JPACT Worksheet

Agenda Item Title: Portland-Vancouver area Comprehensive Climate Action Plan: feedback and comments on draft plan

Presenters: Ted Leybold, Transportation Policy Director; Kim Ellis, Climate Program Manager; Eliot Rose, Senior Transportation Planner

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Purpose/Objective

The purpose of this item is to collect feedback from JPACT on how to address feedback and public comments received during summer 2025 as Metro finalizes the draft Comprehensive Climate Action Plan (CCAP) for the Portland-Vancouver metropolitan area. Metro published the draft CCAP in August 2025 and has been collecting feedback on the draft plan via an online open house and survey, email comments, and consultation with partner agencies. Metro staff are seeking feedback from TPAC on the following questions:

- What feedback do you have on the proposed changes in response to comments received on the draft CCAP?
- Do you have other feedback that should be considered as the CCAP is finalized?

This feedback will help staff finalize the CCAP before bringing it to Metro Council to consider endorsing by resolution.

Outcome

JPACT offers feedback on the public feedback received on the draft CCAP to date and on Metro staff's proposed responses to this feedback.

What has changed since JPACT last considered this issue/item?

The CCAP is funded through a Climate Pollution Reduction Grant (CPRG) Planning Grant from the US Environmental Protection Agency (EPA) that Metro received in August 2023. The grant supports coordinated climate action planning for the Portland-Vancouver metropolitan area and involves a series of three deliverables.

JPACT last considered this project in January 2024 as Metro was finalizing the first deliverable funded through the CPRG grant, the **Priority Climate Action Plan (PCAP)**. The PCAP, which Metro submitted to EPA in February 2024, identified high-priority, implementation-ready greenhouse gas (GHG) reduction measures that could be delivered with current staffing and funded with available resources—including competitive CPRG implementation grants that EPA made available in Spring 2024.[1]

Since then, Metro has been working to develop the CCAP, which is the second deliverable required by the CPRG grant, and is due at the end of 2025. The CCAP, which was published in draft in August

[1] Metro and partner agencies submitted 5 applications for implementation grants in April 2024 totaling roughly $100 million. None of these applications were funded, but Oregon received funding for a statewide implementation grant for $197 million focuses on reducing emissions from waste and materials, buildings, and transportation, which are the largest contributors to climate pollution in Oregon. Oregon's grant includes resources for local and regional climate programs that focus on reducing emissions in each of these three areas. See https://www.oregon.gov/deq/ghgp/Documents/CPRGVisual-ODOE.pdf for a summary of how the state plans to spend these funds.

2025 and is available via Metro's project website,[2] includes a comprehensive inventory of GHG emissions for the metro area and a set of proposed measures to reduce emissions. The final deliverable under the grant is a **status report**, due late 2027, that updates EPA on the status of the actions identified in the PCAP and CCAP.

The CCAP is the most comprehensive climate plan that the metropolitan area has ever developed. The CCAP will provide a unifying framework for addressing climate in the Portland-Vancouver metropolitan area that:

- Builds on previous climate plans by Metro and agency/community partners and identifies the actions from these plans that are most beneficial and best poised to move forward.
- Strengthens coordination on climate by identifying cost-effective, implementation-ready climate actions and describing how Metro and partners can collaborate to move them forward.
- Draws on extensive outreach and engagement conducted by both Metro and partner organizations on which climate actions do—and don't—advance equity.
- Focuses on actions that not only benefit the climate, but also help people save money and improve their quality of life.
- Provides data, best practices, and updates that can inform other climate plans in the metropolitan area.
- Outlines a bold approach to meeting climate goals that involves pursuing more resources and implementing controversial actions, such as roadway pricing—while also highlighting the challenges and concerns that Metro and partners need to address to move these actions forward.
- Identifies projects, policies and process changes that can help Metro, local governments and other partners reduce climate pollution more effectively over the long term.
- Clarifies how state, regional, and local governments can best work together to combat climate change given their complementary and overlapping roles.
- Supports Metro and its partners in pursuing state, foundation, and federal funding to implement climate projects.

The CCAP includes:

- A **greenhouse gas emissions (GHG) inventory** that provides a snapshot of how many GHG emissions the metropolitan area produces and where those emissions come from.
- **GHG emissions targets** based on state climate goals in Oregon and Washington.,
- **GHG emissions projections** that forecast reductions due to state-level policies and programs and identify the remaining gap between forecasted emissions and climate goals. The CCAP aims to fill this gap.
- **Climate actions** that aim to reduce emissions from transportation; buildings; and food, goods, and services, which contribute the majority of the metropolitan area's GHG emissions.
- An **equity and benefits analysis** that estimates the cost savings to households and reduction in air pollution due to each action in the CCAP, and qualitatively discusses which actions benefit health and safety, economic development, and resilience and access to nature—and which actions risk creating negative impacts for low-income and disadvantaged people.
- A **draft workforce planning analysis** that describes an approach to identifying the priority occupations that are needed to implement the CCAP and the steps needed to train and develop workers in key occupations. The final CCAP will include the results of this analysis.
- A description of **coordination and outreach** conducted in the course of creating the plan.
- **Technical appendices**, including information on the methods and data used to inventory and project GHG emissions and analyze the costs and benefits of actions.

[2] https://www.oregonmetro.gov/tools-partners/grants-and-resources/climate-pollution-reduction-planning-grants

Metro and its consultant team's extensive process for developing the draft CCAP is documented throughout the draft plan. This process included:

- **A review of local and regional climate-related plans (CAPs) produced by public agencies and community-based organizations in the metropolitan area.** Metro used these plans to identify potential climate actions to include in the CCAP and develop assumptions about how these plans would be implemented. Metro also used the information in these CAPs to develop screening criteria to evaluate potential climate actions for the CCAP, especially criteria related to equity. The plans reviewed highlighted several ways in which climate actions can advance equity and often included detailed outreach to community members on equity benefits and impacts. Appendix 4 in the CCAP technical appendices[3] summarizes the plans reviewed.
- Extensive **stakeholder engagement**, with different groups providing different information based on their focus and expertise:
    - The **Climate Partners' Forum**, a group of agency and non-profit staff focused on climate-related work, provided feedback on every aspect of the draft CCAP, with a focus on ensuring that the CCAP reflected relevant climate plans and data, included the most beneficial actions, and identified realistic pathways to implementing each action. The coordination and outreach section of the draft CCAP includes a summary of Climate Partners' Forum meetings and a list of member organizations.[4]
    - **Regional advisory committees** offered feedback on aligning the CCAP actions and targets with relevant regional transportation and land use planning efforts. The coordination and outreach section of the draft CCAP includes a summary of these committee engagements.[5]
    - Members of the public provided feedback on the CCAP through two **online open houses** that focused on understanding which actions that community members see as most beneficial and why. This information was used to analyze co-benefits and highlight co-benefits that are particularly important for disadvantaged communities. The coordination and outreach section of the draft CCAP includes a summary of findings from the first online open house, held in December 2025-January 2025,[6] and Appendix 5 of the CCAP technical appendices provides more detailed information on results.[7] The final CCAP will also include a summary of the second online open house, which was open from August 5th 2025 to September 4th 2025, and the CCAP team is still processing the feedback received. This memorandum includes interim results from the second online open house and accompanying public comments.
- **Quantitative and qualitative analysis**, led by Metro staff and consultants, that helped to estimate current and future GHG emissions, select climate actions, and estimate their costs and benefits. This included a qualitative screening of potential actions based on criteria such as implementation readiness and scalability, which was used to prioritize actions for inclusion in the plan, as well as a quantitative analysis of the costs and benefits of each action. The Metro team drew on existing guidance and best practices to identify methods to estimate costs and benefits and on adopted plans to provide the inputs needed for these methods. Stakeholder input helped to identify relevant plans and data sources and interpret

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[3] https://www.oregonmetro.gov/sites/default/files/2025/08/05/Draft-Metro-CCAP-technical-appendices.pdf, beginning on p. 111-119.

[4] https://www.oregonmetro.gov/sites/default/files/2025/08/05/Draft-Metro-comprehensive-climate-action-plan.pdf, p. 150-153.

[5] https://www.oregonmetro.gov/sites/default/files/2025/08/05/Draft-Metro-comprehensive-climate-action-plan.pdf, p. 153-156.

[6] https://www.oregonmetro.gov/sites/default/files/2025/08/05/Draft-Metro-comprehensive-climate-action-plan.pdf, p. 156-159.

[7] https://www.oregonmetro.gov/sites/default/files/2025/08/05/Draft-Metro-CCAP-technical-appendices.pdf, p. 120-129.

and communicate results. The summary of costs and benefits in the draft CCAP[8] contains more details.

What packet material do you plan to include?

- Attachment 1: Project schedule and engagement activities
- Attachment 2: Interim results from online open house #2 and public comment period
- Attachment 3: Summary of public comments received and recommended actions (as of 8/27/25)
- Attachment 4: Draft Metro Council resolution for the purpose of accepting the findings and recommendations in the draft CCAP
- Attachment 5: Draft Comprehensive Climate Action Plan

[8] https://www.oregonmetro.gov/sites/default/files/2025/08/05/Draft-Metro-comprehensive-climate-action-plan.pdf, p. 34-48.

Comprehensive Climate Action Plan Engagement Activities

This document lists planned engagement activities to support development of the Comprehensive Climate Action Plan in 2024 and 2025. These engagement activities build on past climate action planning and community priorities identified through extensive engagement conducted during development of the 2023 Regional Transportation Plan, the Climate Smart Strategy, the Regional Waste Plan and other local and regional climate planning.

Climate Partners' Forum Meetings

Audience: Public agencies and community organizations
Purpose: Seek feedback from public agencies and community organizations on key elements of the EPA-funded Comprehensive Climate Action Plan and promote collaboration among partner organizations that are doing climate work. Led by Metro's PD&R Department, other Metro departments participate in the Forum, including Metro's WPES Department and Metro's Housing Department. See Attachment 1 for a complete list of participating organizations. The Forum meets 9 times throughout the development of the CCAP:

- July 23, 2024
- October 29, 2024
- December 17, 2024
- March 18, 2025
- April 15, 2025
- June 17, 2025
- September 16, 2025
- October 21, 2025
- December 16, 2025

Online Open Houses

Audience: Members of the general public
Purpose: Seek feedback from the general public. Led by Metro's PD&R Department, other Metro departments help to develop the open house content, including Metro's WPES and Housing Departments. The first online open house concluded in January 2025 and requested feedback on which climate actions best meet the needs of their communities to help the CCAP prioritize actions that help save money, increase resiliency, or offer other co-benefits. The second online open house is planned for July 2025 and will seek feedback on the draft CCAP.

1:1 Meetings with Project Partners

Audience: Agencies, businesses or non-profits that are focused on supporting specific climate actions
Purpose: Identify opportunities to engage for people who are interested in supporting specific actions or providing feedback on specific sections of the CCAP.

Regional Advisory Committees and County-level Coordinating Committees

Audience: TPAC, MTAC, MPAC, JPACT, RTAC, SW RTC and county-level coordinating committees
Purpose: Provide an update on the Comprehensive Climate Action Plan and request feedback on climate targets and actions to be included in the draft and final CCAP before Metro Council considers endorsement of the plan in November 2025.

Metro Council Updates and Meetings

Audience: Metro Council
Purpose: Provide updates on the Comprehensive Climate Action Plan, seek feedback on climate targets and actions to be included in the plan and request Council endorsement of the plan at the end of the process.

Updated June 21, 2025

2025 Metro Council and Regional Advisory Committee Discussions

The Metro Council and regional advisory committees provide feedback to support development of the Comprehensive Climate Action Plan in 2025.

- **2/7/25** – **TPAC meeting**: review results from recent analyses and outreach and provide feedback on climate targets and proposed GHG reduction actions
- **2/19/25** – **MTAC meeting**: review results from recent analyses and outreach and provide feedback on climate targets and priority actions
- **March-May 2025** – **Metro Council updates:** individual and small group discussions on recent analysis and outreach and proposed climate targets, CCAP actions and Metro Council endorsement of CCAP
- **5/2/25** – **TPAC meeting**: provide feedback on aligning land use and transportation actions with regional plans
- **5/21/25** – **MTAC meeting**: provide feedback on aligning land use and transportation actions with regional plans
- **5/28/25** – **MPAC meeting**: provide feedback on climate targets and proposed GHG reduction actions
- **May-June 2025**: opportunity for **county coordinating committees** to provide feedback on land use and transportation actions
- **6/5/25 – WCCC TAC meeting**: provide feedback on land use and transportation actions
- **6/9/25 – WCCC meeting**: provide feedback on land use and transportation actions
- **6/18/25 – C4 Metro subcommittee meeting**: provide feedback on land use and transportation actions
- **7/8/25 – Metro Council work session**: provide feedback on draft CCAP actions and proposed Council endorsement action
- **7/10/25 – CTAC meeting**: provide feedback on the draft CCAP
- **7/11/25 – TPAC meeting**: provide feedback on the draft CCAP
- **7/16/25 – C4 Metro Subcommittee meeting**: provide feedback on the draft CCAP
- **7/16/25 – MTAC meeting**: provide feedback on the draft CCAP
- **7/17/25 – JPACT meeting**: comment from the chair promoting CCAP comment opportunity
- **7/23/25 – MPAC meeting**: provide feedback on the draft CCAP
- **July-August 2025**: opportunity for **county coordinating committees** to provide feedback on the draft CCAP
- **9/4/25 – CTAC meeting**: review comments on / changes to the draft CCAP
- **9/5/25 – TPAC meeting**: review comments on / changes to the draft CCAP
- **9/17/25 – MTAC meeting**: review comments on / changes to the draft CCAP
- **9/18/25 – JPACT meeting:** review results of second online open house and partner feedback received to date, provide feedback on the draft CCAP *(pending request)*
- **9/24/25 – MPAC meeting:** review results of second online open house and partner feedback received to date, provide feedback on the draft CCAP *(pending request)*
- **10/21/25 – Metro Council work session**: review results of second online open house and partner feedback received to date, provide feedback on the draft CCAP
- **11/13/25 – Metro Council meeting**: consider endorsement of the final CCAP by resolution

Metro Climate Partners' Forum members

Metro is convening the Climate Partners' Forum to serve as the technical steering group for Metro's EPA-funded Climate Pollution Reduction Grant (CPRG). The Forum provides feedback on key elements of CPRG deliverables, such as greenhouse gas inventories, reduction measures, the Priority Climate Action Plan (PCAP) and the Comprehensive Climate Action Plan (CCAP). The Forum consists of staff from public agencies, community-based organizations, and environmental non-profits who are engaged in climate work, and includes representation from Metro departments that have an external-facing role in cutting climate pollution. Members help to ensure that CPRG-funded plans are coordinated with and supportive of partner organizations' climate efforts.

The Forum is an open body; any eligible organization is welcome to join at any time, and organizations may send different staff to different meetings based on their capacity and/or on the topic at hand. Below is a list of organizations that have participated in recent Forum meetings.

Public agencies

- Beaverton
- Clackamas County
- Clark County
- Columbia County
- Gresham
- Hillsboro
- Lake Oswego
- Milwaukie
- Multnomah County
- Oregon Department of Transportation
- Oregon Department of Environmental Quality
- Port of Columbia County
- City of Portland
- Portland Public Schools
- Southwest Washington Regional Transportation Commission
- Skamania County
- Southwest Clean Air Agency
- Tualatin Hills Park and Recreation District
- Tigard
- TriMet
- Tualatin
- Vancouver
- Washington County

Community-based organizations and environmental non-profits

- Blueprint Foundation
- Earth Advantage
- Energy Trust of Oregon
- Fourth Plain Forward
- Getting There Together
- Latino Network
- Neighbors for Clean Air
- Oregon Walks
- The Street Trust
- WorkSystems

Metro departments

- Capital Asset Management
- Government Affairs and Policy Development
- Housing
- Parks and Nature
- Planning, Development and Research
- Waste Prevention and Environmental Service

Date: Thursday, September 4, 2025

To: Metro technical and policy committees and interested parties

From: Eliot Rose, Senior Transportation Planner

Subject: Draft Comprehensive Climate Action Plan: interim results from online open house #2 and public comment period

Introduction

Metro held the second CCAP online open house from August 5th, 2025 to September 4th, 2025. This online open house includes surveys that gauge general support for the CCAP as well as specific levels of support for the different climate actions in the CCAP, and also allows users to submit open-ended comments on the plan in general or specific actions. The results of this survey will help Metro finalize the CCAP and also provide useful information about support for different climate actions that can also inform other planning efforts. Metro distributed the survey through relevant email lists (including to Climate Partners' Forum members and interested parties lists for Metro technical and policy committees), social media feeds, the Metro newsletter, and through word of mouth. As part of the online open house, Metro also made the draft CCAP available for review and solicited detailed comments via email.

The CCAP team is currently working to produce a complete summary of the online open house that captures all survey results and open ended comments and identifies key themes and take-aways. This memo contains an interim summary of findings based on responses received as of August 27, 2025.

Key findings from the online open house include:

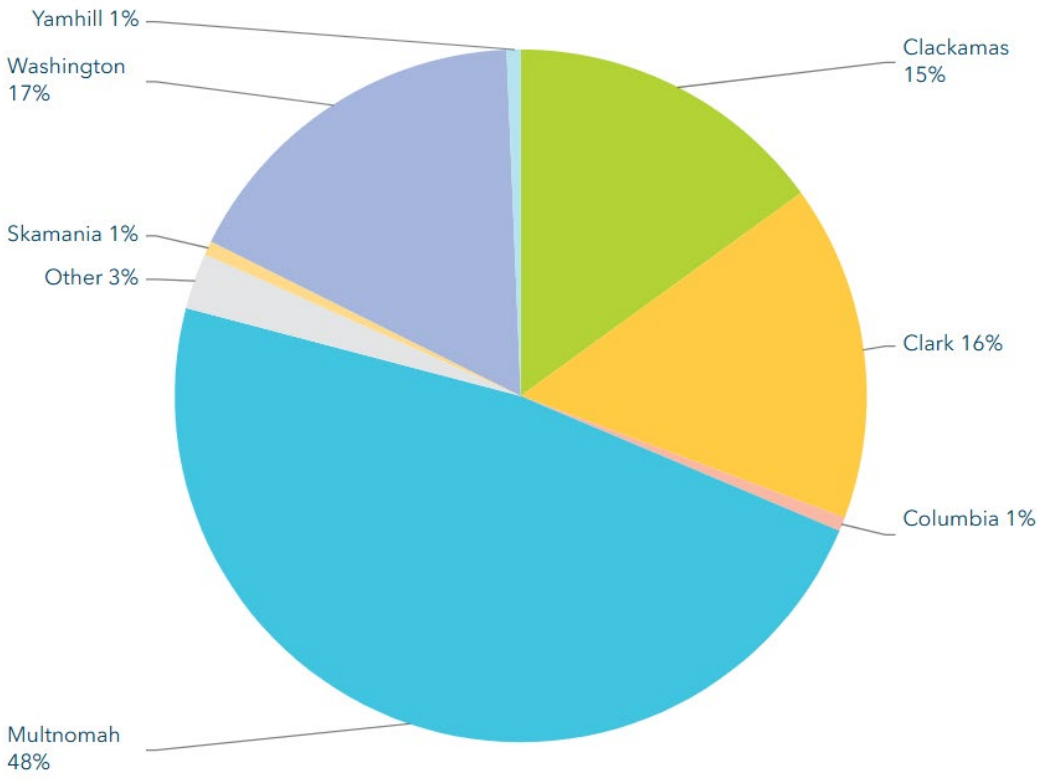
- **There is overwhelming support for government action on climate**. Three quarters of respondents are concerned about the impacts of climate change on their communities, and the same share agree that Metro and other local and regional governments should prioritize combating climate change.
- **A majority of respondents (61%) say that the draft Comprehensive Climate Action Plan is on the right track** to combat climate change.
- **There is majority support for every action in the CCAP**. The online open house asked people about their support for different actions in the CCAP; for every action at least 70% of people were supportive.

Online open house results

Number and distribution of responses

As of August 27, 22 days into the 30-day comment period, Metro had received **152 total responses to the survey**. Figure 1 shows the distribution of these responses by the county in which the respondent lives or works.

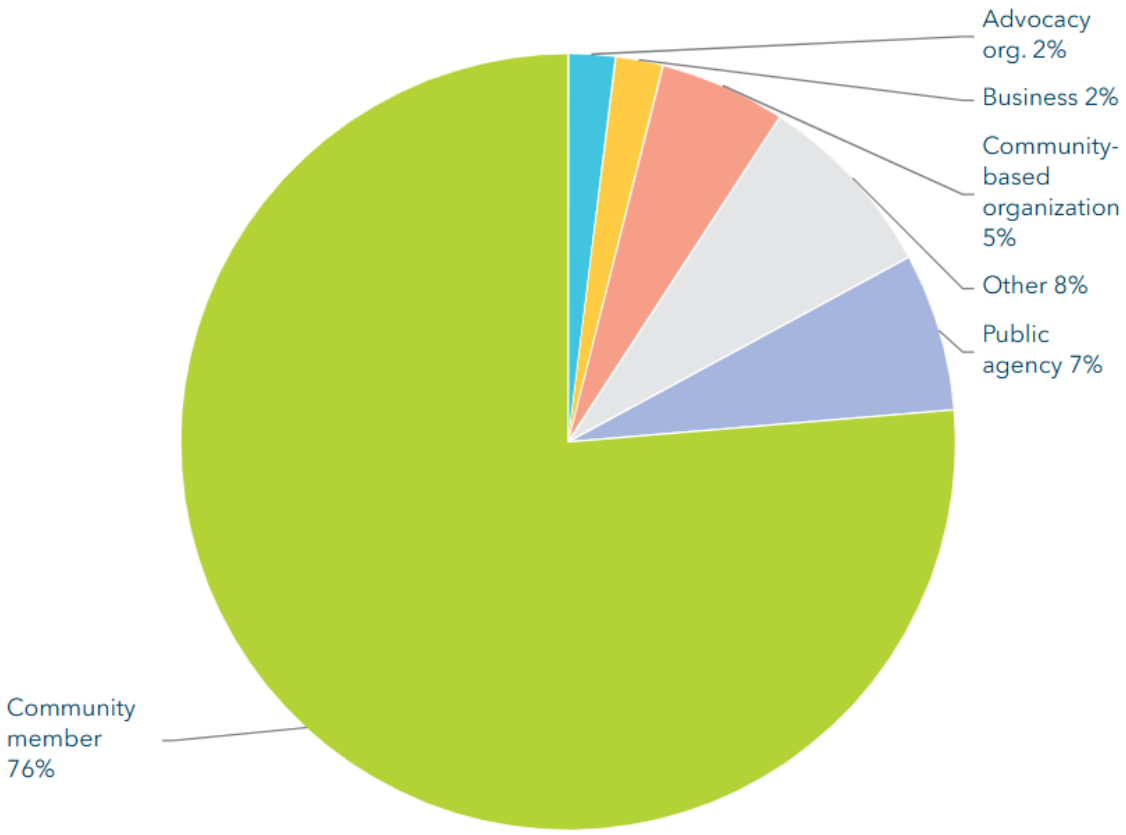
Figure 1: Distribution of online open house responses by county



Almost half of the responses received come from Multnomah County. More populous counties submitted a greater share of responses, and the share of responses submitted by each county is roughly proportional to each county's share of the MSA population. However, **Multnomah County is over-represented in the responses** (it accounts for 48% of the responses, but only 31% of the metropolitan area's population), and **other counties are slightly under-represented**.

Figure 2 shows the distribution of responses by sector (i.e., whether the respondent is an unaffiliated community member or represents an organization like a public agency or community-based organization).

Figure 2: Distribution of online open house responses by sector



Over three-quarters of responses are from unaffiliated community members. Representatives of public agencies, community-based organizations, and other organizations also submitted significant shares of responses.

The survey includes both required general questions about climate change and optional questions about the actions within each of the three sectors that the CCAP focuses on: transportation, buildings, and food, goods and services. Examining the share of people who answered these optional questions can help to understand the expertise and priorities of respondents. Of the 73 people who responded to date:

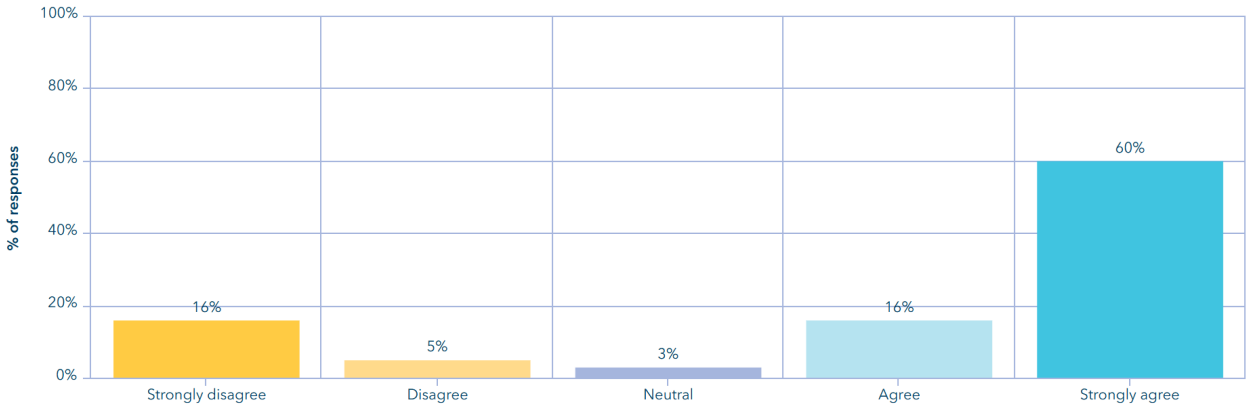
- 106-107[1] answered the optional questions regarding actions in the transportation sector.
- 77-79 answered the optional questions regarding actions in the buildings sector.
- 69-70 answered the optional questions regarding actions in the food, goods and services sector.

[1] Each sector includes multiple optional questions related to different types of climate actions. A range indicates that different numbers of people responded to the different questions within each sector.

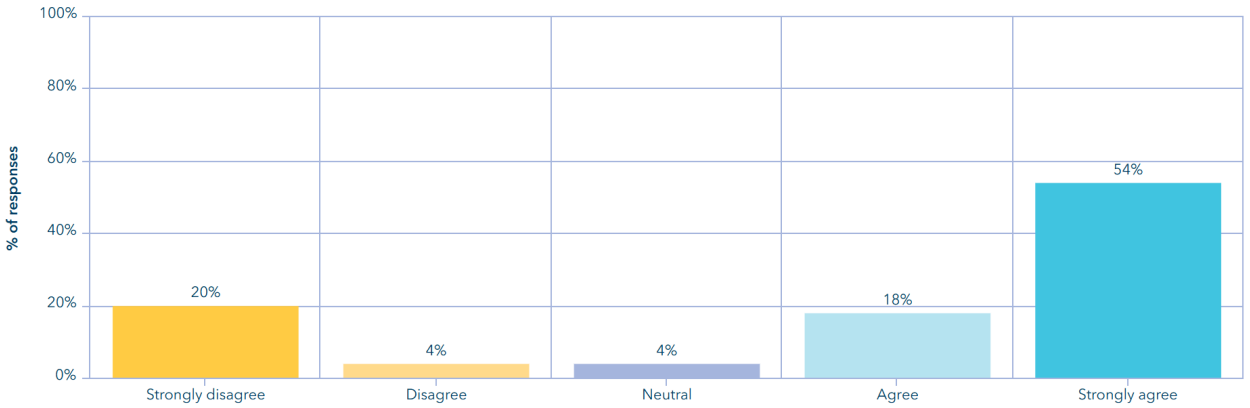
Responses to general questions

The survey includes three general questions that gauge respondents' level of concern about climate in general, support for local and regional agencies addressing climate change, and support for the CCAP. Figure 3 below summarizes the responses to these questions.

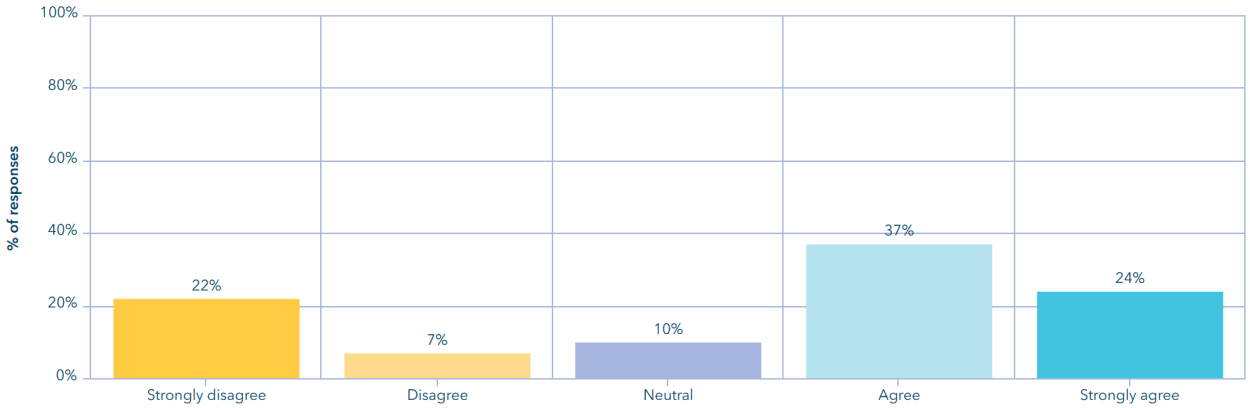
Figure 3: Responses to general questions about climate change and the CCAP



I am concerned about the impacts of climate change on my community.



Metro and other local and regional governments should prioritize combatting climate change.



The draft Comprehensive Climate Action Plan is on the right track to combat climate change.

A strong majority of respondents agree with all three statements. Three-quarters of respondents are concerned about the impacts of climate change on their communities and agree that local and regional governments should prioritize combating climate change. Over 60% of respondents agree that the draft CCAP is on the right track to combat climate change. The finding that there is higher support for government action on climate change in general than for the CCAP in particular is consistent with the results of previous surveys conducted by Metro, which have generally found greater agreement that climate change is a concern or priority than with a specific action or set of actions to reduce climate change. Multiple open-ended comments on these questions indicated surprise or disappointment that the CCAP focuses on reducing climate pollution and does not address adapting to climate change. This is because the CCAP is required by the grant that funds it to focus on reducing climate pollution; other regional efforts, like Metro's Cooling Corridors Study or the Regional Transportation Plan, focus on adaptation and preparedness.

Responses to sector-specific questions

The online open house survey included optional questions to gauge level of support for the different actions in each of the three main sectors of focus in the CCAP: buildings, transportation, and food, goods and services. In order to facilitate responses, these sections organized the 6-11 actions in each sector into 3-4 categories of similar actions. The descriptions below include information on which actions were included in each category.

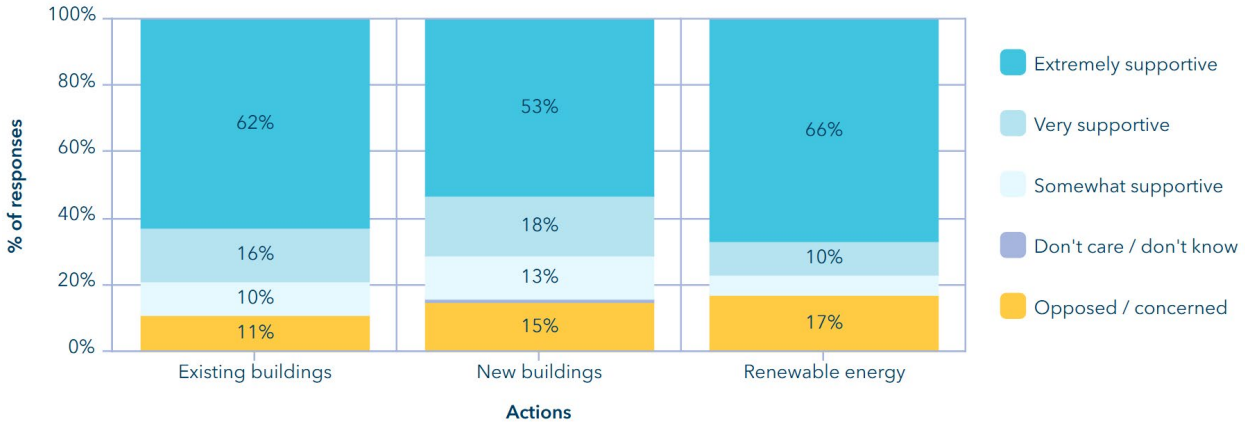
The survey asked respondents to rate their level of support for each category of actions using a 5-point Likert scale ranging from "opposed / concerned" to "extremely supportive." This scale is biased toward positive responses because the level of community support (based on the first CCAP online open house and on outreach conducted by partner agencies in the course of developing their climate action plans) was a key factor in selecting actions for the CCAP. The information already reviewed demonstrates general support for these actions and the survey results confirm this; every category of actions included in the survey receives majority support. The survey focuses on distinguishing between stronger and weaker support in order to highlight the most popular actions.

Table 1 summarizes how building actions were grouped into categories. Figure 4 summarizes the survey responses with respect to each category of building actions.

Table 1: Building actions by category

Category	Action
Existing buildings	Energy efficiency in existing homes
	Efficiency in commercial/industrial buildings
	Installing electric appliances in existing homes
	Planting street trees to reduce cooling needs and sequester carbon
New buildings	Increased requirements for electric appliances in new buildings
	More energy-efficient building codes
Renewable energy	Net-zero public buildings
	Rooftop solar

Figure 4: Level of support for action categories related to buildings



Actions that reduce climate pollution in existing buildings enjoy slightly higher levels of support than actions that focus on new buildings or on renewable energy. This is consistent with the results from the first CCAP online open house. Potential explanations for this include:

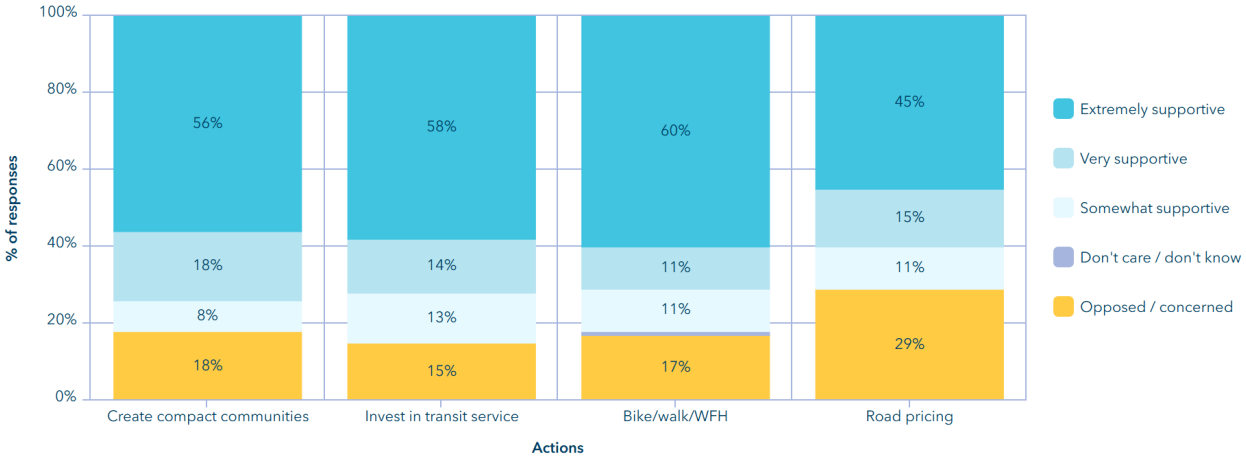
- Some open-ended comments voiced concerns that actions focused on new buildings, which often involve requiring new buildings to be more energy-efficient, could drive up the cost and/or slow the timeline for development—especially for housing.
- Many organizations are already implementing actions that focus on existing buildings; states, utilities and other organizations offer incentives and support to make older buildings more energy-efficient. Public familiarity with these programs could foster greater support.

Table 2 summarizes how transportation actions were grouped into categories. Figure 5 summarizes the survey responses with respect to each category of building actions.

Table 2: Transportation actions by category

Category	Action
Create compact communities	Implement local and regional land use plans
	Implement transit-oriented development programs
	Price and manage parking
Invest in transit service	Implement planned transit service
	Offer discounted transit passes
	Build high-speed rail
Make biking, walking, rolling and working from home easier	Build new bicycle and pedestrian facilities
	Expand electric bike and scooter sharing systems
	Maximize teleworking
Road pricing	Implement roadway pricing and/or fees

Figure 5: Level of support for action categories related to transportation



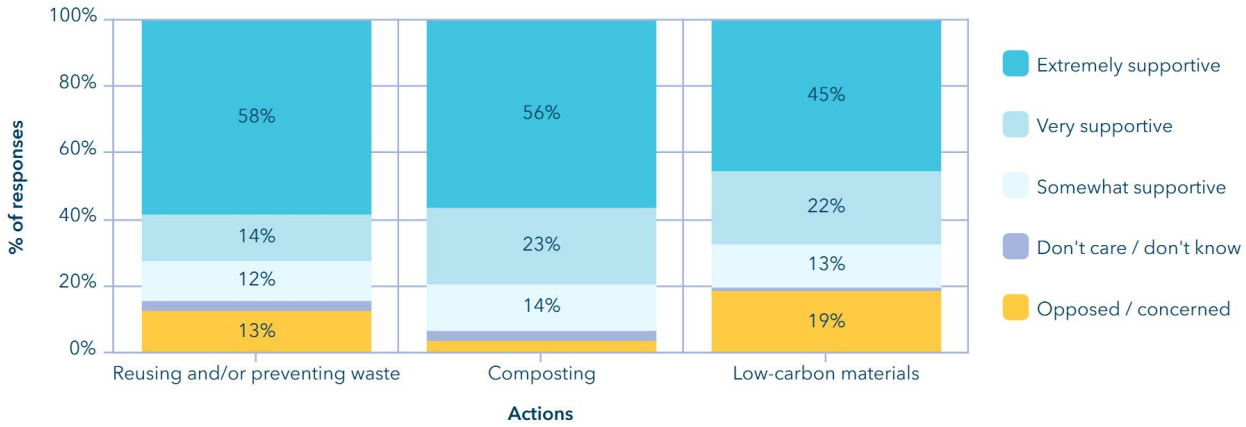
Though the majority of respondents support road pricing, it receives significantly less support than other actions in this sector. Several respondents submitted open-ended comments voicing concerns about the impact of road pricing on people's cost of living. The remaining actions in this sector see similar levels of support. Of these three, investing in transit has the most support.

Table 3 summarizes how food, goods and services actions were grouped into categories. Figure 6 summarizes the survey responses with respect to each category of food, goods, and services actions.

Table 3: Food, goods and services actions by category

Category	Action
Composting	Expanded residential composting
Procurement / construction	Requiring low-carbon construction materials in new buildings
	Low-carbon government procurement
Reusing / preventing waste	Prevent and recover business food waste, with a focus on prevention
	Increase reuse of products and materials

Figure 6: Level of support for action categories related to food, goods and services



Composting, which is a widely established strategy to reduce landfill waste and climate pollution, and is familiar to the many people in the metropolitan area who already have residential composting service, **has the highest support of these actions**. **Reusing and/or preventing waste has the next-highest level of support**. Several open-ended comments voiced support for these actions, but some voiced concerns that these actions would increase the cost of food and of certain goods or limit people's choices. Actions that focus on low-carbon materials received the least support. Some open-ended comments expressed concern about the potential for these actions to increase the cost of building housing.

The complete summary of the online open house results will be available in mid-September. It will include the final results of the survey questions above, as well as cross-tabulations that explore how support for climate action varies by county and coding of open-ended comments to identify prevailing themes.

E-mail and consultation comments on the draft CCAP

The online open house included a link to the draft CCAP, hosted on Metro's project webpage, and provided an email address to which people can submit detailed comments. Metro also shared the link to the draft plan and the same email address in communications promoting the online open house. Metro is logging all of these comments individually, along with any comments on the draft plan received through consultation with agency partners. This section summarizes the substantive comments received on the draft CCAP as of August 27, 2025, along with Metro's proposed response.

Table 4 summarizes comments received to date that recommend changes to the draft CCAP and Metro's proposed response.

Table 4: Summary of CCAP comments received to date and proposed responses

Name	Organization/ Affiliation	Summary of comment	Proposed change to the draft CCAP
Adam Fiss and Judith Perez Keniston	Southwest Washington Regional Transportation Council	Clarify the distinction between Metro and RTC's RTPs in the descriptions of how CCAP actions are defined based on existing plans throughout the draft CCAP.	Change as requested.
Adam Fiss and Judith Perez Keniston	Southwest Washington Regional Transportation Council	Include RTC-administered transportation funding programs as potential resources for relevant actions.	Change as requested.
Keith Liden	Community member	Include a section that discusses funding realities pertaining to implementation.	Add a description of the current status of relevant state and federal programs and policies. (p. 26)
Keith Liden	Community member	Sponsor a comprehensive survey to better understand what it will take to get people to not grab the car keys every time they leave home.	Include "conduct research into how and why public transit and active transportation use is changing, and recommend steps to address these changes and maximize use of these modes" as a potential next step for Metro.
Keith Liden	Community member	Focus on improving service, speed, reliability, safety, and comfort of conventional intercity rail over unrealistic high-speed rail.	Acknowledge Metro's Regional Rail Futures study, which will explore additional opportunities to improve intercity rail connections apart from high-speed rail.
Keith Liden	Community member	Acknowledge telecommuting, but don't encourage it; it has negative impacts on transit and on development in employment centers.	Add an implementation recommendation to promote teleworking in a way that contributes to development in employment centers.
Cassandra Jackson and Lewis Lem	Port of Portland	Acknowledge the Port's new Clean Ports plan, funded by a federal grant.	Change as requested.
(online survey response)	Somali Empowerment Circle	Include clear implementation timelines and measurable outcomes for CCAP actions, and expand engagement strategies for disadvantaged communities to ensure that their needs are addressed during the implementation process.	Change as requested. Expand the recommendation related to collaboration to highlight the role that CBOs can play and highlight opportunities to use this collaboration not just to avoid negative impacts of certain actions, but to maximize the impact and benefits of all actions. (p. 54)

Draft Comprehensive Climate Action Plan
Summary of Public Comments Received and Recommended Actions (as of 8/27/25)

Comment #	Last Name	First Name	Affiliation	Method	Date received	Comment proposes a change? (Y/N)	Summary of Comment and Proposed Change Identified in Comment (changes shown in ~~bold strikeout~~ and underscore)	Recommended Action in Response to Comment (changes shown in ~~bold strikeout~~ and underscore)	Change Recommended (Y/N)
1	Fiss	Adam	SW WA Regional Transportation Council	Email	8/8/2025	N	p. 13: It came as a bit of surprise to me that 'electronics manufacturing' was a leading industrial process in Clark County. The Clark County GHG inventory calls out industry as being a primary emitter, largely through refrigerants and other coolants, but doesn't call out electronics specifically.	No change recommended. Metro confirmed with the consultants that this is correct, and the apparent difference is due to the underlying differences in the scope of Clark County and the CCAP GHG inventories.	N
2	Fiss	Adam	SW WA Regional Transportation Council	Email	8/8/2025	Y	p. 15: Might be appropriate to specifically call out Clark Public Utilities in this section	Change as requested: "Other publicly- or consumer-owned utilities—such as ~~those in the counties in the state of Washington~~ *Clark and Skamania County Public Utility Districts* or in those the western coast range of the MSA."	Y
3	Fiss	Adam	SW WA Regional Transportation Council	Email and follow-up conversation	8/8/2025	N	p. 43: Please be consistent when referring to RTPs. Notation switches between 2023 RTP, RTP and Metro RTP. Is the 2023 RTP referring to Metro's RTP. Per our discussion, the model that underpins RTC and Metro RTPs is the same. Clark County's RTP was adopted in 2024. Recommend adding a foot note to clarify. Maybe a reference to this could also fit on page 60: related plans, projects, and resources	Change as requested. Clarify references to Metro vs. RTC RTPs throughout the CCAP and in Table 12, add a footnote to Table 12 describing the extent of coordination on the two RTPs, and add a table summarizing the scale at which all actions are applied to further clarify which actions apply to the Metro region vs. to both the Metro and RTC regions.	Y
4	Fiss	Adam	SW WA Regional Transportation Council	Email	8/8/2025	Y	p. 60: "Though not required, Metro's RTP also identifies a list of short-term constrained projects that can be implemented before the next update and a list of strategic unconstrained projects that reflect priorities for any additional funding that should become available." RTC's Clark County RTP similarly includes unfunded projects that are community priorities and couple be implemented in the 2045 horizon. Refer to page 7 onward in Appendix N: Plans, Studies, and Projects - https://rtc.wa.gov/wp-content/uploads/Programs/rtp/clark/draft/2024MTPAppendices/2024_RTP_AppN-Plans.%20Studies.%20and%20Studies.pdf	Change as requested. Add a reference to RTC RTP Appendix N for this action and any other actions that apply to both Metro and RTC and use the Metro RTP strategic unconstrained project list as a basis to define actions or scenarios.	Y
5	Fiss	Adam	SW WA Regional Transportation Council	Email	8/8/2025	Y	p. 61: Should clarify that it is *Metro's* RTP transit vision being referenced. Might also be appropriate to reference CTRAN's High Capacity Transit System Plan and Transit Development Plan or the Clark County High Capacity Transit System Study, which has analogous aims to Forward Together	Change as requested.	Y
6	Fiss	Adam	SW WA Regional Transportation Council	Email	8/8/2025	Y	p. 61: Also worth noting that RTCs Transportation Improvement Program (TIP) distributes regional allocation of Surface Transportation Block Grant (STBG), Congestion Mitigation and Air Quality (CMAQ), Transportation Alternatives (TA) programs, Carbon Reduction Program (CRP), and other regionally allocated federal funds that may support public transit.	Change as requested.	Y
7	Fiss	Adam	SW WA Regional Transportation Council	Email	8/8/2025	Y	p. 62: C-TRAN is the local public transit provider and is the designated recipient of regionally allocated federal transit funds. C-TRAN receives Federal Transit Administration (FTA) urban area funds and selects projects for Section 5307 (Urbanized Area Formula Program), Section 5310 (Enhanced Mobility of Seniors and Individuals with Disabilities), Section 5337(State of Good Repair Grant), and Section 5339 (Bus and Bus Facilities Program).	Amend to list FTA funding programs (including the 5307, 5310, 5337, and 5339 programs referenced in the comment) as potential funding sources for transit and acknowledge that transit agencies in the metropolitan area are the recipient of these funds.	Y
8	Perez Keniston	Judith	SW WA Regional Transportation Council	Email	8/8/2025	Y	p. 59, 66, 155: Replace Regional Transportation Commission with Regional Transportation Council	Change as requested.	Y
9	Perez Keniston	Judith	SW WA Regional Transportation Council	Email	8/8/2025	Y	p. 60: Document states that "Metro and RTC collaborate to ensure that their RTPs reflect each other's transit projects". In theory that is correct However, our RTP does not list or mentions Metro projects. The only commonality that we have are projects identified on I 205 and I 5. Metro's 2023 High Capacity Transit Strategy was adopted in conjunction to the RTP. This plan mentioned the light rail project on I 5 (priority 1) and a future connection bus route on I 205 (priority 4). Outside projects on the bridges Metro RTP or high capacity transit strategy do not mentioned any other transit project.	No change recommended. See response to comment #10, which is related.	Y
10	Fiss	Adam	SW WA Regional Transportation Council	Email	8/8/2025	Y	p. 60 :Relating to Judith's comment, above, I would recognize that the 2045 financially contrained highway and transit network for the modeling done for each RTP contain transit and program projects found in the adopted RTP project lists. This is noted in the email from Mark Harrington dated 7/15/2025	Change as requested to clarify the relationship between Metro and RTC RTPs: "Metro and RTC collaborate to ensure that *the travel models that they use to analyze* their RTPs reflect ~~each other's~~ *planned* transit projects *in both regions* ."	Y

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11	Perez Keniston	Judith	SW WA Regional Transportation Council	Email	8/8/2025	Y	p. 59: Recommending to delete RTC. The last part of this first paragraph under Overview states "Regional transportation plans (RTPs) for the urbanized areas of the region developed by Metro and RTC identify a variety of transportation projects that benefit the climate, advance other goals, and can be paid for with anticipated resources. " With the current administration not supporting climate actions I am not sure we want RTC's name on this statement. We need to revisit the objectives under the Sustainability and resiliency goal to ensure meet the directives of the current administration.	Change as requested.	Y
12	Perez Keniston	Judith	SW WA Regional Transportation Council	Email	8/8/2025	Y	p. 27: Comment re: GHG targets. Table 5 on page 27 accurately summarizes WA's GHG reduction targets.. However, on Wednesday County Council provided staff with a directive to include in their Climate Element the following target: Reduce GHG emission to net zero by 2050 with a base year of 2020 (not 1990 as the state has it). Vancouver GHG reduction target is: Net Zero by 2040. Somehow I think we need to note this so there is no misunderstanding of the GHG reduction goals to be adopted as part of the Comp Plan's Update.	Change as requested. Edit the text below this table as follows: "Oregon's goals were adopted by the legislature in 2007 and updated by executive order in 2020. Washington's goals were adopted by the Washington legislature in 2020. *Local and regional climate plans sometimes include climate goals that differ from state goals based on local needs, resources and priorities. The CCAP uses state climate goals to help define the reductions that the plan needs to achieve; it does not recommend that other climate action plans in the metropolitan area use identical goals."*	Y
13	Liden	Keith	Private resident	Email	8/9/2025	Y	The plan appears to assume continued state and federal funding to help implement it. Given the attitude of our current federal administration, this is probably unrealistic (I'm frankly surprised Metro's funding for this project hasn't been yanked) and should be reevaluated. To make matters worse, our state legislature becomes more dysfunctional and unreliable with each new session. Recommendation: Include a section that discusses funding realities pertaining to implementation.	Add detail to the following text on p. 26 so that the text lists specific changes to federal programs and local resources for climate work: "It does not appear that the metropolitan area is on track to meet the 2030 target (as discussed below), and recent federal actions to scale back climate policies and programs, coupled with a lack of local resources, create a lot of short-term uncertainty for climate efforts in our metropolitan area and across the U.S." The new text will describe the current status of key state and federal processes that affect the climate actions in the CCAP, potentially including federal clean vehicle rules, federal solar credits, and state transportation funding. Available information may be limited because these processes are dynamic and ongoing.	Y
14	Liden	Keith	Private resident	Email	8/9/2025	Y	The draft assumes that if active transportation services and facilities are improved, more people will walk, ride, and take transit. However, this isn't reflected in recent data. For example, TriMet's ridership was basically flat from 2005 until Covid and is now struggling to get above 60% of pre-Covid levels. Bicycling levels peaked around 2016, dropped steadily after that, and are now only seeing a feeble uptick. All the while, transit service and bicycle facilities got better! The "build it and they will come" mantra is apparently no longer valid. Recommendation: Metro needs to sponsor a comprehensive survey to better understand what it will take to get people to not grab the car keys every time they leave home.	Add the following bullet to p. 56 as a potential transportation-related next step for Metro: "Conduct research into how and why public transit and active transportation use is changing, and recommend steps to address these changes and maximize use of these modes." This text may also include additional detail on relevant Metro projects, such as the Community Connectors Study.	Y
15	Liden	Keith	Private resident	Email	8/9/2025	Y	Teleworking may be a good GHG reduction strategy, but it has been a disaster for downtown Portland and other business districts in the metro area. Downtown Portland has one of the highest vacancy rates in the country, and it's a shell of its former self. Higher telecommuting rates will only drag it down further with higher vacancy rates and plummeting real estate values. Recommendation: Acknowledge telecommuting, but don't encourage it.	Add the following bullet to p. 84 as an implementation recommendation for the Maximize Teleworking action: "Promote teleworking in a way that contributes to development in employment centers," including additional details about the challenges that teleworking presents for transit use and for development in some activity centers.	Y

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16	Liden	Keith	Private resident	Email	8/9/2025	Y	The plan should forget about high-speed rail and opt for reasonably fast conventional rail with better service instead. If the California high-speed rail debacle is any indication, a high-speed project here would take a century to complete. We've been working on the Columbia River Crossing for over 20 years with nothing to show for it yet. In short, we have a poor track record constructing big projects on time and on budget. Simply providing more frequent service and reasonably fast trains should be the goal. For example, the Portland-Seattle train has the ride quality of a stagecoach, often stops for freight traffic, and occasionally reaches around 75 mph (big deal). It takes around 4 hours for a trip that is less than 3 hours by car. Switzerland has virtually no high-speed trains, but it still offers some of the best train service in Europe. We could also strive to make train travel more pleasant. We've invested billions in PDX, but we can't seem to find the money to adequately maintain our train station and its disgraceful immediate neighborhood. Recommendation: Focus on improving service, speed, reliability, safety, and comfort of conventional intercity rail.	Add text to p. 90 (Related plans, projects and resources for the High-speed Rail action) acknowledging Metro's Regional Rail Futures study: "High-speed rail is focused on serving major metropolitan areas. Additional interregional passenger rail connections between smaller cities could also help to reduce driving and better connect the metro area to destinations in cases where there is adequate demand and infrastructure. Metro's Regional Rail Futures Study is currently exploring the potential to create these connections."	Y
17	Liden	Keith	Private resident	Email	8/9/2025	N	As a recently retired planner who has worked in the metro area for many years, I have been frustrated about how the traffic engineering profession (with exceptions, of course) undercuts our planning aspirations to create livable communities that are walkable, bicycle-friendly, and transit-friendly. My experience with ODOT and Washington County in particular has demonstrated how time and again traffic engineers demand streets that will first and foremost make driving fast and convenient at the expense of active transportation modes. Bloated street cross sections and intersections, maintenance of highway speeds on streets that are transitioning from rural to urban, and infrequent and unsafe crossings on arterials and collectors continue to be required by the traffic engineers over the protest of urban planners and designers. Planning for UGB expansion areas has placed more emphasis on making them great places to drive instead of first focusing on making them great places to live. I'll spare you the examples but simply say this blind Robert Moses allegiance to the automobile will smother active transportation and create new high crash corridors into the future. Recommendation: Get the traffic engineering profession to support active transportation.	No change recommended.	N
18	Jackson	Cassandra	Port of Portland	Meeting	8/18/2025	Y	Acknowledge the Port's new Clean Ports plan, funded by a federal grant.	Change as requested. Update Appendix 1 to include a summary of this planning effort.	Y

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20	Steinke	Don	Climate Action of SW V	Email	8/23/2025	N	High-level 1. Stop permitting the construction of barriers to clean energy. New construction that is not EV-ready, not solar-ready and not all-electric ready, is a financial barrier to clean energy. It is not cost effective to dig up asphalt or tear out sheet rock for electrical conduit. 2. Stop digging deeper. Stop permitting projects (or expenditures of funds into equipment) that will increase emissions. 3. Maximize energy efficiency everywhere. 4. Electrify everything possible. The most palatable time to replace non-electric devices is when they age out or require a permit for repairs. 5. Develop a workforce training program for heat-pump installations. Also develop a sustainable funding resource for heat pumps. Contractors don't want to staff-up unless they can have fairly steady work for 3 or more years. Misc. Discourage the burning of woody debris or trash. We need to keep carbon sequestered as long as nature allows. Clean up brownfields fully so that they can be converted to mixed use development	No change recommended. Comment noted. These recommendations are generally supportive of the actions related to new and existing buildings and compact communities. Metro will consider the comment re: workforce traning programs for heat-pump installations as it finalizes the workforce planning analysis in the CCAP.	N
21	Steinke	Don	Climate Action of SW V	Email	8/23/2025	N	Alt fuels Say No to using hydrogen for applications for which electric batteries will work. Make socially just electrolytic hydrogen to replace dirty hydrogen in fertilizer and steel manufacturing. Say NO to blending hydrogen into home heating fuels. Say NO to storage and transport of hydrogen. As the smallest molecule, hydrogen is prone to leaks and is an indirect greenhouse gas with a carbon intensity of 30. If we wanted to use electricity to replace all the dirty hydrogen on the market with electrolytic hydrogen, that would require all the electricity produced by the entire US electric grid, including nuclear, coal, oil, and all the renewables. Say no to liquid biofuels, and renewable diesel.	Comment noted. The CCAP is a local and regional plan, and local and regional agencies have very little authority to require or discourage the use of specific fuels. State agencies in Oregon and Washington are responsible for administering low-carbon fuel standards and regulating the energy provided by utilities. Metro will share this comment with relevant state agencies.	N

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22	Steinke	Don	Climate Action of SW V	Email	8/23/2025	N	Transportation 1. Require a reduction of per-capita vehicle miles travelled in SOV. This is because even if the sale of ICE cars were to end today, existing ICE cars would continue to pollute for a long time. 2. I urge Oregon/Metro to include an Indirect Source Review program within its State Implementation Plan as authorized under the Clean Air Act. According to the link below, local air quality districts are allowed to regulate entities, such as warehouses and airports, that attract pollution. https://environmentalenergybrief.sidley.com/2025/04/16/states-propose-new-indirect-source-rules-targeting-warehouse-emissions/ In Washington, the Dept of Ecology has apparently done this in at least one case. https://ecology.wa.gov/ecologys-work-near-you/regional-work/southwest-region/bridge-point-development-tacoma-settlemen 3. Consider underwriting a lease program for electric trucks because regular banks won't finance a lease program for electric trucks. Banks need a record of post lease sale prices before they can underwrite leases. We need: 1. Adequate EV charging infrastructure in new multifamily developments 2. Adequate EV charging infrastructure in existing multifamily developments 3. Adequate EV charging infrastructure in new employee parking lots, 4. Adequate EV charging infrastructure in existing employee parking lots, particularly Government property. 5. A comprehensive plan to incubate medium and heavy-duty fleets. 6. A comprehensive plan to provide charging infrastructure for medium and heavy-duty fleets. 7. Re hydrogen powered planes: For now, the highest and best use of green hydrogen is to replace dirty hydrogen in the making of fertilizer. 8. Re rail. Use wires, not liquid fuel. 9. Develop a plan to increase the reliability of public EV chargers 10. Develop a plan that will quickly lead to secure parking for bicycles. 11. Promote electric water craft.	Comment noted; no change recommended. Oregon's Climate Friendly and Equitable Communities rules already require local and regional transportation plans in urbanized portions of the metro area within Oregon to demonstrate a reduction in vehicle miles traveled. State building codes already require pre-wiring for EV charging infrasstructure in many new developments, and state agencies in Oregon and Washington are lading work to electrify medium- and heavy-duty fleets through efforts such as Oregon DEQ's CERTA program, which funds a variety of programs to reduce medium- and heavy-duty emissions). With respect to local regulation of air quality and GHG emissions: Local and regional governments in the Metro area collaborate with state agencies to reduce climate pollution, especially on major commercial and industrial polluters, which have traditionally been under the regulatory authority of state environmental agencies. State agencies in both Oregon and Washington have created cap-and-invest programs (Oregon's Climate Protection Program, Washington's Climate Commitment Act) that aim to reduce GHG emissions from major polluters through a combination of regulation and incentives, in keeping with emerging best practices. Meanwhile, Portland and Multnomah County explored the potential to form a local air quality management districty in 2018, and found supporting a resourced state regulatory program in conjunction with locally-led education, outreach, and incentive programs are a more effective multipronged approach to air quality issues. This suggests that the best opportunity to address GHG emissions from major commercial and industrial polluters is through existing state-led efforts. Metro will monitor the status of the Climate Protection Program and Climate Commitment Act through 2027 through the status reporting required by the grant that funds development of the CCAP.	N
23	Steinke	Don	Climate Action of SW V	Email	8/23/2025	N	Buildings 1. Maximize efficiency 2. Encourage rooftop solar plus batteries. 3. Take lessons from the PAE Building in down town Portland. 4. Consider supporting the gas industry in transitioning to a new business model such as thermal energy networks or other ideas as suggested in this Sightline Article. https://sightline.org/2023/07/17/without-gas-what-business-models-could-gas-utilities-pursue/ 2. Develop a plan to help small brewers transition away from gas. 3. Recognize the huge amount of CO2 produced by burning propane in rural communities and develop a plan for them. 4. Develop a plan to help Food carts transition away from gas. 5. Develop a plan to help commercial kitchens decarbonize. Start with the excessive hot water requirements	Comment noted; no change recommended. Items #1 and 2 are generally supportive of the actions to reduce emissions from buildings that are already in the CCAP . The remaining comments, whcih get into detail about opportunities to reduce emissions from certain types of businesses or certain buildings, will be shared with the Climate Partners' Forum, which includes representatives of local governments throughout the region. These comments are best addressed through local partnerships and/or permitting authority, and opportunities to address them will vary widely and depend on factors such as the type of businesses that are located in different cities and cities' authority over commercial development.	N

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24	Rattay	Scott	Private resident	Email	8/24/2025	N	I am writing to express opposition to the Metro Climate Action Plan in its entirety. The plan openly admits the intent to try unpopular and controversial methods to fight climate pollution. They are unpopular and controversial for a reason. They raise the cost of living and impose mandates that restrict how we live our lives. Metro's efforts to fight climate pollution are nothing but a money and power grab. *Comment includes additional discussion of concerns related to the draft CCAP.*	No change recommended. The CCAP online open houses and other outreach conducted by Metro and agency partners deomnstrates widespread suport for government action on climate change. The specific concerns addressed in this comment, including cost and accountability, are addressed in the draft CCAP, which includes analyses of the costs and savings due to each action and implementation timelines and recommendations that Metro will continue to track through follow-up status reporting.	N
28	Wilson	Michael	Private resident	Email	8/13/2025	N	How about some truth?????? *The rest of the comment was a forwarded email from executivedirector@co2coalition.org.*	No change recommended.	N
29	Steinke	Don	Climate Action of SW V	Email	8/23/2025	N	1. Although EVs are not the only climate solution, EVs are essential to meeting our emissions reduction goals. Yet I saw nothing in your plan in support of EVs. A great many people in the Metro area live more than 1 mile from a transit stop. a. Remove barriers to EV adoption. b. Promote EV adoption. c. Support EV charging stations in new and existing multifamily developments d. As much as possible, electrify all government vehicles. e. Although land use policy reform is essential, it alone will not reduce the pollution from trucks, buses, construction equipment, garden tools, trains, planes, ships and small water craft, none of which were mentioned in your draft. 2. Washington has revised It's Clean Fuel Standard (CFS). It requires fuel suppliers to reduce the carbon intensity of transportation fuels by 45% below 2017 levels by 2038. Approved by the governor on May 17, 2025, this update accelerates and strengthens the original 20% reduction target, aiming to significantly decrease transportation-related greenhouse gas emissions and promote the use of clean fuels like electricity and low-carbon fuels. 3. Alternatives to Taxiing Commercial Jets. Use electric tow vehicles. For a large commercial jet, the fuel used for taxiing typically ranges from 200 to over 400 gallons, but it can vary considerably. For example, a Boeing 747 can burn about one ton of fuel, which is roughly 320 gallons, during a 15-minute taxi. 4. Consider shutting down the Delta Park Speedway 5. Reconsider RECs. An economist has told me that un-bundled recs do not reduce emissions. They simply acquire credits from an existing renewable energy project. I recommend actual emissions reduction within the Metro area. 6. Consider requiring data centers to "Bring Your Own New Clean Energy", B.Y.O.N.C.E. 7. Regarding high-speed rail. I support fast regional rail on its own track, rather that super high-speed rail between Portland and Seattle. Tens of thousands of people drive from Kelso, Longview, Kalama, Woodland, and Ridgefield every day toward the Portland area. A super hi-speed train would not stop at any of those places. 8. Consider requiring anyone, including data-centers, that discharge heated gases to use a heat exchanger to capture the waste heat. (Look for industrial	Comment noted; no change recommended. Most of these ideas relate to federal- or state-led climate actions, and the CCAP is focused on actions that can be led by local and regional governments within the metropolitan area. As discussed in the CCAP, state agencies on Oregon and Washington administer clean fuel standards, lead actions related to vehicle electrification (particularly from heavy duty vehicles; for example Oregon's CERTA grant funds four different programs to reduce medium- and heavy-duty emissions), are currently leading on planning high-speed rail, and have the authority to regulate commercial and industrial pollution from businesses like speedways and data centers, while the Federal Aviation Administration regulates airplane fuels. In addition, the CCAP includes recommendations to ensure that RECs purchased by goverrnments demonstrably reduce emissions. Metro will share this comment with state agencies in Oregon and Washington who generally have the authority to address the issues raised.	N

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30			Somali Empowerment	Online survey	8/8/2025	Y	Somali Empowerment Circle appreciates the clarity and breadth of the draft CCAP, particularly its integration of equity considerations and the use of interactive StoryMap tools to improve accessibility. To strengthen the plan, we recommend including measurable outcomes and clear timelines for each action in the StoryMaps. We also encourage expanding engagement strategies for immigrant, refugee, low-income, and BIPOC communities to ensure those most impacted by climate change are actively involved in shaping solutions. Creating a transparent feedback loop where community members see how their input informs updates will build trust and participation. While priorities are clear, there is limited detail on how actions will be implemented. More specifics on processes, responsible parties, timelines, and resources, along with how equity will be embedded at each stage, would improve accountability and help partners like SEC align our efforts with the plan.	Change as requested. On p. 54, expand the recommendation related to collaboration to highlight the role that CBOs can play and highlight opportunities to use this collaboration not just to avoid negative impacts of certain actions, but to maximize the impact and benefits of all actions. Original text: "Collaborate with businesses, residents and state agencies to address the risk of some actions increasing the cost of living or having other potential unintended consequences. Most of the actions in the CCAP save people money, but some actions with significant climate benefits—including implementing road or parking pricing and creating requirements to build more energy-efficient buildings or use lower-carbon materials—risk increasing people's cost of living or could have other unintended consequences. These actions are essential to meeting climate goals, but they also feel unacceptable to many because the Portland-Vancouver metropolitan area is already experiencing a housing shortage that is increasing the cost of living for everyone, particularly vulnerable residents. Agencies should work with residents and businesses who may be impacted by these actions to proactively address potential cost increases and other unintended consequences. Portland's Pricing Options for Equitable Mobility task force is an example of cross-sector coordination to address the impacts of road pricing. Collaboration with builders, residents, utilities, and state agencies, who have the authority to set building codes, helps to advance many actions that reduce emissions from buildings." Revised text: "Collaborate early and broadly with a wide range of partners—including community-based organizations, businesses, residents, utilities and state agencies—to implement climate actions effectively and avoid unintended consequences. Though the actions in the CCAP are agency-led, few can be implemented by public agencies alone. Community-based organizations play a vital role in helping to reach vulnerable people who are most impacted by climate change during both planning and implementation. Businesses such as builders, utilities, and solid waste haulers, play a vital role in implementing certain actions, and often have in-depth knowledge of potential barriers and paths to	Y

BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF ACCEPTING THE FINDINGS AND RECOMMENDATIONS IN THE COMPREHENSIVE CLIMATE ACTION PLAN FOR THE PORTLAND-VANCOUVER METROPOLITAN STATISTICAL AREA	RESOLUTION NO. 25-5520 Introduced by Chief Operating Officer Marissa Madrigal in concurrence with Council President Lynn Peterson

WHEREAS, climate change is a threat to people's health and to the region's natural areas, clean air, and the economy; and

WHEREAS, climate change is already impacting the region through increased wildfire smoke, hotter summers, flooding and stronger storms; and

WHEREAS, leading on climate change and minimizing contributions to global warming is one of Metro's six desired outcomes for the greater Portland region; and

WHEREAS, the states of Oregon and Washington have recommended targets to reduce climate pollution that aim to reduce greenhouse gas emissions to 95 percent below 1990 levels by the year 2050; and

WHEREAS, research and experience demonstrate that climate pollution has a disproportionate effect on marginalized communities, including Black, Indigenous and people of color, people with limited English proficiency, people with low income, youth, seniors, and people with disabilities, who typically have fewer resources and more exposure to environmental hazards caused by climate pollution, and are the most vulnerable to displacement, adverse health effects, job loss, property damage and other effects; and

WHEREAS, research and experience demonstrate that many of the actions that local and regional agencies can take to reduce climate pollution have the potential to also save people and businesses money, create more resilient communities, create new jobs, help improve people's access to opportunities, and preserve natural areas; and

WHEREAS, many plans that guide Metro's work – including the Regional Framework Plan, Climate Smart Strategy, Regional Transportation Plan, Regional Waste Plan, and Metro Sustainability Plan – include goals, policies and actions to reduce climate pollution; and

WHEREAS, nine cities and four counties in the Portland-Vancouver metropolitan area have created climate action plans that guide efforts to reduce climate pollution in their communities; and

WHEREAS, eight cities, three counties, and several community-based organizations in the Metro region have created climate action plans that guide efforts to reduce climate pollution in their communities, but several communities remain without a climate action plan; and

WHEREAS, there is no existing comprehensive plan to reduce climate pollution from all major sources within the Portland-Vancouver metropolitan area or within the greater Portland region; and

WHEREAS, Metro received a Climate Pollution Reduction Grant (CPRG) from the U.S. Environmental Protection Agency in 2023 that provided funding to develop a Comprehensive Climate Action Plan (CCAP); and

WHEREAS, the focus of the CCAP, as required by the grant that funds it, is on reducing climate pollution, and as a result the CCAP does not include actions that solely focus on preparing for or protecting people from the impacts of climate change; and

WHEREAS, the geographic scope of the planning effort was, by the requirements of the CPRG, the seven-county Portland-Vancouver metropolitan statistical area, including Clark and Skamania Counties in the state of Washington, and Columbia, Clackamas, Multnomah, Washington, and Yamhill counties in the state of Oregon; and

WHEREAS, the Climate Partners' Forum, a multi-disciplinary group convened by Metro that includes representatives of over 35 public agencies, community-based organizations, and environmental non-profits from throughout the metropolitan statistical area who are currently engaged in climate work, supported the development of the CCAP; and

WHEREAS, Metro staff coordinated and consulted with cities, counties, agencies, tribes, and other organizations through the Climate Partners' Forum and other engagement efforts throughout the process to identify the most beneficial climate actions that local and regional agencies can lead, and facilitated collaboration and coordination among these organizations; and

WHEREAS, Metro staff participated in monthly coordination calls with other EPA staff and CPRG grantees in the Pacific Northwest, including the State of Oregon, the State of Washington, the Puget Sound Clean Air Agency, and the Affiliated Tribes of Northwest Indians, to align their respective CPRG-funded plans, processes, and outreach and education efforts; and

WHEREAS, agencies, partner organizations, and members of the public provided feedback that shaped the CCAP through two online open houses held during Winter 2024-25 and Summer 2025; and

WHEREAS, the CCAP identifies 24 actions that collectively address the major sources of climate pollution within the metropolitan area (e.g., transportation, buildings, and food, goods and services) and make substantial progress toward meeting Oregon and Washington's targets to reduce climate pollution; analyzes the costs, greenhouse gas reductions, and co-benefits of these actions; and includes recommendations for successful implementation; and

WHEREAS, the CCAP was developed in collaboration with the Climate Partners' Forum and reflects input from regional committees and elected bodies, such as the Transportation Policy Alternatives Committee, the Metro Technical Advisory Committee, the County Coordinating Committees, the Metro Policy Advisory Committee, the Joint Policy Advisory Committee on Transportation, and the Metro Council; and

WHEREAS, by accepting the CCAP, the Metro Council recognizes the plan identifies the actions needed to make significant progress toward state climate targets and provides a framework, guidance, and up-to-date information to support climate efforts across the region; now therefore,

BE IT RESOLVED THAT:

1. The Metro Council hereby accepts the data, findings, and recommendations contained within the Comprehensive Climate Action Plan, attached as Exhibit A.

2. This action does not commit Metro or partners to implementing any of the climate actions contained within the Comprehensive Climate Action Plan.

3. The Metro Council hereby directs staff to:

    a. Use the analyses, menu of potential actions, and recommendations in the Comprehensive Climate Action Plan to inform future updates to other Metro-led plans that address goals or requirements to reduce climate pollution, including the Climate Smart Strategy and Regional Transportation Plan.

    b. Pursue resources to implement the actions in the Comprehensive Climate Action Plan.

    c. Pursue resources to update the associated greenhouse gas inventory, projections, and cost/benefit analyses.

    d. Report on Metro and partner agencies' progress in implementing the actions in the plan within Metro's jurisdictional boundary as part of future updates to Metro-lead plans that aim to reduce climate pollution.

ADOPTED by the Metro Council this 13th day of November 2025.

_____

Lynn Peterson, Council President

Approved as to Form:

_____

Carrie MacLaren, Metro Attorney

DRAFT

Comprehensive Climate Action Plan

for the Portland-Vancouver metropolitan area

August 2025

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Acknowledgments

This project has been funded wholly or in part by the United States Environmental Protection Agency (EPA) under assistance agreement 02J36101 to Metro. The contents of this document do not necessarily reflect the views and policies of the EPA, nor does the EPA endorse trade names or recommend the use of commercial products mentioned in this document.

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Parametrix is a sustainability consulting team based out of Eugene, Oregon. Of the Parametrix team, **Tracy Lunsford** served as project manager, research analyst, and coauthor of this report. **Claudia Denton, Beth Miller, and Grace Thirkill** served as project researchers, analysts, and coauthors. **Josh Proudfoot** served as principal-in-charge and provided project oversight.

Parametrix

JLA is a public involvement firm located in the greater Portland region and provided significant support in conducting engagement with both community and agency partners as well as developing the outreach strategy. **Valentina Peng, Franziska Elliott, and Adrienne DeDona** supported the engagement.

jla Public Involvement

EcoDataLab is a climate analysis firm based on the San Francisco Bay Area. EcoDataLab conducted the comsumption-based emissions inventory discussed in the CCAP under a separate contract with Metro. **Ben Gould** served as project manager.

EcoDataLab

Climate Partners' Forum

The CCAP team would also like to extend our appreciation and gratitude for the collaboration and invaluable feedback provided by Forum partners throughout development of the PCAP and CCAP. Convened by Metro, the forum included staff from agencies, organizations and non-profits from across the metropolitan area who work on climate-related issues. Forum partners are listed in the Coordination and outreach section.

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Acronyms and abbreviations

Acronym or Abbreviation	Definition
BIPOC	Black, Indigenous and people of color
C2P2	Construction Career Pathways Program
CBEI	Consumption Based Emissions Inventory
CAP	Climate action plan
CCA	Climate Commitment Act
CCAP	Comprehensive Climate Action Plan
CFEC	Climate Friendly and Equitable Communities
CIG	Capital Investment Grants program
CMAQ	Congestion Mitigation Air Quality
CPRG	Climate Pollution Reduction Grants
EPA	Environmental Protection Agency
FTA	Federal Transportation Administration
GHG	Greenhouse gas
HCT	High capacity transit
HVAC	Heating, ventilation, and air conditioning
LIDAC	Low Income Disadvantaged Communities
MPO	Metropolitan planning organization
MSA	Metropolitan statistical area
MT CO_2e	Metric tons of carbon dioxide equivalent
DEQ	Oregon Department of Environmental Quality
ODOE	Oregon Department of Energy
PCAP	Priority Climate Action Plan
PGE	Portland General Electric
RFFA	Regional Flexible Funding Allocation
RTC	Southwest Washington Regional Transportation Council
RTP	Regional Transportation Plan
SBEI	Sector Based Emissions Inventory
SRTS	Safe routes to school
STBG	Surface Transportation Block Grant program
TOD	Transit-oriented development
VMT	Vehicle miles travelled

Executive summary

(To be added in the final document)

Introduction

Climate change is the defining global challenge of the twenty-first century. As the recent increase in climate-induced wildfires and extreme weather events has demonstrated, it is likely to have significant impacts on the Portland-Vancouver-Hillsboro, OR-WA, Metropolitan Statistical Area (MSA or metropolitan area). Both Oregon and Washington have adopted statewide climate targets that call for agencies at all levels of government to significantly reduce greenhouse gas (GHG) emissions, and local and regional agencies in the MSA have created plans and implemented projects to help meet these targets. Many of these efforts are already reducing emissions, and in the process, providing insights into how local and regional agencies can achieve deeper GHG emissions reductions in the future.

Though agency partners have more ideas than ever about how to best reduce GHG emissions, there simply have not been enough resources available in the MSA to implement all of these ideas and achieve the transformative changes that are necessary to meet climate goals. The U.S. Environmental Protection Agency (EPA) Climate Pollution Reduction Grant (CPRG) program provides an opportunity to identify and plan for projects that will contribute to meeting state, regional, and local climate targets.

Metro collaborated with agency and community partners from across the MSA to produce this Comprehensive Climate Action Plan (CCAP). The CCAP identifies the actions that are needed to make significant progress toward Metro's targets, and provides a framework and guidance to support climate efforts across the region that:

- **Builds on previous climate plans** by Metro and agency/community partners and identifies the actions from these plans that are most beneficial and best poised to move forward.
- Strengthens coordination on climate by identifying **cost-effective, implementation-ready climate actions** and describing how Metro and partners can collaborate to move them forward.
- **Draws on extensive outreach and engagement** conducted by both Metro and partner organizations on which climate actions do—and don't—advance equity.
- Focuses on actions that not only benefit the climate, but also **help people save money and improve their quality of life**.
- **Provides data, best practices, and updates** that can inform other climate plans in the metropolitan area.

- **Outlines a bold approach** to meeting climate goals that involves **pursuing more resources and implementing controversial actions**, such as roadway pricing—while also highlighting the challenges and concerns that Metro and partners need to address to move these actions forward.
- **Identifies projects, policies and process changes** that can help Metro, local governments and other partners reduce climate pollution more effectively over the long term.
- **Clarifies how state, regional, and local governments** can best work together to combat climate change given their complementary and overlapping roles.
- Supports Metro and its partners in **pursuing state, foundation, and federal funding** to implement climate projects.

This CCAP does not commit Metro or its partner agencies to implementing or funding specific actions, nor does it replace other state, regional, or local climate action plans. Implementing the actions in this plan to the fullest will require seeking additional resources and building public support and political will at all levels—especially for actions that are highly beneficial but challenging to implement. With this in mind, Metro has taken steps throughout the development of the CCAP to engage and collaborate with local agencies, community organizations and other implementation partners across the metropolitan area.

Climate Pollution Reduction Grants overview

Metro is the recipient of a Climate Pollution Reduction planning Grant (CPRG planning grant) from the US Environmental Protection Agency (EPA). The grant supports planning work to create a regional climate action plan for the metropolitan area. Metro is leading this work in close coordination with regional partners.

This grant funds Metro to produce three deliverables over the four-year grant period:

- A **Priority Climate Action Plan** (PCAP), submitted to the EPA in February 2024, that identified high-priority, implementation-ready greenhouse gas (GHG) reduction actions that could be delivered with current staffing in the near-term.
- This **Comprehensive Climate Action Plan** (CCAP), due in December 2025, which includes a comprehensive inventory of GHG emissions for the metropolitan area, and a set of actions to reduce emissions.
- A **Status Report**, due late 2027, that updates the EPA on the status of the actions identified in the PCAP and CCAP.

CCAP overview

This CCAP is organized into the following sections:

Greenhouse gas emissions inventory. The GHG inventory provides a snapshot of how many GHG emissions the metropolitan area produces and where those emissions come from. As required by the CPRG grant, the inventory accounts for all sector-based emissions and accounts for all significant sources of GHG emissions driven by activities taking place within the MSA's geographic boundary. It follows internationally recognized community GHG inventory protocols and the processes and requirements laid out in Metro's Quality Assurance Project Plan for this grant. The inventory also includes a consumption-based emissions inventory, funded through a separate project led by Metro, which provides a complimentary view of the region's GHG emissions.[1]

GHG emissions targets and projections. These sections identify GHG reduction targets for the CCAP and estimate future GHG emissions levels. Both the states of Oregon and Washington are leaders in addressing climate change and have aggressive goals to reduce emissions, as well as extensive state-level policies and programs to meet these goals. The CCAP targets are based on these state goals, and the projections estimate the reductions due to state-level policies and programs, which helps to identify the remaining gap between forecasted emissions and climate goals. The CCAP aims to fill this gap.

Climate actions. The CCAP includes actions that aim to reduce emissions from transportation; buildings; and food, goods, and services, which are the sources of the majority of the metropolitan area's GHG emissions, and also sources that local and regional agencies have the resources and authority to address. For each action, the CCAP describes the plans, policies and documents that shaped the action; identifies key roles, best practices, and potential funding sources to support successful implementation; and estimates the costs and climate benefits. The introduction to this section summarizes cost, benefits and best practices across all actions in the CCAP, and the following subsections describe individual actions in detail.

[1] See the Greenhouse gas inventory section for more information on the differences between sector-based and consumption-based inventories.

Equity and benefits analysis. Implementing the actions included in this CCAP is anticipated to provide a broad range of benefits—including many that are especially important to low-income and disadvantaged people. The co-benefits section estimates the cost savings to households and reduction in air pollution due to each action in the CCAP, and qualitatively discusses which actions benefit health and safety, economic development, and resilience and access to nature. It also mentions which actions risk creating negative impacts, especially for low-income and disadvantaged people.

Workforce planning analysis. This section identifies the priority occupations that are needed to implement the CCAP, analyzes whether there is an adequate workforce to implement the plan, and recommends steps to help train and develop workers in key occupations where needed, with a focus on identifying existing training programs and plans that can support workforce needs.

Coordination and outreach. The CCAP was developed with extensive input from agency and community partners across the metropolitan area. This section describes how Metro engaged these groups in the course of creating the plan.

Technical appendices, including information on the methods and data used to inventory and project GHG emissions and analyze the costs and benefits of actions.

The cost of climate inaction

Tackling climate change can seem costly—unless you consider the costs of inaction. Agencies often use the social cost of carbon—which estimates cost, in dollars, of the damage to the economy, environment, and to human health from each additional metric ton of carbon emissions—to understand the full costs and savings of climate work.

Estimates of the social cost of carbon vary widely. A recent EPA report estimated the value of 2050 reductions between $200 and 480 per metric ton. The Cities of Portland and Vancouver use more conservative values; roughly $140 per ton.

Using this value, the 175 million metric tons of GHGs reduced by the CCAP under the high implementation scenario save **$25 billion in social costs**. These savings, together with the **estimated $80 billion that households save as a result of the actions in the plan**, more than make up for the estimated $100 billion cost of implementing these actions.

Scope of the CCAP

The CCAP covers the Portland-Vancouver-Hillsboro, OR-WA MSA, which includes seven counties (Clark and Skamania Counties in Washington and Clackamas, Columbia, Multnomah, Washington, and Yamhill Counties in Oregon), over 50 cities. More

information on the scope of the CCAP, including a map of the different geographies used in the plan, is available in the Geographic scope of analyses subsection of the Climate actions, implementation scenarios, and results section.

Approach to developing the CCAP

Metro's approach to developing the CCAP included:

A **review of local and regional climate-related plans (CAPs)** produced by public agencies and community-based organizations in the metropolitan area. Metro used these plans to identify potential climate actions to include in the CCAP and develop assumptions about how these plans would be implemented. The CCAP team also used the information in these CAPs to develop screening criteria to evaluate potential climate actions for the CCAP, especially criteria related to equity. The plans reviewed highlighted several ways in which climate actions can advance equity and often included detailed outreach to community members on equity benefits and impacts. **Appendix 4** summarizes the plans reviewed.

Extensive stakeholder engagement, with different groups providing different information based on their focus and expertise:

- The **Climate Partners' Forum**, a group of agency and non-profit staff focused on climate-related work, provided feedback on every aspect of the draft CCAP, with a focus on ensuring that the CCAP reflected relevant climate plans and data, included the most beneficial actions, and identified realistic pathways to implementing each action.
- **Regional advisory committees** offered feedback on aligning the CCAP actions and targets with relevant regional transportation and land use planning efforts.
- **Members of the public** provided feedback on the CCAP through **online open houses** that focused on understanding which actions that community members see as most beneficial and why. This information was used to analyze co-benefits and highlight co-benefits that are particularly important for disadvantaged communities.

See the Coordination and outreach section for more information on these engagements.

Quantitative and qualitative analysis, led by the Metro team, that helped to estimate current and future GHG emissions, select climate actions, and estimate their costs and benefits. This included a qualitative screening of potential actions based on criteria such as implementation readiness and scalability, which was used to prioritize actions for

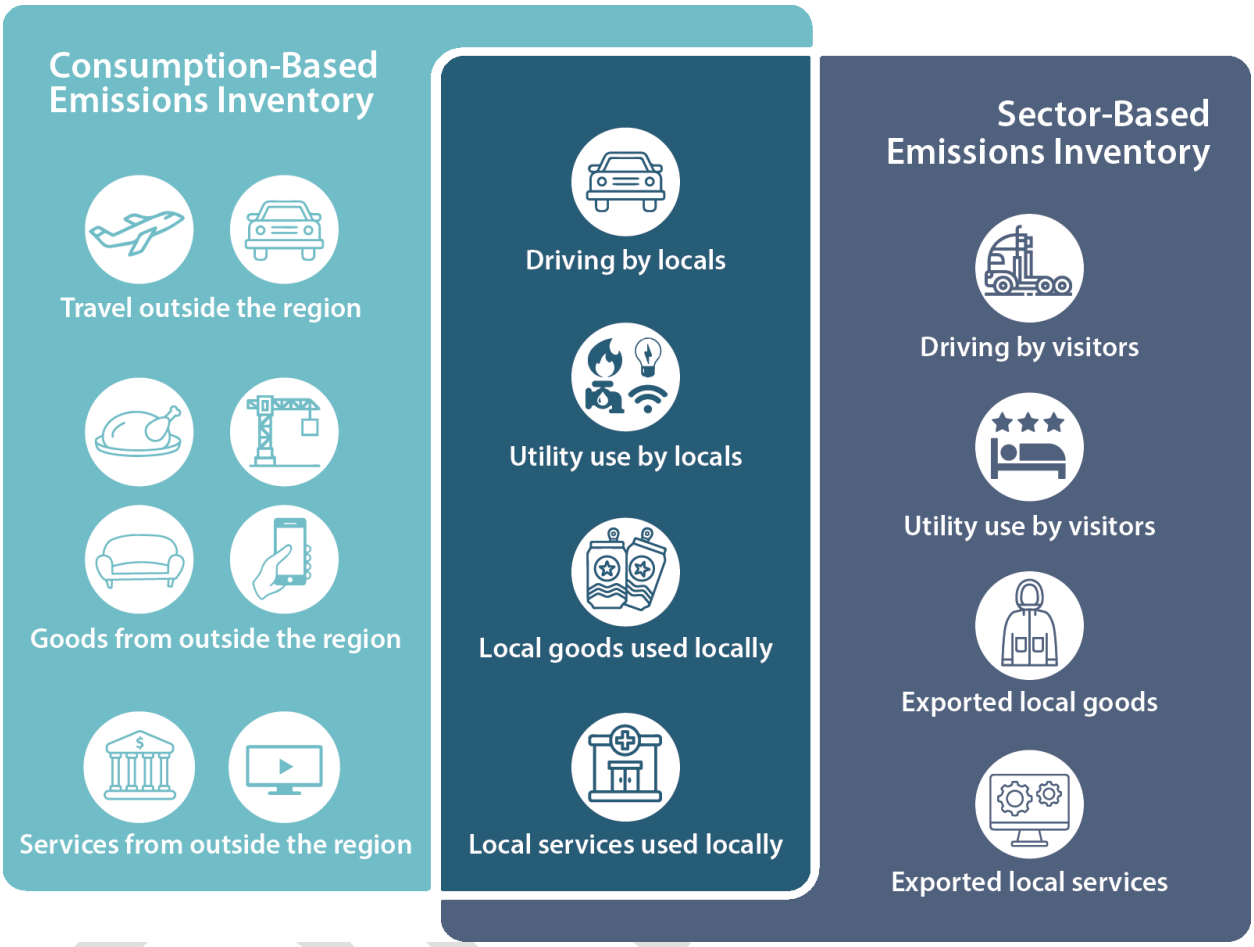
inclusion in the plan, as well as a quantitative analysis of the costs and benefits of each action. The Metro team drew on existing guidance and best practices to identify methods to estimate costs and benefits and on adopted plans to provide the inputs needed for these methods. Stakeholder input helped to identify relevant plans and data sources and interpret and communicate results.

Greenhouse gas inventory

In order to reduce our climate impact, we need to start with an inventory of our metropolitan area's greenhouse gas emissions. Since greenhouse gas emissions are a global pollutant, we can't directly measure how many emissions our metropolitan area produces. Greenhouse gas inventories estimate emissions levels based on a variety of data.

The CCAP includes a **sector-based** community greenhouse gas inventory and also reports results from Metro's **consumption-based** inventory. These provide complementary views of the region's current climate emissions. **Figure 1** illustrates the scopes of these two inventories.

Figure 1. Scopes of consumption-based and sector-based inventories (Metro Consumption-Based Emissions Inventory)



The **sector-based inventory** covers emissions generated within or near the metropolitan area, such as emissions from vehicles traveling on roads, the generation of electricity to supply energy for buildings (regardless of where that electricity is produced), and manufacturing processes (even if those manufactured goods are exported to other places instead of being used in the metropolitan area). Most climate action plans use sector-based inventories, and a sector-based inventory is required for the CCAP.

Sector-based inventories are valuable in guiding plans like the CCAP because the emissions that originate within a community are often easier to influence with local and regional policies, programs, and projects than emissions that are generated outside of the community. They are especially well-suited to capture the impacts of transportation and housing, which together contribute the majority of the GHG emissions produced locally and are also areas where local and regional partners have significant influence,

resources, and authority. However, sector-based inventories do not capture the rising share of climate pollution that comes from the manufacturing, transportation, and consumption of the food, goods and services we use—most of which come from outside of our metropolitan area.

The **consumption-based inventory** captures all emissions associated with the consumption of goods and services within our metropolitan area, regardless of where they originate from. This type of inventory represents a newer approach that more fully captures the climate impact of people's choices, especially the impact of the food, goods and services that people use. The majority of these emissions originate outside our metropolitan area—from factories, farms, and other sources located elsewhere; or from freight vehicles traveling through other communities as they bring food and goods here. Consumption-based inventories also capture additional emissions from transportation and buildings that sector-based inventories don't, such as the emissions involved in manufacturing and transporting vehicles and building materials. Though the CCAP is not required to include a consumption-based inventory, the State of Oregon and Metro have been developing these inventories to track and reduce climate pollution from all sources.

Consumption-based inventories capture the climate impacts of people's consumption patterns more broadly and offer a more comprehensive view of emissions. Metro's consumption-based inventory - developed by EcoDataLab – estimates that the metropolitan area is responsible for 46.9 million $MTCO_2e$, as opposed to the 28.2 million $MTCO_2e$ captured by the CCAP sector-based inventory. Roughly 59% of the estimated consumption emissions originate from outside of the metropolitan area, with 35% generated out-of-state. It can be more challenging for local and regional agencies to influence emissions that come from outside of their jurisdictions, where they have no authority. As the state of the practice evolves, local and regional agencies' playbook for reducing emissions from food, goods and services will likely expand.

The CCAP includes both types of inventories and uses a hybrid approach to estimating the climate benefits of actions. Estimates for the transportation and building energy sectors, as well as the projections and targets discussed later in this document, are based on sector-based analyses, whereas estimates for actions related to food, goods and services mostly draw from consumption-based analyses. This introduces some inconsistencies into the plan, because results from these two different approaches are not comparable to each other. However, it also helps to identify the actions that have the greatest potential to reduce the region's climate emissions.

Sector-based inventory

The sector-based inventory follows internationally recognized community GHG inventory protocols and accounts for all significant sources of GHG emissions driven by activities taking place within the MSA's geographic boundary, which includes Clackamas, Columbia, Multnomah, Washington, and Yamhill Counties in Oregon, and Clark and Skamania Counties in Washington. All results are reported in metric tons of carbon dioxide equivalent (MT CO_2e). The data included in the sector-based inventory are from a combination of direct activity sources (such as utility usage, fuel sales, and EPA FLIGHT) and previously conducted GHG inventories within the MSA geography. All activity data, emissions factor data sources, and the inventory methodology are described in **Appendix 1**. The inventory includes the sectors and greenhouse gases summarized in **Table 1**.

Table 1. Sectors and greenhouse gases included in this inventory

Sectors	Greenhouse Gases (across all sectors)
Building energy (commercial, residential, industrial) Transportation energy Waste disposal Wastewater Industrial processes and refrigerants (IPPU) Agriculture, land use, and forestry	carbon dioxide (CO_2) methane (CH_4) nitrous oxide (N_2O) fluorinated gases (F-gases), including hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3)

Metro's sector-based GHG inventory categorizes emissions sources using Greenhouse Gas Protocol's Global Protocol for Community-Scale GHG Emission Inventories (GPC), which is slightly different from the classification laid out by the EPA. The classification presented here is consistent with past inventories in the region.

Building energy. Emissions from energy used or produced in a fixed location, e.g., electricity, natural gas (including fugitive emissions), propane, and fuel oil. This includes the EPA's categories of **electricity use and generation**, **commercial and residential buildings** (only energy usage, not waste or refrigerants), and **industrial energy use** (but not non-energy industrial emissions). This category also includes CH_4 emissions from natural gas distribution hubs.

Transportation energy. Emissions from vehicles and mobile equipment. This is similar to the EPA's **transportation** category, but it excludes vehicle refrigerants.

Waste disposal. Landfilled waste emissions and wastewater treatment emissions. This includes the EPA's **waste and materials management** and **wastewater** categories.

Industrial process & refrigerants. Emissions from refrigerants (building and transportation cooling systems) and other fugitive gases from industrial processes. This coincides with the EPA's **commercial, residential, and industrial buildings** refrigerant use as well as non-energy **industrial** activity such as silicon chip manufacturing.

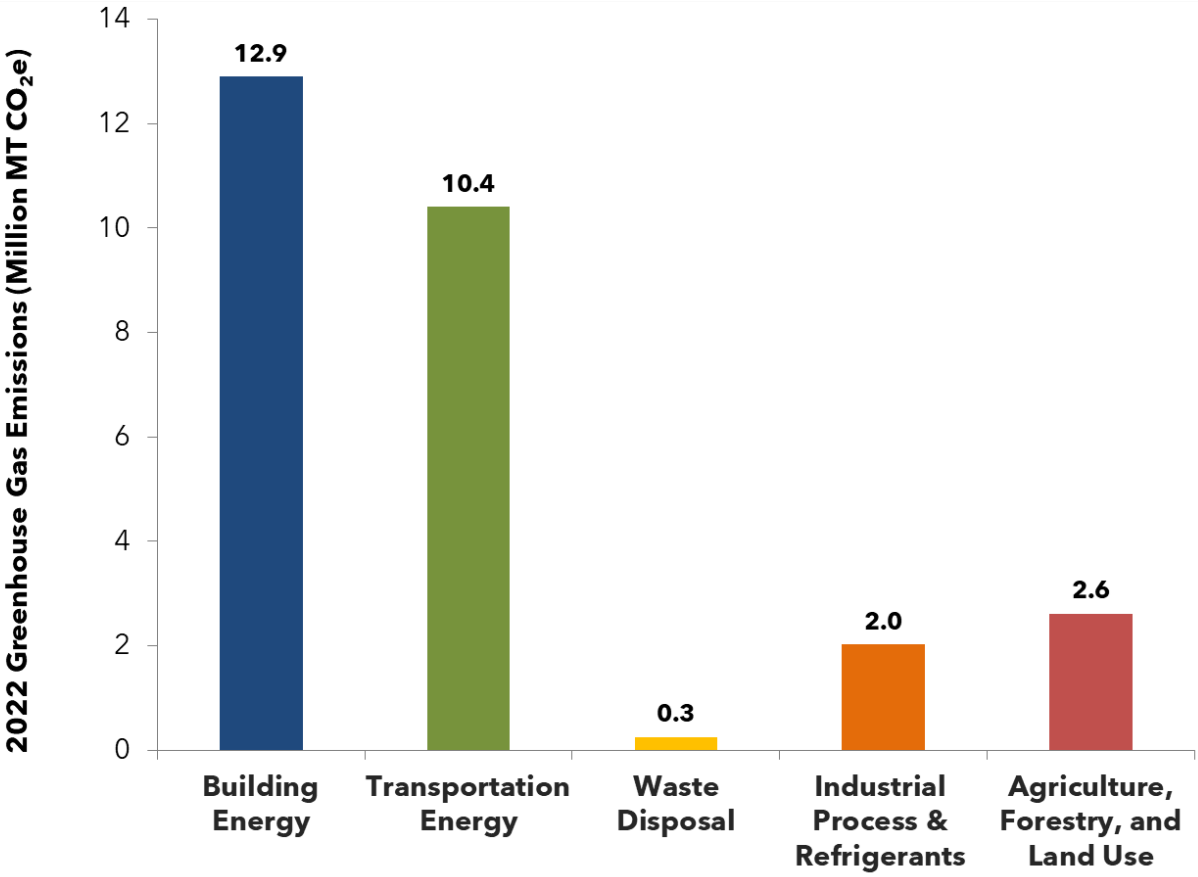
Agriculture, forestry, and land use. Emissions from land use changes, forestry, and agricultural activity (e.g., livestock and fertilizer use).[2] This coincides with EPA's **agriculture** and **land use, land use change, and forestry** categories.

Sector-based inventory results

In all, the 2.5 million residents of the seven counties in the MSA are responsible for approximately 28.2 million MT CO_2e of emissions. Total GHG emissions in each of the categories described above are shown in **Figure 2**.

[2] Land use emissions—which result from changes in how undeveloped or lightly-developed land is used—are different from land use decisions, which govern how highly-developed land is used in urbanized areas, and which primarily affect emissions from transportation.

Figure 2. MSA emissions by category



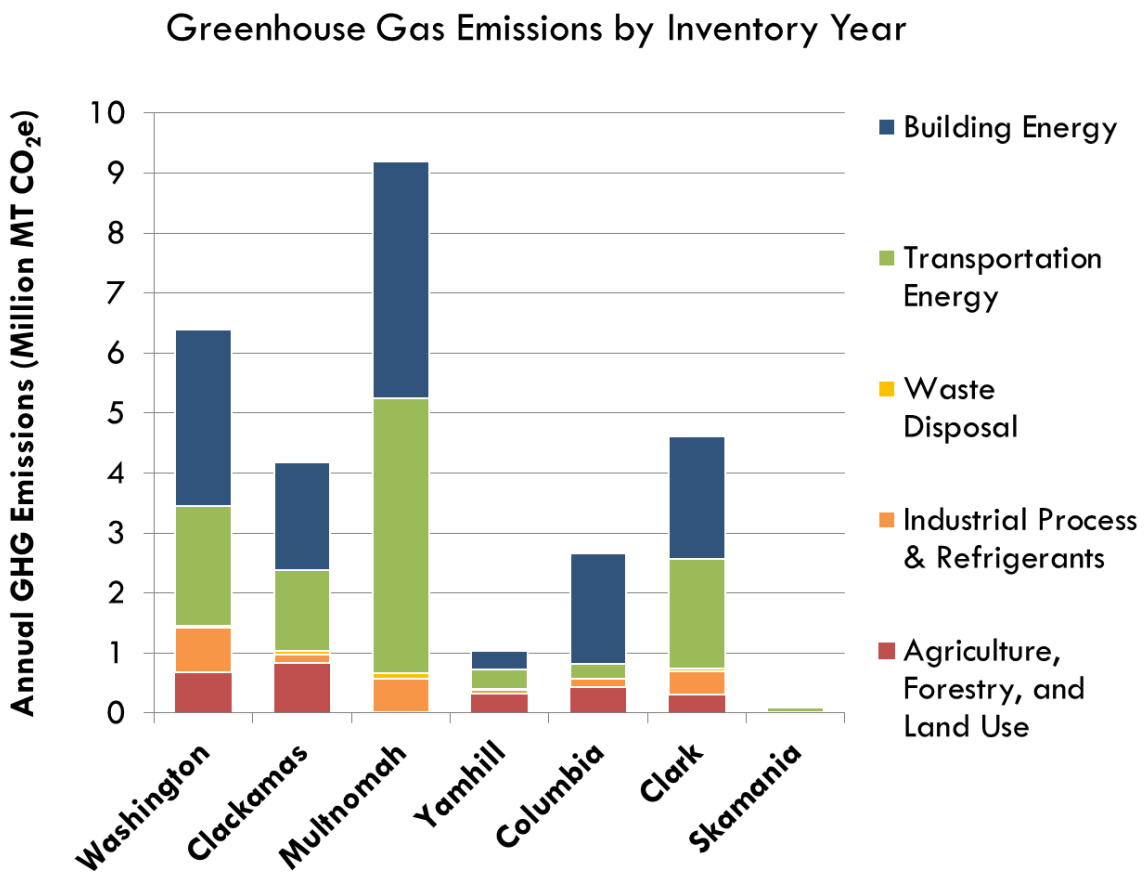
The largest share of the metropolitan area's climate pollution comes from **building energy use**. Cleaning up our energy supply and reducing the amount of energy that buildings use helps to reduce these emissions. While state agencies have the authority to require utilities to produce energy from cleaner sources, local and regional agencies are mostly focused on making buildings more energy-efficient, installing local renewable energy sources, and electrification, and the CCAP reflects this focus.

Transportation contributes the second-largest share of climate pollution in the metropolitan area. Making vehicles and fuels cleaner and providing opportunities for people to travel by transit, bike, or foot instead of driving helps to reduce these emissions. State agencies have the power to regulate vehicles and fuels, so the CCAP focuses on helping people find different ways to travel.

The remaining sectors shown above account for fewer emissions and are less of a focus for the CCAP.

Figure 3 shows how sector-based emissions vary by county.

Figure 3. Emissions by county and sector



Generally, sector-based emissions across the MSA average 10 MT CO_2e per capita. The United States average is 14.2 MT CO_2e per capita, and the global average is 6.2 MT CO_2e. The only exception is Columbia County, which has much higher emissions (50 MT CO_2e per capita) due to relatively low population density combined with large quantities of emissions from power plants within the county. This brings the Columbia County per capita emissions to approximately 50 MT CO_2e.

The distribution of emissions across sectors in each county generally reflects how emissions are distributed in the metropolitan area, but there are a few interesting variances:

- A greater share of emissions come from transportation in both the metropolitan area's most urbanized and most rural areas. This is particularly visible in the

results for Multnomah, Yamhill, and Skamania counties, where transportation contributes more emissions than building energy use does. This would be true in Columbia County as well if not for the outsized impact of power plants on building energy emissions. The high results for urbanized areas likely reflect that these areas are business and employment hubs, so they attract an outsized portion of the region's work- and freight-related trips. Meanwhile, rural communities often see an outsized share of transportation emissions due to travelers passing through these communities on long-distance trips.

- A larger share of emissions come from agriculture, forestry and land use in Clackamas, Clark, Columbia, Washington, and Yamhill counties, all of which include large tracts of state- and/or federally managed land. In contrast, the forested lands in Multnomah and Skamania counties sequester more carbon than they emit.
- Industrial process emissions vary across counties and are due to the following industries:
    - Clark – electronics manufacturing
    - Columbia – chemical manufacturing
    - Multnomah – electronics and glass manufacturing
    - Washington – electronics manufacturing
    - Yamhill – steel manufacturing

Table 2 provides detailed emissions values by category and by county.

Table 2. Detailed emissions data by category and county

Geographic Information		Emissions (MT CO2e)					
County	Population	Buildings	Transporta-tion	Waste disposal	Industrial process & refrigerants	Agriculture, forestry, and land use	Total
Clackamas	422,739	1,786,114	1,344,827	59,281	143,061	837,706	4,170,990
Clark	516,779	2,038,658	1,819,779	54,933	384,253	310,578	4,608,201
Columbia	53,160	1,843,840	235,786	4,883	145,259	427,494	2,657,262
Multnomah	813,691	3,947,807	4,587,128	95,260	545,947	20,375	9,196,517
Skamania	12,460	26,991	86,014	1,589	6,440	5,424	126,458
Washington	614,267	2,942,951	2,003,106	27,679	736,069	687,762	6,397,567
Yamhill	109,311	314,165	328,259	8,007	63,658	327,861	1,041,950
Total:	2,542,407	12,900,527	10,404,900	251,632	2,024,687	2,617,199	28,198,945

The following sections provide further detail on the amount, source and nature of emissions within each category

Building energy

Building energy makes up the largest emissions category, accounting for over 12.9 million MT CO_2e and 46 percent of the region's footprint. Of those emissions, natural gas makes up 51 percent, market-based electricity makes up 44 percent, and other stationary fuels (such as propane and fuel oil) make up the remaining 5 percent. Stationary industrial emissions accounts for the largest proportion of these emissions (40 percent), followed by residential sector emissions (31 percent), and the remaining 29 percent comes from commercial building activities. See **Table 3** for a detailed breakdown of stationary emissions sources and sectors.

Table 3. Building emissions by source and sector

	Emissions (MT CO2e)			
Sector	Electricity	Natural Gas	Other	Totals
Residential	1,782,387	1,991,048	201,103	3,974,537
Commercial	2,021,238	1,482,522	264,231	3,767,991
Industrial	1,866,749	3,099,953	191,296	5,157,998
Totals:	5,670,374	6,573,522	656,631	12,900,527

The main electricity provider in the MSA is Portland General Electric (PGE). PGE's emissions factor is 0.294 MT CO_2e/MWh, slightly higher than the regional emissions factor of 0.29 MT CO_2e/MWh for the Northwest Power Pool. Other publicly- or consumer-owned utilities—such as those in the counties in the state of Washington or in the western coast range of the MSA—have substantially lower emissions factors because they have access to Bonneville Power Administration (BPA) -supplied power, which relies heavily on low-carbon hydropower. These factors are as low as 0.015 MT CO_2e/MWh in Yamhill County and 0.016 MT CO_2e/MWh in Skamania County.

Transportation energy

Transportation energy is the second-largest emissions source, responsible for more than 10.4 million MT CO_2e, or 37 percent of total emissions. The majority of transportation emissions come from gasoline sold, as reported by the state tax records, making passenger cars the most significant source of transportation emissions in the MSA. In Washington County, for example, passenger cars make up 82 percent of transportation emissions. The second largest source of transportation emissions is from aviation gasoline and jet fuel, responsible for more than 1 million MT CO_2e.

Industrial process and refrigerants

This category comprises seven percent of total emissions (roughly 2 million MT CO_2e) and includes both building and transportation refrigeration, as well as industrial processes that emit high global warming potential gases. High-tech manufacturing is a major industry in the MSA, and so these emissions represent 53 percent of industrial processes and refrigerant emissions (over one million MT CO_2e) while the other 47 percent of emissions in this category are attributable to community refrigerant usage.

Waste disposal

Solid waste and wastewater represent the smallest portion of sector-based community emissions at approximately 0.3 million MT CO_2e (one percent). It should be noted that most of these emissions occur outside of the MSA boundary. The largest landfills serving the region are not within the geographic boundary of the MSA, but these emissions are included for completeness.

Agriculture, forestry, and land use

Emissions from tree loss (net forest carbon emissions) including wildfires were around 1.9 million MT CO_2e, or seven percent of the MSA's total emissions. A large proportion of these losses come from logging and from wildfire (as estimated by satellite imagery). While significant stretches of the region are forested, these lands are primarily managed by federal agencies and private timber, not local agencies. It is important to note that protocols are rapidly evolving regarding forestry emissions, especially regarding wildfires.

Livestock production totaled just over 400,000 MT CO_2e and make up one percent of the MSA's total emissions. Of this, dairy production represents approximately 300,000 MT CO_2e, and around 87,000 MT CO_2e comes from beef cattle production. The rest of the livestock emissions come from sheep, goats, swine, horses, and poultry. Agricultural soils make up the remaining emissions in this category at approximately 230,000 MT CO_2e.

Consumption-based inventory

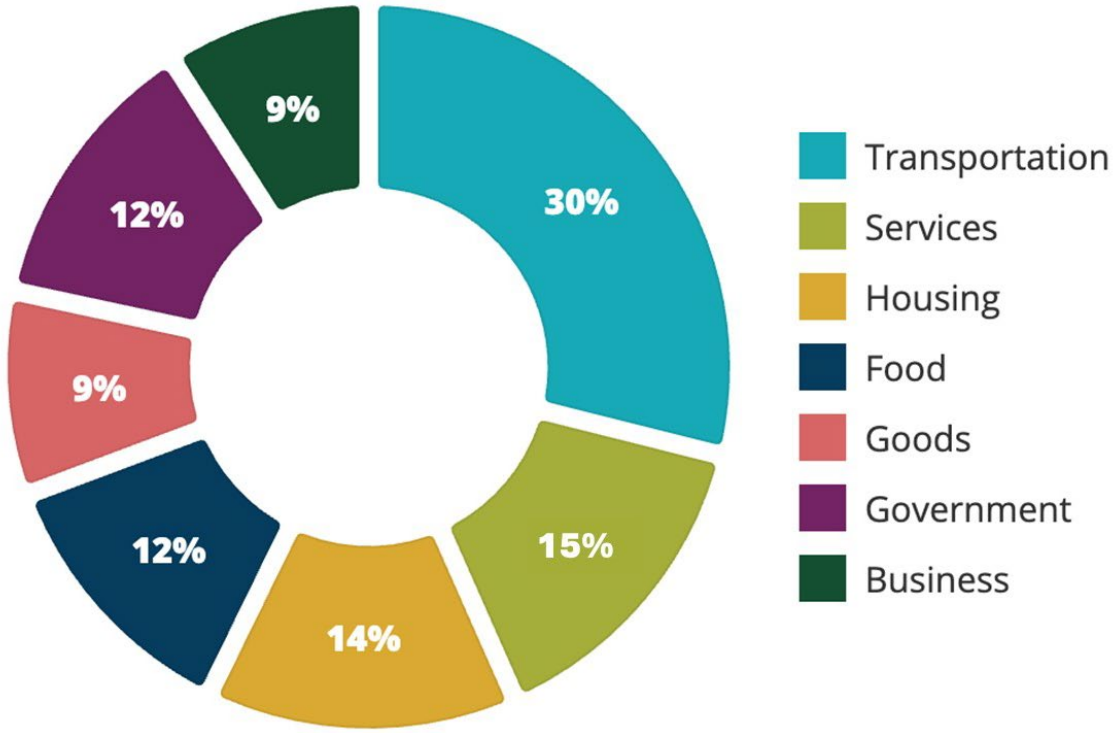
Metro's consumption-based greenhouse gas inventory for the MSA estimates all emissions associated with the production, transport, sale, use, and disposal of various goods and services, and assigns those emissions to the final user of those goods and services—which are typically households but can also include government agencies and businesses. This inventory was conducted by EcoDataLab on behalf of Metro's Waste Prevention and Environmental Services (WPES) department and was not funded or required as part of the CCAP; a report on the inventory is forthcoming.

This inventory includes emissions associated with three types of consumer spending: by households, by governments and spending by businesses on capital goods and unsold inventory. The inventory further organizes household emissions into five major categories: transportation, housing, food, goods, and services. Unlike the sector-based inventory, the consumption-based inventory does not include a category for the MSA's commercial or industrial category of emissions. These emissions are captured to the

extent that households in the region use goods and services that are manufactured locally. Similarly, the inventory includes emissions generated by businesses outside the MSA when making and transporting products consumed within the MSA. Metro's consumption-based inventory does not account for the emissions associated with goods and services that come from the region but are exported elsewhere; from a consumption-based perspective other metropolitan areas are responsible for these emissions.

Figure 4 summarizes the total 2023 consumption-based emissions in the Portland MSA across the five major household consumption categories, plus categories for government and businesses.

Figure 4. Portland-Vancouver MSA Consumption-Based Emissions (2023)

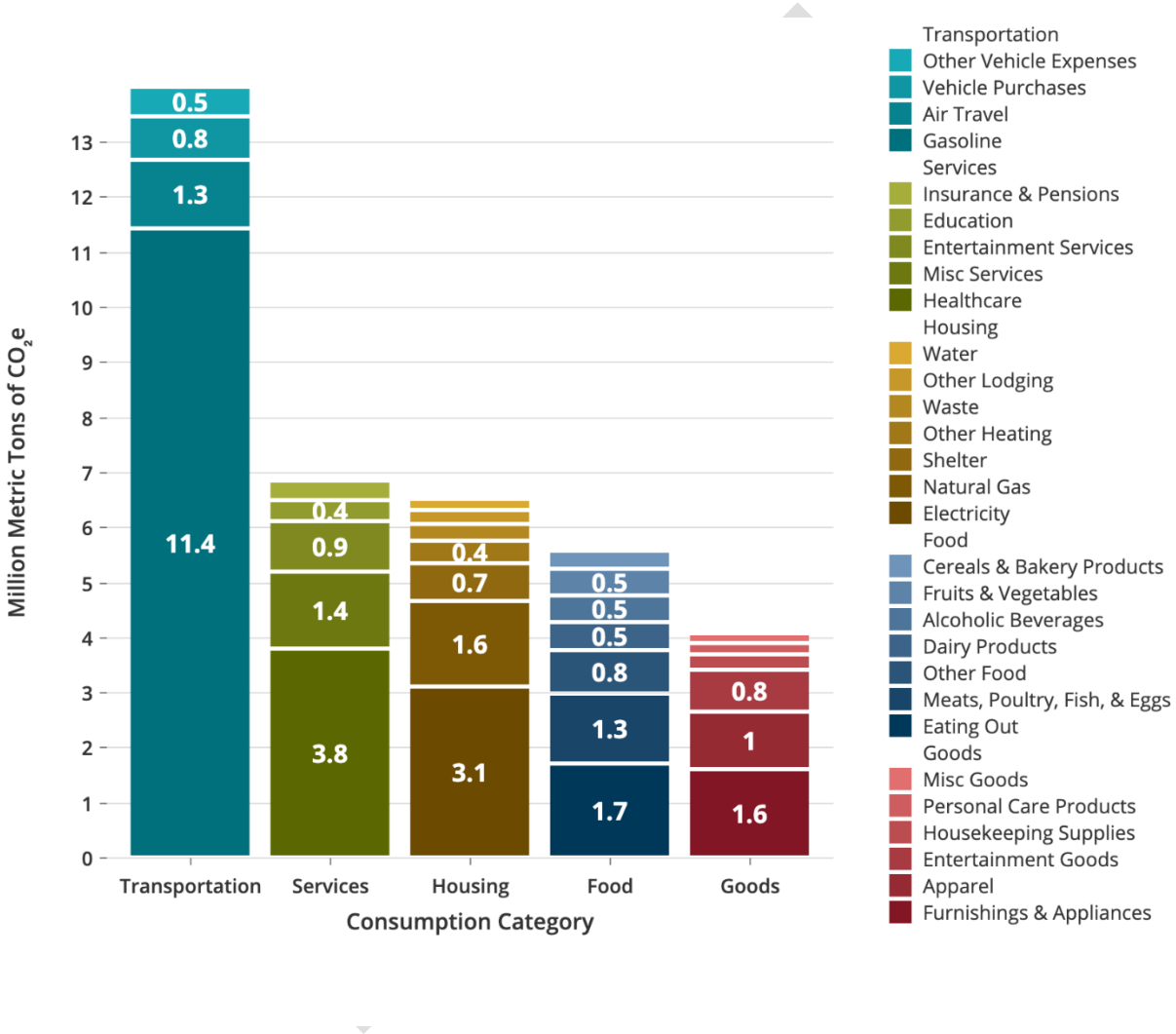


The consumption-based inventory highlights the impact of household decisions on GHG emissions. The sector-based inventory described above shows that households are responsible for under half of the region's emissions (i.e., the majority of transportation emissions and residential building emissions); the consumption-based inventory finds that households are responsible for 79% of emissions, which means that it can help to identify additional opportunities for people to reduce their emissions by changing their behavior. It also highlights the 12 percent of emissions that are due to government, which

are not broken out under the sector-based inventory. This shows the potential benefits of actions to reduce emissions at government agencies—and particularly from the significant amount of food, goods, and services these agencies procure.

Figure 5 provides a detailed breakdown of household consumption-based emissions.

Figure 5. Portland MSA Average Household Consumption-Based Emissions by Category and Subcategory (2023)



The consumption-based inventory finds that the largest sources of household emissions are gasoline usage (11.4 MMTCO2e), healthcare services (3.8 MMTCO2e), electricity (3.1 MMTCO2e), eating out (1.7 MMTCO2e), furnishings & appliances (1.6 MMTCO2e) and natural gas use (1.6 MMTCO2e).

Table 4 shows the breakdown of consumption-based emissions across categories in each county within the metropolitan area.

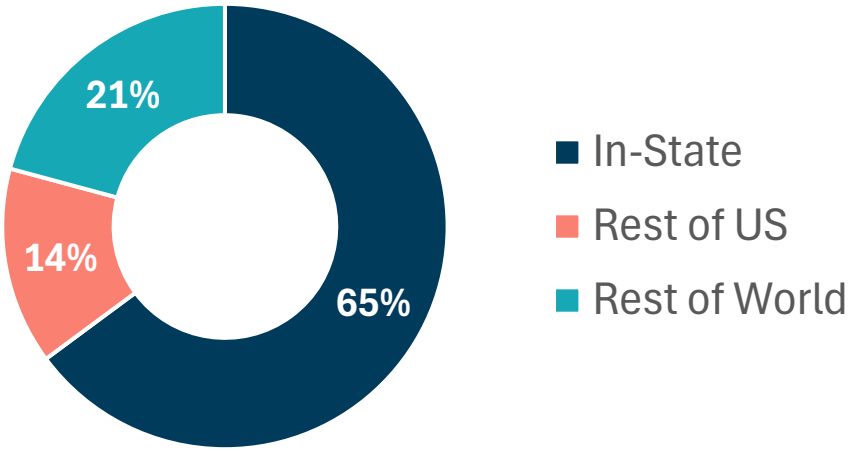
Table 4. Portland MSA household consumption-based emissions by category and county (2023, thousands of $MTCO_2e$)

County	Transportation	Services	Housing	Food	Goods	Total
Multnomah	4,064	2,151	1,984	1,801	1,292	11,292
Washington	3,397	1,618	1,507	1,325	967	8,813
Clark	2,832	1,421	1,385	1,148	850	7,636
Clackamas	2,632	1,202	1,166	938	701	6,640
Yamhill	652	273	282	218	160	1,586
Columbia	343	136	158	105	78	820
Skamania	76	36	34	27	20	193
Total	13,996	6,837	6,515	5,563	4,070	36,979

As is the case for sector-based emissions, the amount of consumption-based emissions that a county is responsible for is proportional to its population. Unlike with sector-based emissions, the distribution of consumption-based emissions across category is relatively consistent from county to county. This is likely because the geography of the area in question has more of an influence on results for sector-based inventories—in other words, a county with a larger area will likely show more sector-based emissions than a smaller county with the same population—than for consumption-based inventories.

The metropolitan area's consumption-based emissions can occur anywhere in the world. **Figure 6** shows the source of household emissions by their geographic origin—separating emissions produced elsewhere in the states of Oregon and Washington from those produced elsewhere in the U.S. and elsewhere in the world.

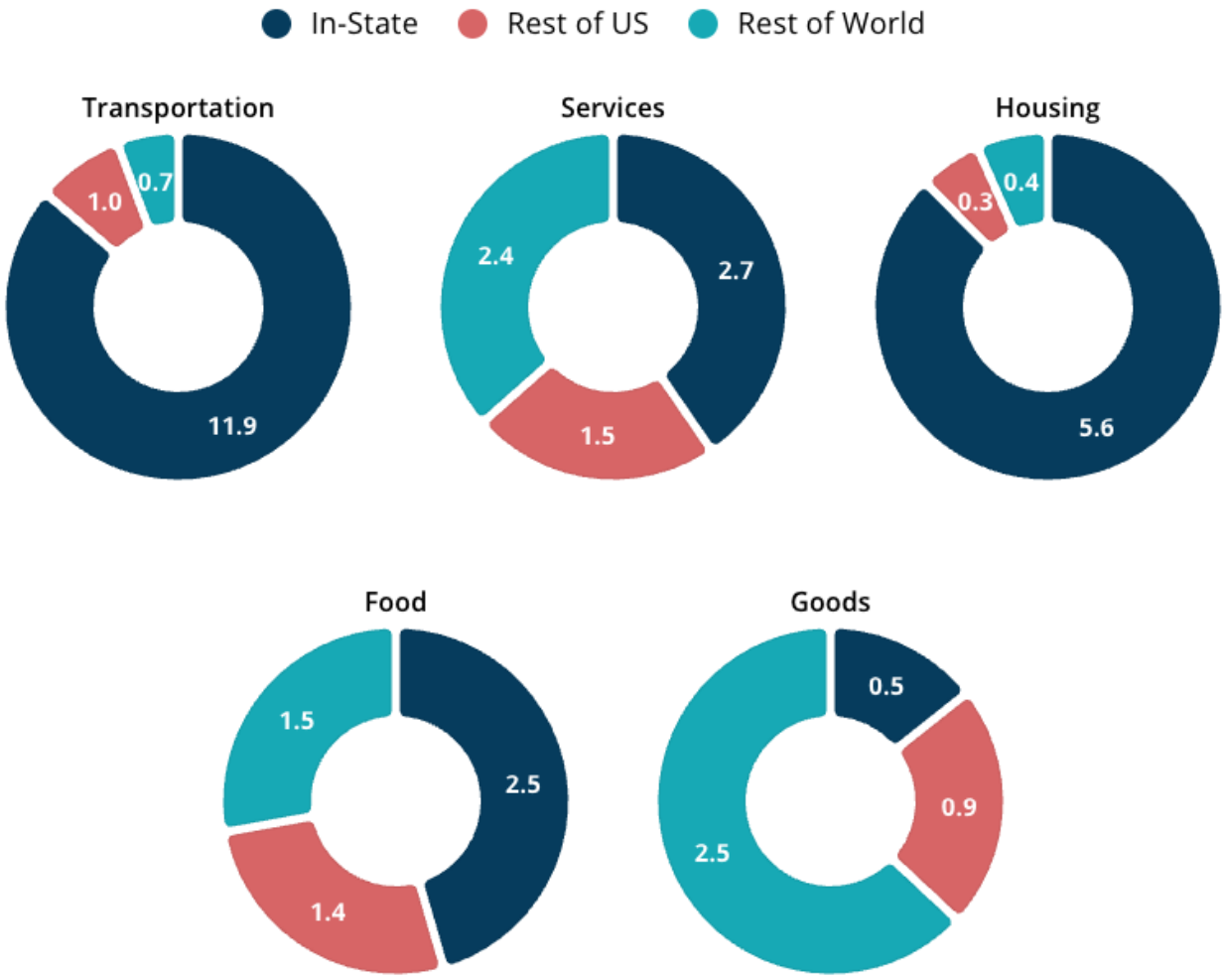
Figure 6. Portland MSA Household Emissions by Geographic Origin (2023)



Most consumption-based emissions—roughly two-thirds—come from within Oregon and Washington. These emissions can be easier to reduce than emissions that originate out-of-state, because Oregon and Washington are also working to reduce consumption-based emissions and because local/regional agencies in the metropolitan area regularly collaborate with the state agencies on climate efforts.

Figure 7 shows the same information as **Figure 6**, broken out by category.

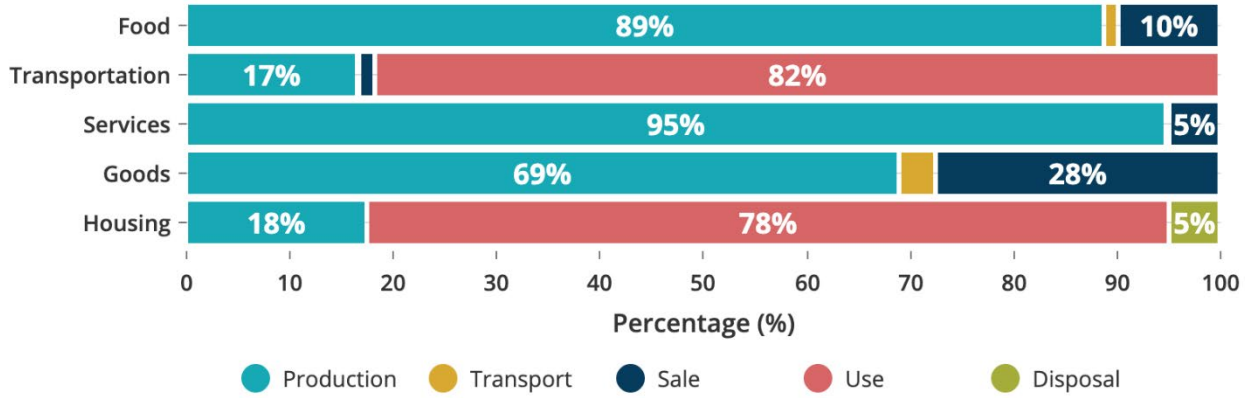
Figure 7. Portland MSA Household Emissions by Geographic Origin by Category (2023, $MTCO_2e$ per household)



The origin of emissions varies significantly across the different categories included in the consumption-based inventory. A large majority of emissions from transportation and housing originate from in-state, and these are two of the categories where local, regional and state agencies have long collaborated to reduce emissions. The majority of emissions for food, services, and especially goods come from out-of-state, and state and local agencies continue to develop best practices for reducing out-of-state emissions.

Figure 8 breaks out consumption-based emissions across the different supply chain stages—production, transport, sale, use, and disposal—that are accounted for in the consumption-based inventory.

Figure 8. Emissions by supply chain stage



This figure illustrates where the consumption- and sector-based inventories tend to overlap—and where they don't. The sector-based inventory focuses on the "use" and "disposal" stages shown in Figure 8, and for the most part, ignores the other stages. Most of the emissions for transportation and housing come from the use stage, which means that the consumption-based and sector-based inventories are likely to agree on how many emissions these categories contribute and what can be done to reduce those emissions. In contrast, almost all of the emissions from food, goods and services are generated during the production, transport, and sale stages, which means that these emissions can only be fully accounted for in the consumption-based inventory.

Inventory findings and recommendations

The sector-based and consumption-based inventories are complimentary, and each contributes different information to the CCAP.

The sector-based inventory is useful for:

- **Tracking change in emissions over time**, **tracking progress toward targets**, and **comparing results to state and local GHG inventories** in order to identify trends shaping the region's emissions. Sector-based inventories are well established in climate practice, widely used by state and local partners and are the basis for Oregon and Washington's climate goals. This makes it easy to compare results over time or between different communities.
- **Identifying how local and regional agencies can use their authority to reduce emissions**. The sector-based inventory focuses on emissions produced within the

metropolitan area, and these emissions are more likely to be subject to local and regional influence.

- **Capturing emissions from transportation and housing**. The sector-based inventory and consumption-based inventory overlap for these two categories, which contribute a significant share of the metropolitan area's emissions and are also areas where local and regional agencies have a lot of experience working to reduce emissions.

The consumption-based inventory is useful for:

- **Comprehensively capturing the climate impact of decisions** made by households, businesses, and government agencies in the metropolitan area. Consumption-based inventories capture emissions from throughout the full life-cycle these decisions, whereas sector-based inventories only capture emissions that are generated within the metropolitan area through use and disposal of goods and services.
- **Identifying new opportunities to reduce emissions and meet climate targets**. Since consumption-based inventories are more comprehensive, they often reveal opportunities to reduce emissions that aren't accounted for in sector-based inventories. This is especially important given that state inventories for Oregon and Washington show progress in reducing sector-based emissions, but research suggests that consumption-based emissions continue to rise.
- **Capturing emissions from the food, goods and services we use, as well as opportunities to reduce these emissions.** For the most part, these emissions are only visible in consumption-based inventories.

The CCAP uses a sector-based approach for:

- Projecting future emissions
- Setting climate targets

- Analyzing the climate benefits of actions that reduce emissions from transportation and, in most cases, building energy use.[3]

The CCAP uses a consumption-based approach to analyze the impact of actions that reduce consumption-based emissions from the food, goods and services we use—including goods like building materials, which are not well captured by the methods traditionally used to analyze the climate impacts of building energy use.

This hybrid sector- and consumption-based approach means that **the CCAP always uses the method that is best suited to capture the benefits of a given action**—even if doing so introduces some inconsistency in the results.

The findings from both inventories help to shape the CCAP in several ways:

- **Transportation; building energy use; and food, goods and services contribute to most of the metropolitan area's emissions**—and there are ample opportunities to reduce these emissions through local and regional action. These three sectors are the focus of the climate actions in the CCAP.
- **Industrial process and refrigerants; waste disposal; and agriculture, forestry and land use contribute relatively small amounts of emissions,** and (with the exception of waste disposal) the emissions in these categories are challenging for local and regional agencies to influence. The projections and targets discussed in the following sections exclude these sectors, and the CCAP does not include actions that address these sectors—except in cases where actions that focus on the three key sectors discussed above have spillover benefits.
- **More populous and urbanized counties contribute more greenhouse gas emissions—and may also offer more opportunities to reduce these emissions.** The region's four urbanized counties—Clackamas, Clark, Multnomah and Washington—contain 93% of the metropolitan area's population, and produce a similar share of its emissions. The sector-based inventory also finds that Multnomah County contributes an especially high share of transportation emissions, likely because so many people travel there for work, shopping and

[3] This includes emissions from commercial and industrial buildings. Neither consumption- or sector-based inventories perfectly capture the emissions in this category, but the majority of guidance and experience related to analyzing and interpreting these emissions uses sector-based approaches.

other trips. Though this is not visible in the inventory, these urbanized counties also often have coordinated processes for planning transportation and waste projects, which create unique opportunities to identify collaborative actions that have significant climate benefits. The CCAP includes many actions that apply to the entire metropolitan area, but it also includes some that focus on urbanized areas, especially in transportation, in order to make the most of these opportunities.

Meanwhile, **there are fewer opportunities to reduce emissions from waste disposal, industrial processes and refrigerants, and agriculture, forestry, and land use**, both because these sectors contribute fewer emissions and because local and regional agencies do not have the authority or resources to significantly reduce emissions from these sectors:

- **Waste disposal** accounts for a relatively small portion of emissions from the food, goods and services we use. The majority of these emissions come from producing and transporting the food, goods and services we use. The CCAP includes several actions focused on reducing emissions from food, goods and services that mostly focus on reducing the large share of emissions that come from production and transportation, and that also help to reduce emissions from waste disposal.
- **Industrial process and refrigerants** captures emissions from industrial processes that are created not by energy purchased from the grid (those emissions are captured under building energy use), but by specialized fuels, refrigerants and processes. These emissions are challenging to address in the CCAP because, unlike state agencies, local and regional governments do not have the authority to regulate these emissions, and because these emissions are created by diverse and specialized processes, which makes it challenging to identify actions that significantly reduce these emissions.
- **Agriculture, forestry, and land use** captures emissions due to how land is managed. Some of these emissions are related to agricultural practices, but most of the emissions in this category come from changes to the carbon sequestered within the metropolitan area's natural and working lands, especially within the large stretches of state and federally managed land in rural Clackamas and Washington counties. The majority of these emissions are not subject to local and regional authority and are best addressed through state-led efforts to reduce emissions across the large stretches of agricultural, natural, and working lands in Oregon and Washington.

Due to these issues, the **emissions projections in the CCAP exclude emissions from industrial process and refrigerants and from agriculture, forestry, and land use**. The CCAP **does not include many actions that focus specifically on reducing emissions from these sectors or from waste disposal** but does note where actions do help to reduce emissions from these sectors alongside others.

Greenhouse gas reduction targets

Climate change is a global challenge, and the metropolitan area is working to do its part to reduce emissions. The CCAP includes greenhouse gas reduction targets that guide us along the way. These goals are based on state-level climate goals, and aim to reduce greenhouse gas emissions:

- To **45% below 1990 levels by 2030**.
- To **95% below 1990 levels by 2050**.

The CCAP focuses on long-term actions to meet the 2050 target. It does not appear that the metropolitan area is on track to meet the 2030 target (as discussed below), and recent federal actions to scale back climate policies and programs, coupled with a lack of local resources, create a lot of short-term uncertainty for climate efforts in our metropolitan area and across the U.S. In spite of this uncertainty, targets are still useful in guiding the metropolitan area's climate work. **Even if the metropolitan area does not fully meet these targets, any progress helps to reduce the impacts of climate change and deliver the many other benefits that are associated with regional climate action**.

Local and regional agencies are not solely responsible for meeting the targets above—they also collaborate with the state. As discussed in the following section, state-level climate policies and programs are forecasted to reduce the gap between business-as-usual emissions and state goals by roughly 60%. **The CCAP aims to reduce the remaining 40% of emissions and make up the gap between current actions and state goals.**

The CCAP targets are based on state climate goals because both Oregon and Washington have adopted ambitious, science-based climate goals, and both states rely on close coordination between state, local, and regional agencies to meet these goals. However, Oregon and Washington have slightly different climate goals, as summarized in **Table 5**.

Table 5. Summary of Oregon and Washington climate goals

Milestone year	Oregon goals	Washington goals
2030		45% below 1990 levels
2035	45% below 1990 levels	
2040		70% below 1990 levels
2050	80% below 1990 levels	95% below 1990 levels, achieve net zero emissions

Oregon's goals were adopted by the legislature in 2007 and updated by executive order in 2020.[4] Washington's goals[5] were adopted by the Washington legislature in 2020.

After discussion with the Climate Partners' Forum and with policy makers in early 2024, Washington's goals are recommended as a basis for the CCAP. Washington's goals are more consistent with recent scientific guidance on avoiding catastrophic climate change, and it seems likely that Oregon will eventually align its goals with Washington's. In 2023, Oregon's Climate Action Commission recommended updating Oregon's goals to be consistent with Washington's,[6] but the Oregon legislature has not yet adopted those goals.

In addition to the GHG targets discussed above, Metro, which coordinates transportation planning in the urbanized parts of the metropolitan area that are within Oregon, is required to evaluate its regional transportation plan against climate targets that are set by the state. These targets, which guide the transportation actions in the CCAP, use per capita vehicle miles traveled (VMT) by light-duty vehicles as a proxy for GHG emissions. This reflects the fact that the State of Oregon has the authority and responsibility to make

[4] https://climate.oregon.gov/meeting-our-goals
[5] https://ecology.wa.gov/air-climate/reducing-greenhouse-gas-emissions/tracking-greenhouse-gases
[6] https://climate.oregon.gov/tighger

fuels and vehicles that are sold in Oregon cleaner, whereas local and regional agencies are focused on reducing demand for driving. These targets aim to achieve:

- A 20 percent reduction in per capita GHG emissions below 2005 levels by the year 2035.
- A 25 percent reduction by 2040.
- A 30 percent reduction by 2045.
- A 35 percent reduction by 2050.

Greenhouse gas projections

State, regional and local agencies all share responsibility for meeting the greenhouse gas reduction targets discussed in the previous section. The CCAP focuses on actions that local and regional agencies can lead. The projections in this section help to understand exactly how much local and regional agencies need to reduce emissions in order to do their part in meeting the targets discussed above.

The CCAP includes two different sets of projections:

- **Business as usual projections** that show where emissions levels would be if state, regional and local agencies in Oregon and Washington had never taken any action on climate change. In the absence of any actions, emissions would continue to grow as the population grows and as people consume more energy and goods. This means that the CCAP's targets, which are framed in terms of 1990 emissions levels, are more ambitious than they might at first seem, because the metropolitan area needs to not only reduce emissions below 1990 levels, but also counteract this "natural" growth in emissions. Business as usual projections help us understand how to do that.
- **Mitigated projections** that capture the impact of existing state policies and programs on greenhouse gas emissions. Both Oregon and Washington have taken significant (and for the most part, consistent) steps to clean up vehicles, fuels, and electricity. These actions remove a lot of the carbon from our metropolitan area's energy supply and make major progress toward meeting climate targets. However, they also mean that it is more challenging for local and regional agencies to reduce remaining emissions if they wait to take action on climate. Most local and regional agency actions reduce demand for energy, and they make more of an impact if they displace the "dirtier" energy that is still in use today than

if they displace the cleaner energy that will be available in the future due to state actions. Mitigated projections help us understand how much local and regional agencies in the metropolitan area need to reduce emissions in order to do their share in meeting targets, and also help us select the actions that reduce emissions most effectively.

The remainder of this section describes the methodologies and assumptions used in creating these projections and the results of these projections.

Methodologies and assumptions

Unmitigated business as usual projections

Projected unmitigated business as usual emissions were calculated using county-level GHG emissions inventory results from 2022, and extrapolated based on county population growth projections. Each county received a per-capita emissions profile, and this profile is assumed unchanged into the future, with emissions increases matching population growth in each county. The county results were then added together for the MSA total. Population growth rates come from the following sources, according to county:

- Clackamas, Columbia, Washington, and Yamhill Counties – Portland State University Population Research Center, Multnomah County – Metro.
- Clark and Skamania Counties – Washington Department of Commerce. See annual population estimates in **Appendix 2**.

Metro projected local emissions only for the sectors within the control of local governments. For the purposes of this analysis, that meant excluding the agriculture, forestry, and land use and industrial process and refrigerants sectors. The former was excluded because the vast majority of those emissions come from tree loss occurring predominately on federal and private timber land. The latter was excluded because the refrigerants and industrial processes that contribute to this emissions source are regulated at a federal level and outside of local and regional government control.

Consumption-based emissions are also excluded from this forecast, because most of the state and local data that is available to inform the forecast focuses on sector-based emissions. More guidance and resources from the state are needed to accurately

Consumption-based emissions are estimated using household income and localized spending patterns; in general, they should be considered as an estimate and not an exact inventory.

The tool used to estimate these emissions reductions was a custom-built application for this purpose. The methodology for the emissions projections depends heavily on assumptions that population will grow as projected. It also assumes that daily habits that contribute to greenhouse gas emissions remain constant into the future.

State-level policy mitigated projections

Emissions in the metropolitan area are expected to decrease over time thanks to strong action in Oregon and Washington at the state level in the building energy and transportation sectors. **Table 6** summarizes these policies.

Table 6. Summary of state-level policies accounted for in CCAP GHG projections

Sector	Policies
Building Energy	Energy-efficient building codes • Washington's Energy Code Roadmap to 2031 is estimated to reduce building energy emissions in newly constructed buildings by 70% relative to 2002 emissions. Clean electricity legislation • Oregon's Clean Energy Targets bill requires electricity emissions to go to zero by 2040. This will also result in reductions to the emission from the power plant in Columbia County. • Washington's Clean Energy Targets require electricity emissions to go to zero by 2045. Programs to clean up other building fuels • Oregon's Climate Protection Program limits the emissions from natural gas (among other sources) and is expected to achieve most of those reductions through demand reduction. For this forecast we assumed that a 10% emissions intensity reduction was feasible. The reductions resulting from this policy are broken out for Beaver Power Plant Reductions (Columbia County). • Washington's Climate Commitment Act requires a reduction in fuel intensity across a variety of fuels including natural gas. The act assumes up to 10% reduction by 2030.

Sector	Policies
Transportation	Clean fuels legislation • Oregon's Clean Fuels Standard requires a decrease in transportation fuel emissions of 37% by 2035. • Washington's Clean Fuels Standards require transportation fuel emissions decrease by 20% below 2017 levels by 2034. Zero-emission vehicles standard • Washington's Clean Vehicles Program rule and Oregon's Advanced Clean Cars II program both require 100% of new passenger cars, light-duty trucks, and medium-duty vehicles to be zero emissions by 2035.

The policies summarized above are generally consistent between Oregon and Washington. Clean vehicle requirements are identical between the two states, and clean electricity requirements, programs to clean up other building fuels, and clean fuel requirements are similar in both states, with slight variation in targets and milestone years. The one exception involves energy-efficient building codes, which are significantly more robust in Washington than in Oregon.

State-level policy mitigated projections result from subtracting the emissions reductions resulting from state level policies from the unmitigated business as usual emissions. As with the unmitigated business as usual projections, we took a county-by-county approach to calculate the effects of statewide policies, then added them together for the MSA total. Electricity emissions intensity reductions are assumed to happen in the year that they are required, causing a pronounced stepped effect. For the other actions, we assumed a linear decrease between target years.

These state-level mitigated projections represent the effects of existing state requirements as they currently stand. While these policies in Oregon and Washington are actively being implemented, there are also federal actions that may limit the state's abilities to implement some policies that reduce greenhouse emissions, and those uncertainties are not reflected here. This analysis represents a projection from a moment in time, which will be subject to any number of delays, accelerations, technological advances, and societal changes.

The policies also help illustrate which climate actions local and regional agencies are best poised to lead. State agencies in Oregon and Washington generally lead efforts to increase the supply of clean vehicles, fuels, and electricity because these efforts align with their regulatory authority. This means that the most effective local and regional

climate actions often focus on reducing demand for fuel and electricity, both to complement state agencies' roles and because local and regional agencies have the ability to significantly reduce demand through their oversight of the built environment. This is particularly true in Oregon, where the state explicitly requires regional agencies to meet targets to reduce transportation emissions by reducing demand for driving (see discussion in the Greenhouse gas reduction targets section).

Results

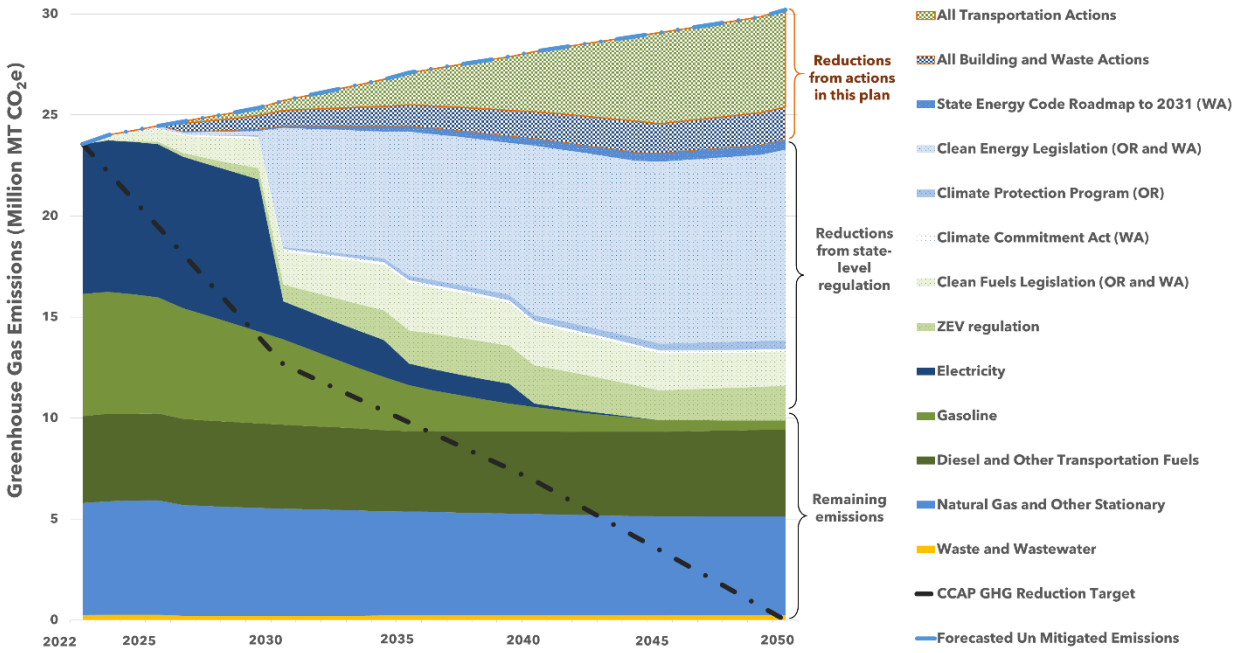
Table 7 below shows the projected unmitigated business as usual greenhouse gas emissions with population growth and state-level policy mitigated emissions over time. By 2030, the state level policies will provide a 47% reduction over unmitigated emissions and by 2050 the reduction is estimated at 60%.

Table 7. Unmitigated emissions and existing state-wide policy projection results

Year	Unmitigated emissions with population growth (million MT CO2e)	Mitigated emissions with state-level policies (million MT CO2e)
2025	24.5	23.6
2030	25.8	13.7
2035	27.2	14.4
2040	28.3	12.8
2045	29.3	12.3
2050	30.3	12.1

The unmitigated business as usual emissions and the state-level policy mitigated projections are represented in **Figure 9** below.

Figure 9. Forecasted unmitigated emissions and the effects of statewide policies



Overall, the state-level policies and programs in the mitigated scenario account for a reduction of roughly 60% (18.3 MMT) of the gap between business as usual and goals by 2050. This means that **local and regional agencies need to reduce the remaining 40% (12.1 MMT) of emissions in order to do their part in meeting these targets under current state climate policies**. The remaining emissions are primarily resulting from diesel (with small amounts of other transportation fuels including aviation fuel), gasoline, natural gas (with small amounts of other stationary fuels including propane and fuel oil), and waste and wastewater. The following section assesses the extent to which the actions in the CCAP reduce these remaining emissions.

Climate actions, implementation scenarios, and results

The CCAP identifies 26 climate actions that reduce emissions and help to meet the targets discussed in the previous section. The information and analysis in the CCAP contributed to the selection of these actions in a variety of ways:

- Wherever possible, actions are drawn from existing local and regional climate and climate-related plans in the metropolitan area. The CCAP includes low, medium, and high implementation scenarios for each action that are based on the

resources and priorities outlined in these plans. These scenarios are used to quantify the costs and benefits of each action according to established research and guidance.

- Coordination and engagement with the Climate Partners' Forum and regional advisory committees helped ensure CCAP actions align with existing plans and identify actions that are ready for implementation by local and regional agencies.
- Online open houses and existing climate plans helped to identify actions that are community priorities because they provide co-benefits (including saving people money, improving access to destinations, and creating resilient communities). These open houses identified some actions that may have negative impacts on community members that may need to be addressed during implementation.
- The inventory, projections, targets, and cost/benefit estimates were used to assess how much progress the planned local and regional actions make toward meeting Oregon and Washington's climate goals. Collectively, the actions in the CCAP and existing state policies do not meet these goals. Meeting state climate goals will require additional collective action.

This section begins by summarizing the costs and benefits of these actions, describes the implementation scenarios that were used to define and analyze each action, recommends best practices and next steps, and assesses the progress that these actions make toward meeting climate goals. It also includes detailed information on every action, organized by sector.

Summary of costs and benefits

The CCAP uses three quantitative metrics to evaluate the costs and benefits of all actions in the CCAP:

- **Cumulative GHG reductions over the life of the plan:** significant reductions are needed to meet climate goals.
- **Total cost:** This represents the up-front cost of implementing each action and focuses on the cost to public agencies. Focusing on up-front costs highlights the short-term investment needed to unlock the benefits of each strategy. This analysis does not capture the longer-term costs and (often significant) savings for households due to these actions, nor the cost to businesses and developers of

complying with regulations. These impacts are discussed in the Equity and section.

- **Cost effectiveness:** This represents the average cost per ton of GHG reductions for each action. This helps to highlight the actions that produce the most return on the limited resources that are available. This is equal to the total cost divided by the cumulative GHG reductions.

There currently do not appear to be enough resources for local/regional climate efforts to meet climate goals. However, Metro and its agency partners see many opportunities to pursue more resources (and to make complimentary changes to policies and programs) and unlock additional benefits from these actions. The CCAP reports results for the three metrics above for a low, medium, and high implementation scenario. The low scenario typically represents a conservative estimate of how an action could be implemented with the resources available today; the medium and high scenarios explore the potential benefits of putting more resources and effort toward implementing these actions.

In addition, the CCAP includes qualitative ratings that access how these actions address community priorities and align with local and regional agencies' authority and resources. This helps to illustrate why different actions were selected and highlight key issues to address during implementation:

- **Priority:** Assesses whether actions are perceived as beneficial by community members. These ratings are based on outreach and engagement to understand community benefits of different climate actions conducted by the CCAP team and by the many agencies in the region that have created community-focused climate action plans for their communities. The CCAP team held an online open house during winter 2024-25 during which respondents identified the actions in each sector that most benefit them and their communities. The project team also reviewed adopted climate actions plans from within the metropolitan area to identify which actions were prioritized by community members during engagement and outreach that shaped development of those plans.
- **Authority:** Assesses whether local and regional agencies and community partners in the metropolitan area have the authority to implement an action. It is based on a review of climate action plans and of the plans that were used to develop implementation scenarios for each action, which typically discuss how actions would be implemented and who has the authority to do so.

- **Resources:** Assesses whether local and regional agencies and community partners in the metropolitan area have the necessary resources to implement an action. It is based on the same plans that were used to develop estimates of cost and cost-effectiveness. These plans typically identify the resources that are available to implement different actions.

Table 8 summarizes the rating scale for these qualitative criteria.

Table 8. Qualitative rating scale for CCAP actions

Rating	Community priority	Authority to implement	Resources to implement
●	Action was rated as one of the top 3 in its sector at the winter online open house *and* identified as a community priority in multiple partner plans.	Local and regional partner agencies have the authority to fully and consistently implement this action across the region.	Regional plans identify funding for the action and this funding is adequate to achieve the low implementation scenario.
◑	Action was rated as one of the top 3 in its sector at the winter online open house *or* identified as a community priority in multiple partner plans.	Local and regional partner agencies have partial / varying authority to implement this action.	Regional plans identify funding for the action, but this funding is not adequate to achieve the low implementation scenario.
○	Action was not identified as a priority in the winter online open house nor in partner plans.	Local and regional partner agencies do not have the authority to implement this action.	Regional plans do not identify a funding source that could support this action.

Table 9, **Table 10,** and **Table 11** summarize costs and benefits of each action by sector and by scenario. **Table 12**, **Table 13**, and **Table 14** summarize the implementation scenarios used to assess each action. All these tables categorize related actions within

each sector. **Table 13** and **Table 14** also include a description of the maximum potential implementation for actions in the building and food, goods and services sectors.[7]

[7] This information is intended to help people assess whether the implementation scenarios are realistic for the actions in these sectors. In the transportation sector, counties and regional agencies are required to engage in collaborative planning processes that assess how many resources are available and how these resources should be prioritized, which help the CCAP team align implementation scenarios with available resources. Such processes are not in place for buildings or food, goods and services (except within the Metro region, where Metro leads coordinated planning of the solid waste system), so the CCAP provides information on maximum implementation potential to help provide context for implementation scenarios.

Table 9. CCAP transportation actions: costs and benefits

	Cumulative GHG reductions (MMT, 2025-50)			Total cost (2024$m, 2025-50)			Cost-effectiveness ($/MT CO2e)			Qualitative rating		
Action / category	Low	Med	High	Low	Med	High	Low	Med	High	Priority	Authority	Resources
Transit												
Implement planned transit service	2.95	7.61	11.1	$10,168	$26,529	$48,540	$3,448	$3,488	$4,374	◑	◑	◑
Offer discounted transit passes	0.05	0.12	0.18	$1,252	$1,252	$1,252	$23,083	$10,492	$6,925	◑	◑	●
Build high-speed rail	0.16	0.29	0.40	$11,725	$9,212	$6,700	$71,840	$31,841	$16,582	○	●	●
Bike / ped / other												
Build new bicycle and pedestrian facilities	0.52	1.33	5.22	$1,526	$2,275	$11,336	$2,929	$1,708	$2,170	●	●	◑
Expand electric bike and scooter sharing systems	-	0.01	0.06	$-	$-	$-	$-	$-	$-	●	●	◑
Maximize teleworking	1.65	2.14	2.82	$-	$-	$-	$-	$-	$-	○	◑	○
Compact communities												
Implement local and regional land use plans	8.17	11.8	17.2	$-	$-	$-	$-	$-	$-	◑	●	◑
Implement transit-	0.57	2.35	4.29	$44	$82	$138	$78	$35	$32	◑	◑	●

	Cumulative GHG reductions (MMT, 2025-50)			Total cost (2024$m, 2025-50)			Cost-effectiveness ($/MT CO2e)			Qualitative rating		
Action / category	Low	Med	High	Low	Med	High	Low	Med	High	Priority	Authority	Resources
oriented development programs												
Price and manage parking	-	3.01	3.92	$-	$-	$-	$-	$-	$-	○	◑	●
Transportation pricing												
Implement roadway pricing and/or fees	-	5.84	16.8	$-	$-	$-	$-	$-	$-	○	◑	◑

Table 10. CCAP building actions: costs and benefits

	Cumulative GHG reductions (MMT, 2025-50)			Total cost[8] (2024$m, 2025-50)			Cost-effectiveness ($/MT CO2e)			Qualitative rating		
Action / category	Low	Med	High	Low	Med	High	Low	Med	High	Priority	Authority	Resources
Existing buildings												
Energy efficiency in existing homes	0.65	1.94	4.53	$192	$575	$1,342	$296	$296	$296	●	●	○
Efficiency in commercial/industrial buildings	0.78	1.56	3.11	$80	$160	$320	$103	$103	$103	◑	●	○
Installing electric appliances in existing homes	1.04	2.09	4.17	$96	$192	$385	$92	$92	$92	●	●	○
Planting street trees to reduce cooling needs and sequester carbon	0.01	0.02	0.04	$38	$38	$75	$3,734	$1,805	$1,805	●	●	○
New buildings										◑	◑	○
Increased requirements for electric appliances in new buildings	1.95	3.58	2.91[9]	$57	$115	$369	$29	$32	$127	◑	◑	○
More energy-efficient building codes	1.02	2.04	4.73	$261	$523	$1,950	$257	$257	$412	◑	○	○

[8] Cost estimates for actions in this sector take into account the cost for builders and developers of complying with new regulations as well as costs incurred by homeowners to upgrade equipment and appliances. This is different than cost estimates for the transportation sector, which focus on costs to the agency and/or organization implementing the action.

[9] Implementation scenarios for actions related to new buildings are aligned in order to account for the interrelationships between these actions. This means that the high scenario for this action produces fewer reductions than the medium scenario, but that the high scenario maximizes the collective impact across all actions in this category.

	Cumulative GHG reductions (MMT, 2025-50)			Total cost[8] (2024$m, 2025-50)			Cost-effectiveness ($/MT CO2e)			Qualitative rating		
Action / category	Low	Med	High	Low	Med	High	Low	Med	High	Priority	Authority	Resources
Renewable energy												
Net-zero public buildings	4.41	4.97	5.51	$82	$93	$103	$19	$19	$19	○	●	◑
Rooftop solar	1.77	3.54	3.95	$1,007	$2,014	$2,048	$569	$569	$518	◑	●	○

Table 11. CCAP food, goods and services actions: costs and benefits

	Cumulative GHG reductions (MMT, 2025-50)			Total cost (2024$m, 2025-50)			Cost-effectiveness ($/MT CO2e)			Qualitative rating		
Action / category	Low	Med	High	Low	Med	High	Low	Med	High	Priority	Authority	Resources
Composting												
Expanded residential composting	0.45	0.90	1.64	$16	$31	$56	$35	$35	$34	●	◑	◑
Procurement / construction[10]												
Requiring low-carbon construction materials in new buildings	11.8	16.3	28.1	$1,043	$1,441	$2,484	$88	$88	$88	○	◑	○
Low-carbon government procurement	4.8	21.6	46.7	$425	$-	$-	$88	$-	$-	◑	●	○
Reusing / preventing waste												
Prevent and recover business food waste, with a focus on prevention	0.59	0.82	1.71	$41	$55	$87	$68	$67	$51	◑	●	●
Increase reuse of products and materials	1.39	1.63	1.84	$324	$349	$367	$234	$214	$199	●	●	●

[10] These scenarios are based on technical potential and less constrained by practical and financial feasibility than the rest of the actions. The resulting draft cost and GHG reduction estimates are therefore higher than what might be achievable in reality. To be discussed.

Implementation scenarios and assumptions

Table 12. Transportation actions: scenarios and assumptions

Action / category	Low scenario assumptions	Medium scenario assumptions	High scenario assumptions
Transit			
Implement planned transit service	2023 RTP constrained transit service (39% increase over current levels)	2023 RTP strategic transit service (100% increase over current levels)	2023 RTP Target 1 scenario (145% increase over current levels; additional service is assumed to be funded through re-investment of congestion pricing revenues in additional transit service)
Offer discounted transit passes	(same as medium scenario)	Assumes that a certain share of people living in areas that are well-served by travel options receive free transit passes (consistent with 2023 RTP update)	(same as medium scenario)
Build high-speed rail	• High speed rail is complete in 2045 • Longer timeline leads to increased costs	• High speed rail is complete in 2040	• High speed rail is complete in 2035 as planned • Shorter timeline minimizes costs
Bike / ped / other			
Build new bicycle and pedestrian facilities	• Based on the RTP short-term constrained project list • 15% increase in bike facility miles • 13% increase in ped facility miles) • Assumes proportional increase across the MSA	• Applies to facilities in the RTP constrained project list (36% increase in bike facility miles, 34% increase in ped facility miles) • Assumes proportional increase across the MSA	• Applies to facilities in the RTP bike-ped vision (129% increase in bike facility miles, 135% increase in ped facility miles) • Assumes proportional increase across the MSA
Expand electric bike and scooter sharing systems	Assumes current levels of bike/scooter sharing coverage (46% of region's households have access)	Assumes bike/scooter sharing systems expand to communities with high densities and bike/ped infrastructure levels (51% of region's households have access)	Assumes bike/scooter sharing systems expand to communities with medium/high densities and bike/ped infrastructure levels (71% of region's households have access)
Maximize teleworking	Teleworking is at lower range of Metro's 2023 RTP projections (14% full-time, 26% full time)	Teleworking is at the midpoint of the range of Metro's 2023 RTP projections (25% full time, 23% part time)	Teleworking is at higher range of Metro's 2023 RTP projections (33% full time, 24% part time)
Compact communities			
Implement local and regional land use plans	• The forecasted share of regional growth (38.4%) occurs in regional centers. • Centers develop at current average	• The forecasted share of regional growth (38.4%) occurs in regional centers. • Centers develop to Orenco-level densities (10.5 DU/ac residential, 5.0 jobs/ac employment)	• A higher-than-forecasted share of regional growth (41.2%) occurs in regional centers. • Centers develop to Hollywood-level residential

Action / category	Low scenario assumptions	Medium scenario assumptions	High scenario assumptions
	densities (6.5 DU/ac residential, 3.7 jobs/ac employment)		densities (12.1 DU/ac) and Lake Grove-level job densities (20/6 jobs/ac)
Implement transit-oriented development programs	Metro TOD program is implemented at 2023 levels (113 units per year, 100% affordable)	Metro TOD program is implemented at average 2017-24 levels (568 units per year, 72% affordable)	Metro TOD program is implemented at 2020 levels (996 units per year, 75% affordable)
Price and manage parking	• Applies to places that already price parking • Assumes prices remain at current levels	• Applies to places that already price parking and Climate-friendly areas • Assumes parking management only in most CFAs • Prices increase at inflation + 1.5% each year beginning in 2030	• Applies to places that already price parking and Climate-friendly areas • Assumes parking management only in most CFAs • Prices increase at inflation + 1.5% each year beginning in 2025
Transportation pricing			
Implement roadway pricing and/or fees	No congestion pricing	STS pricing on the throughway network (avg $0.17/mi.)	• STS pricing on the throughway network (avg $0.17/mi.) • Other STS per-mile fees (avg $0.20/mi.)

Table 13. Building actions: scenarios and assumptions

Action / category	Low scenario assumptions	Medium scenario assumptions	High scenario assumptions	Maximum Potential
Existing buildings				
Energy efficiency in existing homes	• Resource navigator (technical assistance) • Rollout over 20 years • 5% of households (oldest homes and lowest income homeowners, relative to ETO's current numbers)	• Resource navigator + incentives • Rollout over 20 years • 10% of households	• Rollout over 20 years • 20% of households • Includes home energy benchmarking	Maximum potential for this action includes upgrading all existing homes and would achieve 5 times the reductions of the high scenario. This action interacts with the electric appliances action: weatherization decreases the potential gain from electrification and vice versa.
Efficiency in commercial/industrial buildings	• Resource Navigator • 5% of Owner-occupied buildings only, ETO efficiency actions	• Education • 10% of buildings upgraded	• 20% of buildings upgraded • Benchmarking	100% of buildings upgraded, which increases the total potential by 5x. Realistically not all of the buildings will yield the same benefits, so it is likely less/
Installing electric appliances in existing homes	• Resource navigator (TA) • Air and water heating/cooling • 5% of houses upgraded	• Resource navigator (TA) + Incentives • 10% of houses upgraded • Education – • More flexibility in how money is used (than ETO and existing programs)	• Resource navigator (TA) + Higher Incentives • 20% of houses upgraded	The maximum potential for this action would be to upgrade all existing homes' water and space heating. Currently there are just over 2 million MT CO_2e per year in residential natural gas and propane. Roughly 93% of that could be eliminated through the maximum technical potential of this action: close to 50 million MT over 25 years.
Planting street trees to reduce cooling needs and sequester carbon	• Public agencies plant 1,500 trees per year 2026 - 2050 • Assume that trees are placed to maximize cooling and cared for appropriately to maximize life of tree • Trees planted are slow growing conifers	• Public agencies plant 1,500 trees per year 2026 - 2050 • Assume that trees are placed to maximize cooling and cared for appropriately to maximize life of tree • Trees planted are Fast growing hardwoods	• Public agencies plant 3,000 trees per year • Assume that trees are placed to maximize cooling and cared for appropriately to maximize life of tree • Trees planted are fast growing hardwoods	N/A—No reasonable way to estimate total tree planting potential.

Action / category	Low scenario assumptions	Medium scenario assumptions	High scenario assumptions	Maximum Potential
New buildings				
Increased requirements for electric appliances in new buildings	• 43% increase in electric space and water heating = 50% decrease in emissions from natural gas used for space/water heating in all new homes	• 89% increase in electric space and water heating = 100% decrease in emissions from natural gas used for space/water heating in all new homes	• 100% of all new homes have all electric appliances = 100% decrease in emissions from residential natural gas usage (no new residential natural gas allowed). Includes space/water heating, stoves, fireplaces, etc.	The maximum potential of this action is achieved by the high scenario: removing all natural gas from new construction.
More energy-efficient building codes	• 50% of agencies adopt reach codes (EPA Energy star certified homes) for new residential construction yielding 10% energy reductions	• 100% of agencies adopt reach codes for new residential construction yielding 10% energy reductions	• 100% of agencies align with Washington's green building code (assuming successfully advocacy to adopt WA building code) yielding 67% energy reductions in new buildings	N/A – building codes could theoretically require net zero buildings, but this isn't currently feasible. Uncertain what the max realistic technical potential of code changes could be.
Renewable Energy				
Net-zero public buildings	• Public buildings purchase 100% Renewable Energy Credits (RECs)/offsets for electricity and natural gas usage by 2035. • Scales up slowly over 10 years from 2026 – 2035. • RECs are no longer needed after 2044 when region-wide grid emissions factor (EF) is 0.	• Public buildings purchase 100% RECs/offsets for electricity and natural gas usage by 2030. • Scales up over 5 years from 2026 – 2030. • RECs are no longer needed after 2044 when region-wide grid EF is 0.	• Public buildings purchase 100% RECs/offsets for electricity and natural gas usage by 2026. • RECs are no longer needed after 2044 when region-wide grid EF is 0.	The high scenario for this action reaches the maximum technical potential. It eliminates all the natural gas and electricity emissions from public buildings (roughly 2% of total building energy emissions) for the entire CCAP planning period.
Rooftop solar	• 5X current residential solar production • 10% installed per year (over 10 years) beginning in 2026	• 10X current residential solar production • 10% installed per year (over 10 years) beginning in 2026	• 10X current residential solar production • 20% installed per year (over 5 years) beginning in 2026	The maximum potential for this action would be to build 21,254,000 MWh/year of new rooftop solar, which equals 76% of all MSA-wide electricity usage in 2022 (~5.6 million $MTCO_2e$) or 210% of residential usage including renewables (~1.7 million $MTCO_2e$).

Table 14. Food, goods and services action scenarios and assumptions

Action / category	Low scenario assumptions	Medium scenario assumptions	High scenario assumptions	Maximum Potential
Composting				
Expanded residential composting	• 50% of the single-family home (SFH) population that currently lack residential composting get composting service	• 100% of the single-family home (SFH) population that currently lack residential composting get composting service	• 100% of the single-family home (SFH) population that currently lacks residential composting gets composting service • 100% of the multifamily home population in areas that currently have SFH coverage get composting service	This action could be expanded to cover all households including MF outside of the Metro region and Vancouver area, which currently offer residential composting service. This would further decrease the high scenario by another 6,000 MT per year.
Procurement / construction (Pending discussion on constrained scenarios)				
Requiring low-carbon construction materials in new buildings	• Applies to business capital and inventory only (non-governmental commercial)	• Applies to households only	• Assumes total non-government potential per Oregon DEQ's Consumption Based Inventory.[11]	The high scenario corresponds with DEQ's finding that 90% of Oregon construction emissions could be reduced by 2050.
Low-carbon government procurement	• Achievable construction reductions from local government (30% reduction)	• Achievable construction reductions from local government (30% reduction)	• Science Based Target Initiative (SBTI) from all local government supply chain (up to 90% reduction in 2050)	The technical potential for total supply chain emissions reduction is unclear, and each agency has a unique emissions profile. Costs are also unknown and variable. The high scenario aligns with SBTI's recommendation that signatories a 50% emissions reduction by 2030, 90% supply chain reduction by 2050, and net-zero emissions in 2050.

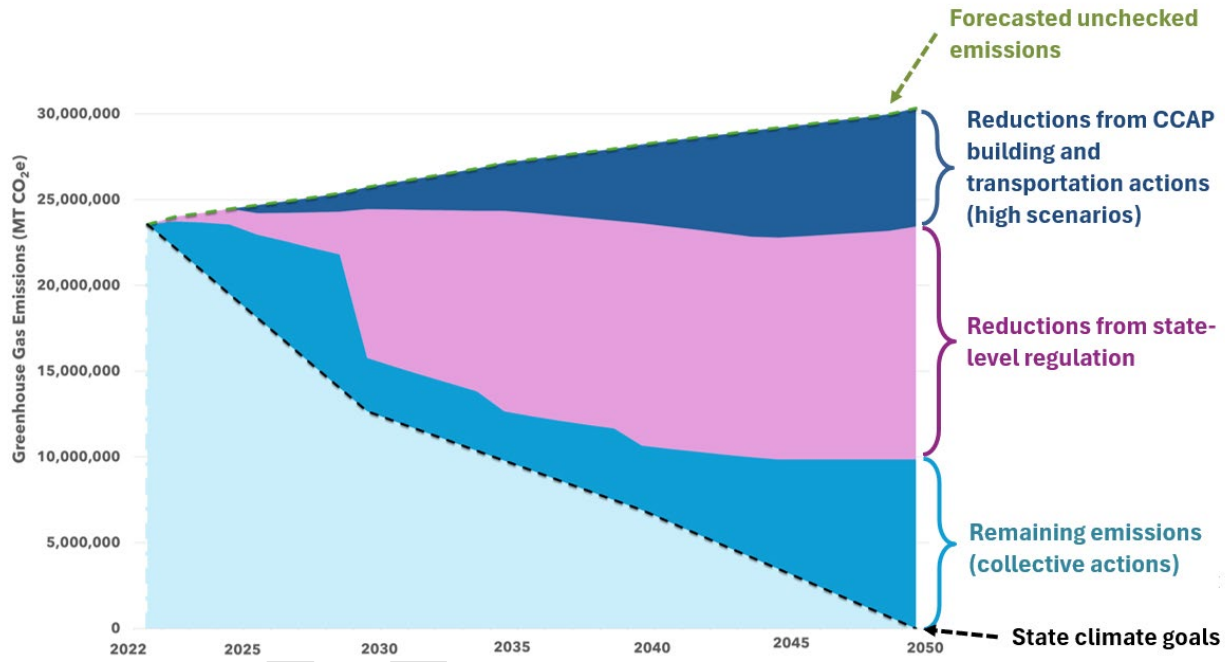
[11] https://www.oregon.gov/deq/mm/Documents/mm-Reporton2021CBEI.pdf

Action / category	Low scenario assumptions	Medium scenario assumptions	High scenario assumptions	Maximum Potential
Reusing / preventing waste				
Prevent and recover business food waste, with a focus on prevention	• New policies require businesses to better manage food waste and prohibit landfill disposal of food waste • Medium levels of investment in program support, technical assistance, grants, and good waste prevention education ($1.6m/year at full implementation)	• New policies require businesses to better manage food waste and prohibit landfill disposal of food waste • Medium levels of investment in program support, technical assistance, grants, and good waste prevention education ($2.2m/year at full implementation)	• New policies require businesses to better manage food waste and prohibit landfill disposal of food waste • Medium levels of investment in program support, technical assistance, grants, and good waste prevention education ($3.5m/year at full implementation)	
Increase reuse of products and materials	• New reuse and recycling facilities capture 10% fewer materials and a less carbon-intensive mix of materials than envisioned in Metro's Regional Systems Facilities Plan • $1m devoted to partnerships with community organizations to increased reuse	• New reuse and recycling facilities capture the same amount and mix of materials envisioned in Metro's Regional Systems Facilities Plan • $2m devoted to partnerships with community organizations to increased reuse	• New reuse and recycling facilities capture 10% more materials and a more carbon-intensive mix of materials than envisioned in Metro's Regional Systems Facilities Plan • $2.7m devoted to partnerships with community organizations to increased reuse	

Progress toward climate targets

Figure 10 summarizes the overall impact of the local and regional CCAP actions alongside the impact of state-level policies and programs and compares these results to the targets and projections discussed above. It highlights an important point: **even under the most optimistic scenarios, the actions in the CCAP do not fully meet state climate goals**. In other words, the metropolitan area needs to pursue all of the actions discussed above and more in order to meet state climate goals. The next section describes what each line and wedge in this chart represents, and what additional actions might help the metropolitan area reach its goals.

Figure 10. Business as usual emissions and mitigations due to state and local/regional action



State climate goals (dark dashed line): This represents statewide climate goals that have been adopted in Washington and recommended in Oregon, which call for a 95% reduction in GHG emissions below 2005 levels by the year 2050. This is an ambitious goal that essentially calls for creating a carbon-free economy in the Pacific Northwest. See the Greenhouse gas reduction targets section for more information on these goals.

Forecasted unchecked emissions (green dashed line): This represents estimated emissions under the business as usual scenario discussed in the Greenhouse section, which assumes that local, regional, or state agencies never have taken nor will they take steps to reduce GHG emissions. It represents baseline GHG emissions; all GHG reductions are applied to this baseline.

Reduction from local and regional building and transportation CCAP actions (high scenarios) (dark blue wedge): This represents the maximum potential impact of all building and transportation actions listed above under the high implementation scenarios described in the previous section. This wedge does not include GHG reductions from actions in the food, goods and services sector because these results are based on a consumption-based analysis and are not comparable to the sector-based data in this chart. See the Greenhouse gas inventory section for more information on the differences between these inventories.

Reductions from state-level regulation (pink wedge): This captures reductions due to state-led climate policies and that are already in place in Oregon and Washington, as discussed in the sections on projections and targets. The impact of state-led actions is larger than the impact of the actions in the CCAP because states have much broader authority to regulate climate pollution than local or regional agencies do and can, therefore, take more significant action to reduce GHG emissions. That said, climate plans in both Oregon and Washington both acknowledge that local and regional action is necessary to meeting state goals.

Remaining emissions (collective actions) (light blue wedge): This represents the remaining GHG reductions that are needed to meet climate targets after accounting for the recommended CCAP actions and for existing state-level policies and programs. Collectively, these actions get roughly two-thirds of the way toward meeting 2050 climate goals; leaving a gap of one-third of projected 2050 GHG emissions (just shy of 10 million MT CO_2e).

These remaining emissions come largely from two specific energy sources, diesel and natural gas. Existing state regulations do not focus as much on these energy sources as they do on others like gasoline and electricity, and local and regional agencies have limited authority to address diesel and natural gas emissions. Recent research also suggests new opportunities to reduce emissions in the food, goods and services sector, but more work needs to be done at all levels to identify the policies and programs that can unlock these opportunities.

Collective climate actions

Closing the remaining emissions gap will take significant and potentially challenging collective action. Collective action involves a coordinated effort by individuals, communities, businesses, and governments to transition to cleaner energy sources and goods through a combination of policy changes, technological advancements, and behavioral changes. Many of the policies that can drive these actions work to create a market for lower-carbon energy sources and goods, and they are generally more effective when they create as large a market as possible, so they ideally need to be implemented consistently across a broad geographic area (i.e., statewide or across multiple states). These actions are not included in the CCAP because neither local/regional agencies nor even state agencies can implement these actions unilaterally without significantly increasing people's cost of living. Implementation involves coordination between local, regional and state agencies, with the private sector, and potentially across multiple states.

Potential collective actions include:

- **Addressing natural gas emissions**: Natural gas is the largest single remaining source of projected emissions in 2050. Natural gas utilities are working to decrease the carbon intensity of their product, and these efforts are not captured in the chart above, but it would be challenging to reduce the carbon intensity of natural gas to zero. Achieving a transition away from natural gas involves a coordinated effort that could include developing new cleaner sources of natural gas, prioritizing these sources for the cases where natural gas is most necessary, and shifting from natural gas to electric appliances where feasible, all while ensuring that there is capacity to deliver the energy that people need without significantly increasing the cost for end users. So far it has been challenging to identify affordable low-carbon alternatives to natural gas.
- **Switch to renewable diesel**: Diesel and other fossil transportation fuels (e.g., propane, aircraft fuel) are the next largest contributor to remaining emissions; diesel alone makes up three-quarters of remaining transportation emissions. The City of Portland already requires local pumps to sell R99 (renewable diesel) and if the entire region followed suit, the final emissions could in theory be reduced by an additional 3 million MT CO_2e. However, the supply of renewable diesel is limited, and the Metro region is a relatively small market compared to neighboring states like California, which has a robust market-based low-carbon fuel standard

that offers significant financial incentives to renewable fuel suppliers. This means that even if the region requires broader use of renewable diesel, the metropolitan area may not be able to attract enough supply to avoid a significant increase in fuel prices. Coordinating with the states of Oregon and Washington to get more robust state-level low-carbon diesel policies in place that mirror those in California could help address this issue.

- **Decrease the carbon intensity of food consumed in the region**: Beef and dairy are some of the highest carbon intensity foods that people eat. If people in the region decreased their consumption of beef and dairy, it could lead to a significant climate benefit, and also improve people's health. In 2024, the Oregon Department of Environmental Quality prepared a report for the Legislature that identified various opportunities to reduce consumption-based greenhouse gas emissions.[5] Some of the most impactful solutions involve implementing new taxes or fees on meat and dairy. This could further increase the cost of food, which has gone up considerably during recent years. If such taxes or fees were implemented only within the metropolitan area, people would likely leave the region to purchase food to avoid the resulting cost increases. These policies would need to be implemented economy-wide in a way that minimizes additional costs for consumers to be successful.

The states of Oregon and Washington are also developing CCAPs, and the CCAP team will continue to coordinate with state staff to develop a shared understanding of how to best advance these actions at both the state and local/regional level.

Recommendations and next steps

Wherever possible, the CCAP includes recommendations on implementing each action included in the plan. These recommendations are based on the same engagement and research that contributed to the development of these actions and focus on how local and regional agencies can implement actions effectively and to the benefit of all given their roles and responsibilities. Some of these recommendations are very specific to the relevant action, but many of them apply broadly. These overarching recommendations include:

Explore new ways to fund climate action. The metropolitan area currently does not have enough funding to implement the actions needed to meet its climate goals. This is true across all three sectors in the CCAP:

- **Transportation:** Though federal, state, and local/regional agencies all contribute to building and operating the transportation system, transportation plans in the metropolitan area repeatedly find that there aren't enough resources to build transit, bicycle, and pedestrian networks. Funding capital construction and ongoing operation of high-capacity transit and expanded transit services which is a high-impact climate action, is particularly challenging.
- **Buildings:** Federal agencies, state agencies and utilities fund many programs to make existing and new buildings more efficient, but there aren't enough resources to meet demand in the metropolitan area. There are no regional or local sources of revenue dedicated to reducing emissions from buildings.
- **Food, goods and services:** Metro oversees the solid waste system within its service area, including collecting fees, administering haulers, and operating facilities. This provides Metro with the ability to launch and fund innovative efforts to reduce emissions from food, goods and services—but this can be more challenging in other parts of the metropolitan area.

During development of the CCAP, partner agencies repeatedly emphasized the need for more funding to support climate actions. They highlighted opportunities to generate this funding, including road pricing—which at its most impactful, funds transit to provide alternatives to priced trips—and programs like Portland's Clean Energy Fund, which supports climate projects in the city of Portland using fees levied on large businesses.

Help people navigate the many different incentives and programs that are available to help make buildings more efficient. As mentioned above, there are already a variety of overlapping federal, state, and utility-led funding programs to support energy efficiency in new and existing buildings. It can be challenging for people to figure out which of the many available programs apply in their community and/or to their specific project. Local and regional agencies can extend the benefits of these existing programs by helping people identify and apply for the programs that are available to them and combine incentives from multiple programs to cover the full cost of their project.

Act early to deliver more benefits for less money. Implementing climate actions in the near-term (i.e., beginning in the next 5 years) produces greater climate benefits at lower cost than doing so in the medium- or long-term. Many of the actions in the CCAP improve buildings or transportation infrastructure, both of which last for decades, and designing or requiring new projects to reduce emissions from the outset delivers more benefits at lower cost than retrofitting projects in the future. Over time, state policies in Oregon and

Washington will require gasoline, electricity and vehicles to become cleaner, so early action reduces more emissions by displacing dirtier sources of energy.

Coordinate education and outreach with new climate investments. Agencies in the metropolitan area run successful programs that help people make low-carbon transportation choices, save energy in buildings, and recycle or compost. These programs are most effective when accompanied by new investments, such as transit lines or energy incentive programs, that give people the opportunity to change their behavior. Outreach and education programs contribute to the success of nearly every action in the CCAP, and the sections for individual actions describe how these programs can best support successful implementation.

Collaborate with businesses, residents and state agencies to address the risk of some actions increasing the cost of living or having other potential unintended consequences. Most of the actions in the CCAP save people money, but some actions with significant climate benefits—including implementing road or parking pricing and creating requirements to build more energy-efficient buildings or use lower-carbon materials—risk increasing people's cost of living or could have other unintended consequences. These actions are essential to meeting climate goals, but they also feel unacceptable to many because the Portland-Vancouver metropolitan area is already experiencing a housing shortage that is increasing the cost of living for everyone, particularly vulnerable residents. Agencies should work with residents and businesses who may be impacted by these actions to proactively address potential cost increases and other unintended consequences. Portland's Pricing Options for Equitable Mobility task force is an example of cross-sector coordination to address the impacts of road pricing. Collaboration with builders, residents, utilities, and state agencies, who have the authority to set building codes, helps to advance many actions that reduce emissions from buildings.

Share information and assistance to support partner organizations' climate planning efforts. Keeping climate action plans up to date can be challenging. Updating GHG inventories is costly and labor-intensive, analytical practices are constantly evolving, and it takes diligent effort to track the trends and state/federal actions that local and regional agencies' opportunities to reduce emissions. Sharing information—potentially including GHG inventory data, new tools for analyzing the costs and benefits of climate actions, updates on the impacts of changing trends and policies, and information on best practices in implementing climate actions—can help partner organizations take a coordinated, effective approach to reducing emissions.

Potential next steps for Metro

Many of the Best practices above highlight the value of collaboration, coordination, and pooling resources to share information, create new programs and leverage funding opportunities. Metro specializes in this type of work within its service area and already oversees many committees and programs that relate to different actions in the CCAP. During development of the CCAP partners suggested many ways in which Metro could act in the short term to lay a strong foundation for continued CCAP implementation. These potential next steps are listed below.

General

- Continue to track climate-related funding opportunities and coordinate with partner organizations to pursue them, using the CCAP as a framework to prioritize what projects to apply for when opportunities become available.
- Track and report on the implementation of climate actions in the Metro region, as well as changes to state policies and programs that might affect progress toward climate goals. The grant that funds the CCAP provides resources for Metro to track progress in implementing the plan through August 2027.
- Provide information to support local climate planning efforts. This could include:
    - GHG inventory data, or insights drawn from state/local inventories
    - Guidance on analyzing the impact of public decisions on GHG emissions
    - Examples of successful climate work from the Metro region
    - Information on trends and policy changes that affect progress toward climate goals can be more effective and useful.
- Promote the CCAP as a source of information and guidance for local climate action plans.
- Continue to convene partner organizations, building on the Climate Partners' Forum, to coordinate on advancing the actions in the CCAP.

Transportation

- Advocate for more resources to build the transit, bicycle and pedestrian network envisioned in the Climate Smart Strategy and Regional Transportation Plan.

- Implement recommendations from the Future Vision update and continue to support local efforts to create communities with easy and affordable access to jobs, shops, and services.
- Support local partners in implementing CFEC requirements in local transportation system plans and community plans, including parking reform.
- Maintain or increase funding for Metro's Transit-oriented Development program, Regional Travel Options program and other programs that support actions to reduce transportation emissions.
- Continue to track teleworking levels and impacts of efforts to increase teleworking. Teleworking can have significant GHG benefits and is not well captured by Metro's travel model or other analysis tools.
- Continue to explore and advance road pricing as a way to fund the region's transportation system, including methods of pricing that do not rely on the state for implementation.
- Strengthen processes and requirements to prioritize projects that benefit the climate in the Regional Transportation Plan.

Buildings

- Participate in state efforts to coordinate existing energy efficiency programs and incentives and help people better access these programs.
- Advocate for changes that make it easier for local governments to adopt Oregon's stretch green building code in the short term, and that strengthen energy efficiency requirements in building codes over the long term.
- Pilot test a technical assistance program to help low-income people and other vulnerable people identify and access energy efficiency programs and incentives that can benefit them.
- Identify resources for Metro to implement best climate practices in reducing energy use at its own facilities and share lessons learned with partner agencies.
- Convene a cross-sectional committee to identify ways of reducing emissions from buildings without impacting housing costs or supply.

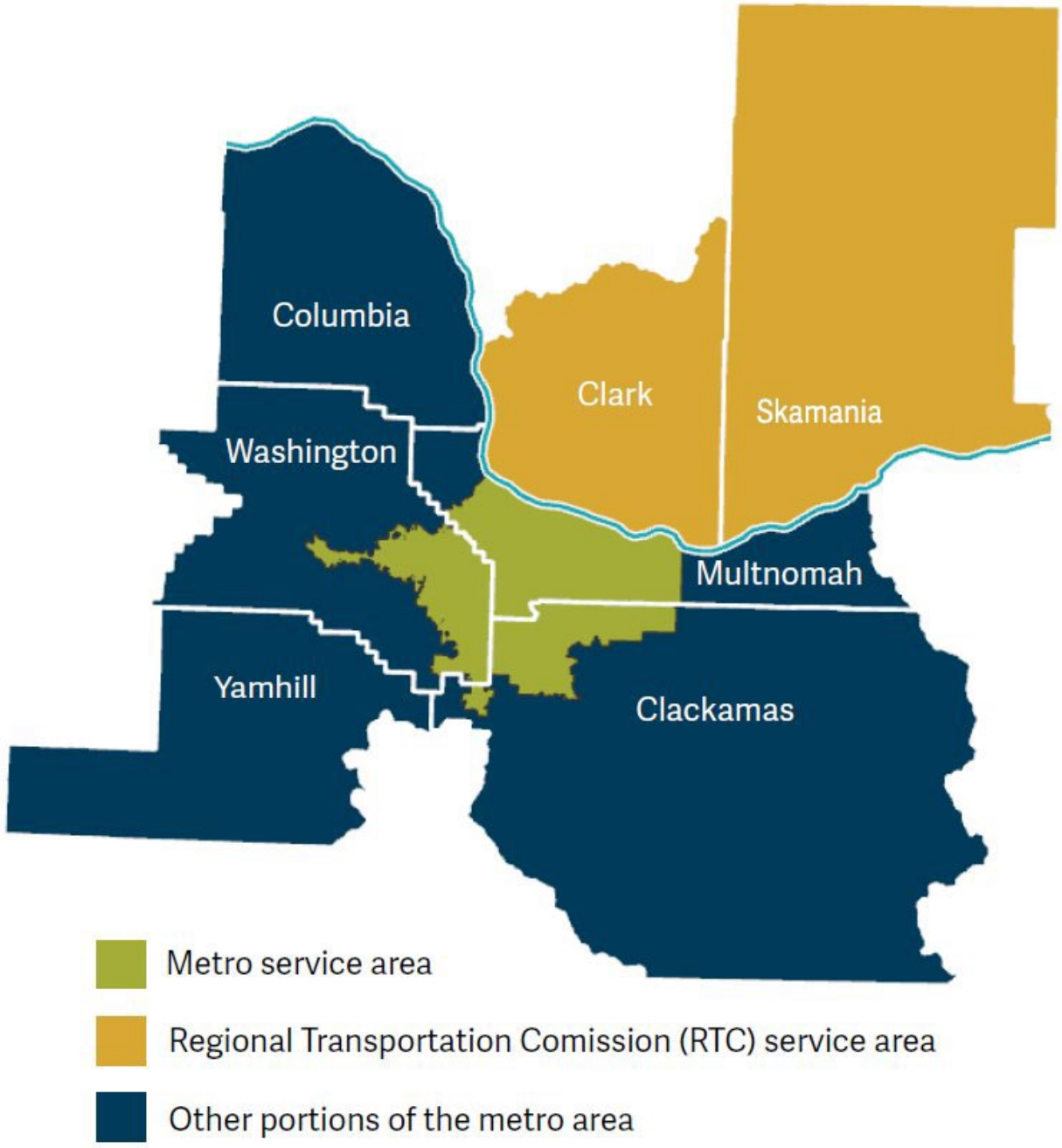
Food, goods and services

- Secure sufficient resources to support effective implementation of the Regional System Facilities Plan.
- Identify and allocate resources for Metro to adopt best climate practices across its facilities and operations, while documenting and sharing lessons learned.
- Strengthen operational capacity and invest in equipment to efficiently sort waste and keep materials out of landfills.
- Participate in state-led efforts to reduce consumption-based emissions and identify additional actions to reduce those emissions.

Geographic scope of analyses

The actions below are applied at different geographic scales based on which agencies have the authority and resources to implement them and on where they produce the most benefits. **Figure 11** shows the different scales used to analyze these actions.

Figure 11. Geographic scope of CCAP analyses



There are three different geographic scales:

1. **Portland-Vancouver metropolitan statistical area (MSA):** The Portland–Vancouver MSA, as defined by the U.S. Census Bureau, includes five counties in Oregon – Multnomah, Washington, Clackamas, Yamhill, and Columbia – and two

counties in Washington – Clark and Skamania. This scale is for actions that are suitable across both urban and rural contexts, such as improving building efficiency and building active transportation infrastructure.

2. **Urbanized areas:** This includes the urbanized areas that are within the planning boundaries of the region's two metropolitan planning organizations (MPO), which are responsible for coordinated transportation planning in urbanized areas. The two MPOs are Metro (whose planning boundaries cover the urbanized portions of Multnomah, Washington, and Clackamas counties in Oregon) and the Southwest Washington Regional Transportation Commission (RTC) whose planning boundary covers Clark County in Washington. This scale is for actions that are best suited for more densely developed areas with high concentrations of people and jobs, such as implementing transit corridors, TOD and compact development/land use strategies.
3. **Metro service area:** This area covers Multnomah, Washington, and Clackamas counties in Oregon, which includes 24 cities and unincorporated areas within the Metro service area boundary. These actions are tailored to the unique governance, planning, and implementation capabilities of Metro, which has unique opportunities to reduce emissions in transportation (due to federal clean air requirements and state requirements to address climate goals in local and regional transportation plans) and waste (due to Metro's regional management of the solid waste system).

Transportation actions

Implement planned transit service

Overview

Transportation accounts for the largest share of the metropolitan area's GHG emissions, and local agencies have a history of collaborating to reduce these emissions. Increasing and improving transit service is identified as a critical climate action in almost every adopted local and regional climate action plan in the MSA. Regional transportation plans (RTPs) for the urbanized areas of the region developed by Metro and RTC identify a variety of transportation projects that benefit the climate, advance other goals, and can be paid for with anticipated resources.

This action implements the transit projects identified in these plans. These projects cover a variety of capital investments and operational costs, such as purchasing new buses

and replacing ones that are out of date, expanding or updating facilities like transit centers and bus garages, improving access to MAX and bus stops, constructing transit priority treatments, and adding service hours. This action focuses on the urbanized areas of the region, which are where there is the greatest potential for transit to reduce emissions.

Contribution to GHG reduction

Shifting trips from driving to transit is one of the most effective strategies to reduce GHG emissions from transportation because transit can substitute for longer driving trips. Expanding and enhancing transit facilities, improving multimodal access to transit, and increasing transit service are all effective strategies to draw new riders to transit that can significantly reduce GHG emissions.

Metro's Climate Smart Strategy (2014) highlights the region's longstanding and evolving commitment to prioritizing transit and establishes that making transit more accessible and convenient effectively reduces GHG emissions.

Implementation

Related plans, projects, and resources

The RTPs developed by Metro and RTC guide the implementation of this action. These plans, which are created in collaboration with local partners and communities, guide long-term transportation investments in the urbanized portions of the metropolitan area. The federal government requires regional planning agencies in urban areas to create 20-year RTPs, update them every five years, and include a list of financially constrained projects for which funding has already been dedicated or is expected to be available. Since people routinely travel between the Oregon and Washington sides of the metropolitan area, Metro and RTC collaborate to ensure that their RTPs reflect each other's transit projects. Several of these projects are already underway or completed, including new bus rapid transit service in the Vancouver area and planning projects to improve transit service and access on key corridors in the Metro service area.

Though not required, Metro's RTP also identifies a list of short-term constrained projects that can be implemented before the next update and a list of strategic unconstrained projects that reflect priorities for any additional funding that should become available. In addition, Metro's RTP is required to analyze the combined impact of state, local, and regional projects on vehicle miles traveled and greenhouse gas emissions—including state plans to price roads in the metropolitan area, which are discussed in Oregon's Statewide Transportation Strategy. Metro's 2023 RTP update explored a scenario where

pricing revenues are reinvested in transit—which would ensure that people who are priced out of driving have affordable and convenient transit options.

Transit agencies and local governments in the metropolitan area are already working to implement the RTP transit vision. TriMet, the metropolitan area's largest transit provider, developed the Forward Together service concept to meet post-pandemic travel needs, increase ridership, and expand service. The concept proposes to expand the Frequent Service bus network (i.e., buses every 15 minutes), extend bus service to new areas and expand weekend service, add more local bus service running every 30 minutes, and add new bus lines serving areas that are currently far from transit.

Local governments are also working to redesign streets in order to prioritize transit. For example, Portland's Enhanced Transit Corridors Plan (2018) and the Rose Lane Project focus on creating dedicated bus lanes, high-quality infrastructure, and support the City of Portland's transportation and climate goals and policy intended to shift transportation away from single-occupancy vehicles to transit, cycling, and walking.

Resource needs and funding sources

Improving transit service requires both capital investments in transit vehicles, streets, transit stations, and bus stops and long-term funding to operate and maintain transit services and systems. Ongoing funds are needed to cover the maintenance of vehicles and transit facilities and operation costs, such as the salaries of drivers and transit operators and fuel. There are several dedicated sources of funding for transit capital projects, but fewer sources for ongoing operations.

Transit projects that are in regional transportation plans are eligible for state and federal funding, including:

- Federal Transit Administration (FTA)'s Capital Investment Grants (CIG) program, which supports planning, construction, equipment, and accessibility investments for maritime, rail, and transit projects. CIG applications are accepted on a rolling basis with individual project awards ranging from several million to over $1 billion.
- Metro's Regional Flexible Fund Allocation (RFFA) program distributes federal funds from the Surface Transportation Block Grant (STBG) program and Congestion Mitigation and Air Quality (CMAQ) program to regional transportation projects. The latest RFFA funding cycle includes a transit bond designed to support capital improvements to transit corridors and create a local match for capital investment grants.

- Metro and TriMet's Better Bus Program includes one-time funding for capital improvements to improve streets and traffic signals and help transit operate quickly and more reliably. It is unclear whether further rounds of this program will be funded.

Locally, transportation system development charges (SDCs), traffic impact fees, and local option sales taxes can be used by local governments to fund transit capital projects, and are often used to provide matching funds for the sources listed above.

To support transit service, agencies in the region rely on several different ongoing revenue sources, including federal and state formula funds, regional payroll taxes, and transit agency farebox revenues. The lack of available funding to operate new service is a significant barrier to implementing this action.

In addition, agencies throughout the metropolitan area offer transportation demand management programs, such as Metro's Regional Travel Options program, that help people take advantage of opportunities to walk, bike, or take transit. These programs help contribute to the success of new transit service by making sure people are aware of it and know how to use it, and sometimes even offer free transit passes or other financial incentives for riders.

A variety of resources are also available to help agencies prioritize and plan for transit investments. These resources are discussed below.

Implementation responsibilities and authority

Transit agencies are primarily responsible for designing and operating transit service. Metropolitan planning organizations play a role in identifying and planning new or increased service and by identifying and funding capital improvements that support adding service. Cities and counties are responsible for implementing these capital improvements.

Implementation recommendations

Through engagement and research, the CCAP team identified many ways for local and regional agencies in the metropolitan area to implement this action effectively and to the benefit of all, including:

- **Seek new funding sources for transit service**. The biggest barrier to improving transit service is that there aren't enough funds available to build and operate new service—which is particularly costly for high-quality transit service that runs

frequently throughout the day, which can be especially effective at reducing GHG emissions.

- **Focus first on improving corridors with high ridership potential.** These corridors typically serve areas with lots of homes, jobs, and destinations that generate ridership, and higher ridership yields greater climate benefits. Metro's High Capacity Transit Strategy and C-TRAN's Transit Development Plan identify these corridors for the urbanized portions of the metropolitan area.
- **Prioritize projects that are ready for implementation.** Improving transit service can be expensive and time-intensive, and the escalating cost of materials means that project delays can be very costly. Advancing projects that are transit-ready—i.e., that have undergone the necessary planning for both service and capital projects and that have identified the necessary matching funds to move forward with federal funding—is critical to reducing climate emissions quickly and cost-effectively.
- **Take a coordinated approach in places that lack transit service**. In order to fully implement this action, agencies need to better serve the many communities in the metropolitan area that currently lack adequate transit service. At the same time, these communities often lack the transit-supportive land uses and street designs needed to unlock the benefits of high-quality transit service. In order to address this, these communities often need to both update land use and transportation plans to be more transit-supportive (which can be funded by programs such as Metro's 2040 Planning and Development Grants and Oregon's Transportation and Growth Management (TGM) Planning Grants) in coordination with updates to transit agency service plans, and may need to consider innovative approaches to transit service (such as those discussed by Metro's Community Connector Transit Study). Metro has also prepared a transit-supportive checklist and toolbox for use by local governments. Regional agencies can help partners coordinate to address these overlapping needs.
- **Continue to invest in transportation demand management programs.** The metropolitan area has a robust tradition of conducting outreach and education to help people make the most of their transportation options. Outreach and education efforts are especially effective when they help people use newly available options or are responding to changing conditions in their lives or on the transportation system—including new transit service. Maintaining these programs ultimately increases the climate benefits of transit by boosting ridership.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. These scenarios were based on the improvements to transit service and the cost of transit projects contained in Metro's RTP, which includes transit projects in Clark County as well as the Metro service area. The low scenario represents the improvements to transit service that can likely be funded with anticipated revenues. The medium and high scenarios explore how the region could further improve transit service if additional resources were available.

Table 9 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 12** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

Build new bicycle and pedestrian facilities

Overview

This action involves building new bicycle and pedestrian facilities that create safer, more comfortable, and more connected routes for people walking and biking. Examples of bicycle and pedestrian facilities include bike lanes, protected bike lanes, bike boulevards, bicycle and pedestrian bridges, multiuse paths, sidewalks and crosswalks, curb extensions, and raised medians.

Contribution to GHG reduction

By improving safety, access, and convenience, bicycle and pedestrian facilities encourage more people to choose active transportation instead of driving. Shifting trips from cars to walking and biking helps reduce greenhouse gas emissions, improve air quality, and support public health, and prioritizing investments in areas with limited existing infrastructure can also advance equity goals. Metro's Climate Smart Strategy (2014) highlights the region's longstanding commitment to making walking and biking safe and convenient in all communities.

Implementation

Related plans, projects, and resources

Local transportation plans typically identify and advance bicycle and pedestrian projects; state and regional plans may also include longer-distance bike/ped trails or bike/ped facilities on key corridors. Oregon and Washington policies encourage these plans to

focus on bike/ped improvements. These include Oregon's "Pedestrian and Bicycle Bill" (ORS 366.514), which requires many types of transportation projects to include bicycle and pedestrian facilities, Washington's Complete Streets law, which requires that state-led transportation projects include bike/ped facilities, and Oregon's Climate-Friendly and Equitable Communities requirements, which require transportation plans to demonstrate that they reduce driving, creating an incentive to prioritize bike/ped facilities.

These plans are the basis for regional plans like Metro's Regional Transportation Plan (RTP) (2023), which is developed in collaboration with local partners and communities, and which guides transportation investments in the Portland metropolitan area. The federal government requires regional planning agencies in urban areas to create 20-year RTPs, update them every five years, and include a list of financially constrained projects for which funding has already been dedicated or is expected to be available, including bicycle and pedestrian projects on regional facilities. Metro's RTP also identifies a list of short-term constrained projects that can be implemented before the next update and a list of strategic projects that reflect priorities for any additional funding that should become available. Metro's Regional Active Transportation Plan (ATP) (2014) takes a financially unconstrained look at what type of bike/ped network is necessary to meet the region's needs. Even though these documents only cover regional bike/ped facilities, they are good proxies for estimating the needed improvements to the local bike/ped network as well, and good sources of information on the cost of these improvements.

In addition, Metro's Designing Livable Streets and Trails Guide offers guidance on how to best design safe, healthy, and multimodal streets in different contexts, with a focus on implementing best practices in bicycle and pedestrian design.

Nearly every climate action plan reviewed for the CCAP—including plans from Beaverton, Hillsboro, Lake Oswego, Milwaukie, Portland, Tualatin, Vancouver, Metro and Multnomah County—includes actions related to improving bicycle and pedestrian facilities. In 2025, the SW Regional Transportation Council adopted a Complete Streets Policy for Clark County that will also help advance implementation of this action.

Resource needs and funding sources

Active transportation projects require capital investments and funding for long-term maintenance. These types of projects may also require easements to have enough space to build these facilities.

Regional active transportation projects can be funded by state and federal funds, which are often programmed at the regional level, while local active transportation projects often require local revenues.

- At the regional level, Metro oversees the Regional Flexible Fund Allocation (RFFA) program, which distributes federal funds, like the Surface Transportation Block Grant (STBG) program and Congestion Mitigation and Air Quality (CMAQ) program, to regional transportation projects, with a focus on funding bicycle and pedestrian projects. Similarly, the Southwest Washington Regional Transportation Commission (RTC) selects active transportation projects for funding through the Transportation Alternatives program.
- Both Oregon and Washington administer Safe Routes to School (SRTS) programs that fund active transportation projects to make streets surrounding schools safer. Metro operates a regional SRTS grant program. These programs can support some active transportation projects that have climate benefits, but their limited resources and geographies (i.e., funds must be spent near schools) limit their potential to meet the needs that this action addresses.
- In 2023, Metro received a U.S. Department of Transportation (USDOT) Safe Streets and Roads for All grant that funds enhanced crash data analysis and identifies a list of quick -build pedestrian safety projects. This grant will be used to help transportation projects that benefit safety get more prepared for implementation, but additional resources will be needed to complete build-out of these projects. The resulting projects will be focused on locations with high crash rates within the Metro service area. These sometimes align with locations where there are opportunities for mode shift and GHG reduction. In 2025, Metro released a Community Quick Build and Demonstration Projects Guide that provides implementation details for rapid safety improvements that communities can deploy quickly and cost-effectively. Many of these improve bicycle and pedestrian infrastructure and accessibility.
- Oregon's Bicycle and Pedestrian Bill, enacted in 1971, requires the provision of sidewalks and bikeways when building or rebuilding a road. This applies to the Oregon Department of Transportation (ODOT) as well as cities and counties. The law also requires ODOT and local governments in Oregon to spend at least 1% of their State Highway Fund dollars on walking and biking.

- Washington's Complete Streets law requires the Washington State Department of Transportation (WSDOT) to dedicate one percent of all project budgets to funding bicycle, pedestrian, and transit access improvements. In 2025, the SW Regional Transportation Council adopted a Complete Streets Policy for Clark County. However, these policies only apply in the the Washington portions of the MSA.
- Other potential sources of funding for bicycle and pedestrian infrastructure can be found on the State of Oregon TGM website.

In addition, agencies throughout the metropolitan area offer transportation demand management programs, such as Metro's Regional Travel Options program, that help people take advantage of opportunities to walk, bike, or take transit. These programs help contribute to the success of bicycle and pedestrian projects by making sure that people are aware of these projects and know how to use them, as well as by funding signage, bike racks, and other light infrastructure.

Implementation responsibilities and authority

City, county, or state transportation agencies are responsible for planning and building most active transportation projects, which are located on the streets owned and operated by these agencies. Metro and special districts, such as parks and recreation districts, are sometimes involved in planning and building longer-distance bicycle and pedestrian trails that pass through green spaces.

Implementation recommendations

Through engagement and research, the CCAP team identified many ways for local and regional agencies in the metropolitan area to implement this action effectively and to the benefit of all, including:

- **Focus first on improving facilities in communities with high potential.** These communities typically have lots of homes, jobs, and destinations relatively close together, which makes it possible to make short trips via bicycling and walking.
- **Prioritize projects that are ready for implementation.** Building new bike/ped facilities—especially high-quality ones in busy locations, which often produce significant climate benefits—can be expensive and time-intensive, and the escalating cost of materials means that project delays can be very costly. Advancing projects have undergone thorough planning and that have identified the necessary matching funds to move forward with federal funding is critical to reducing climate emissions quickly and cost-effectively.

- **Seek new funding sources for bike/ped facilities**. Local and regional agencies have repeatedly found that there aren't enough funds available to build the bicycle and pedestrian networks that they envision.
- **Continue to invest in transportation demand management programs.** The metropolitan area has a robust tradition of conducting outreach and education to help people make the most of their transportation options. Outreach and education efforts are especially effective when they help people use newly available options or are responding to changing conditions in their lives or on the transportation system—including new bicycle and pedestrian facilities. Maintaining these programs ultimately increases the climate benefits of bicycle and pedestrian facilities by ensuring that they are widely used.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. These scenarios were based on the bicycle and pedestrian projects contained in Metro's RTP, and scaled up to capture needs in the parts of the metropolitan area outside of the Metro service area. The low scenario represents the bicycle and pedestrian projects that can likely be funded with anticipated revenues. The medium and high scenarios explore how the region could further improve bicycle and pedestrian facilities if additional resources were available.

Table 9 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 12** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

Implement regional and local land use plans

Overview

This action involves focusing growth in compact communities where people have easy access to transit, jobs, and other destinations. If more people in the region live or work in these areas, they will be able to make shorter trips and have more alternatives to driving to complete these trips. This action applies in the Metro service area, where state land use laws and regional planning processes create opportunities to plan and build these communities.

Metro is unique among regional agencies in that it has authority over land use, which includes setting an urban growth boundary for the cities and urban portions of the three

counties within Metro's service area. Metro's 2040 Growth Concept is a long-range plan developed in 1995 that identifies the centers and corridors that can best accommodate new growth in the region, and provides guidance on how these centers and corridors should continue to develop. The concept concentrates mixed-use and higher density development in communities that are well-served by transportation options and offer good access to shopping and employment. The 2040 Growth Concept is implemented by Metro in the Regional Framework Plan, the Urban Growth Management Functional Plan, and the Regional Transportation Functional Plan. Local governments in Metro's service area use their land use authority to implement the regional plans through their local plans.

Contribution to GHG reduction

Compact and mixed-use development that is connected to robust transit, pedestrian, and bicycle infrastructure makes transit, walking, and biking more accessible and convenient, which helps shift trips away from cars. Implementing adopted local and regional land use plans that support this type of development is highly effective at reducing GHG emissions. The benefits of this approach are evident in the fact that Portland-area residents typically drive less than people in other cities.

Creating compact communities is one of the most effective climate actions identified in Metro's Climate Smart Strategy (2014), and also in the CCAP.

Implementation

Related plans, projects, and resources

Oregon's land use laws are founded on Senate Bill 100, adopted in 1973, place restrictions on the provision of urban services in rural areas, which helps to focus growth inside of the urban growth boundaries maintained by Metro and other local governments in Oregon. Oregon's Climate-Friendly and Equitable Communities (CFEC) rules aim to further reduce GHG emissions by requiring local plans to focus development near transit where available, manage parking near transit to encourage transit ridership, and to demonstrate that local plan updates do not increase driving.

This action focuses on the Metro service area due to Metro's role in implementing Oregon's unique land use laws. However, it is important to note that Washington's Growth Management Act (GMA), enacted in 1990, also requires cities and counties to plan for and manage population growth in a way that is designed to encourage compact development, support access to transportation options, and reduce sprawl. The GMA requires linking land use and transportation planning and that transportation system

improvements be put in place at the same time land is developed. Though Washington's land use laws and processes are different than Oregon's, they also support compact development in metropolitan areas. Similar to Oregon, local governments in Washington State have responsibility for planning for their future growth through local comprehensive plans that serve as the basis for defining and integrating land use, transportation, capital facilities, public utilities, and environmental protection elements. RTC works with its local partners to ensure that local plans address the GMA requirements.

Metro's 2040 Growth Concept, as defined in the Regional Framework Plan, guides the form of regional growth and development within Metro's service area.[12] It reflects the region's vision to focus growth in existing urban areas and to only expand the urban growth boundary when necessary to meet forecasted growth. It calls for concentrating mixed-use and higher density development in urban centers (e.g., Portland central city, regional centers and town centers), station communities, corridors, and main streets that are well-served by transit and a well-connected street network that supports biking and walking for short trips. Employment lands serve as hubs for regional commerce and include industrial land and freight facilities for truck, marine, air and rail cargo sites that enable goods to be generated and moved in and out of the region.

Since 1995, cities and counties across the Oregon portion of the region have updated their comprehensive plans, development regulations and transportation system plans to implement the 2040 Growth Concept in locally tailored ways. The 2040 Growth Concept and adopted local plans provide the foundation for the Climate Smart Strategy adopted in 2014. In addition, Metro maintains population and employment growth forecasts, in collaboration with RTC, Clark County and Skamania County that are used as a basis for regional and local land use plans. This action uses the 2040 Growth Concept and these growth forecasts to estimate the level, location and form of future growth.

Resource needs and funding sources

Both Metro and state agencies offer grants to support plans that focus growth in compact communities. Metro's 2040 Planning and Development Grants support local planning efforts that implement the 2040 Growth Concept. The Oregon Department of Land Conversation and Development offers both Technical Assistance grants to create

[12] Though focused on the Metro service area, the 2040 Growth Concept does include some growth centers in Clark County, which were identified in collaboration with RTC and local governments.

infrastructure financing plans for areas with redevelopment or infill potential and Transportation and Growth Management (TGM) Planning Grants that support integrated land use and transportation planning to promote compact, mixed-use development supported by improved pedestrian, bicycle, transit, and multi-modal street facilities. Regional programs like Metro's Regional Flexible Fund Allocation (RFFA) program (discussed in more detail under previous actions) often fund active transportation projects in 2040 centers.

Implementing regional and local land use plans requires capital investment to finance new development and provide the necessary infrastructure and services—including sewers, sidewalks, parks, and transit. Infrastructure costs for new development are typically funded by city or county levied system development charges (SDCs).

Implementation responsibilities and authority

Local governments have the authority to implement land use plans through comprehensive planning, zoning, and development review processes in Oregon and Washington. Oregon laws require consistency between local and regional plans, and Metro collaborates with local agencies to align local plans with the Regional Framework Plan. Oregon's Department of Land Conservation and Development administers Oregon's land use laws statewide.

Implementation recommendations

Through engagement and research, the CCAP team identified many ways for local and regional agencies in the metropolitan area to implement this action effectively and to the benefit of all, including:

- **Coordinate land use and transportation planning and investment decisions**, which helps ensure that new development offers safe and convenient access to the places people need to go. Metro's Regional Transportation Plan (see Section 3.2.1) and related regional plans include policies and guidance on how to support implementation of the 2040 Growth Concept by tailoring transportation projects to address key needs in the areas where the concept prioritizes growth.
- **Update regional land use plans to address climate and other emerging issues**. Metro is currently updating its Future Vision, a guidance document that defines the preferred 50-year future for the region with respect to a wide range of topics, from land use, transportation and our economy to housing, climate, nature, arts and culture. The Vision was last updated in 1995, and the current update is an opportunity to define what the region's future should look like in a way that

addresses emerging themes and topics, including climate change. The update will include a review of how the 2040 Growth Concept has performed in the 30 years since it was adopted, which may yield insights about how the Concept can be updated.

- **Explore how to best align financial incentives with land use plans.** Acquiring land for new development and serving this development with parks, transit, and infrastructure can be costly, and costs are increasing with inflation. During development of the CCAP, some partners expressed concerns that increasing capital costs may be creating barriers to implementing land use plans by making development more expensive. These partners suggested that the right financial incentives could streamline the development of projects that reflect regional and local priorities, like high-density development in centers. This feedback highlights the importance of aligning financial incentives with land use plans in an era when the cost of development is increasing.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. The low scenario assumes that compact communities develop in a manner consistent with growth forecasts and historical trends. The medium and high scenarios explore the benefits of developing incentives, increased technical support, and other approaches to increase the amount of growth that occurs in compact communities.

Table 9 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 12** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

Implement transit-oriented development programs

Overview

This action involves implementing transit-oriented development (TOD) programs that focus the development of housing, jobs, services, and amenities within walking distance of public transit. These programs are particularly effective in reducing emissions in the Metro service area due to its high-quality transit network and to Metro's unique land use authority (discussed in the previous section.

Metro's Transit-Oriented Development Program supports the creation of high-density affordable and mixed-income housing near transit through grants, land banking, and partnerships with developers and community-based organizations. Cities like Portland, Gresham and Beaverton, which are well served by transit, use their land use plans to focus growth near transit. TriMet, the metropolitan area's largest transit agency, has technical assistance programs that support partnerships between public, private, and community groups to facilitate equitable development near transit.

Contribution to GHG reduction

TOD creates vibrant, walkable neighborhoods where people can easily access daily needs by walking, biking, or taking transit instead of having to rely on cars. Shifting trips away from cars reduces GHG emissions.

Implementation

Related plans, projects, and resources

Metro's Transit-Oriented Development Program supports the creation of high-density affordable and mixed-income housing near transit. The program's strategic plan, last updated in 2023, identifies priorities for where and how the program will invest in communities across the Metro service area. It also includes a thorough evaluation of how many units the TOD program has helped produce each year, which the CCAP uses to analyze the potential benefits of this action.

Some local and regional partner agencies in the metropolitan area also offer TOD programs that provide additional technical assistance to developers, complementing Metro's program. TriMet's longstanding TOD program is an important example; TriMet and Metro coordinate to focus their resources on key opportunities for development near transit.

Resource needs and funding sources

Significant levels of capital investment are needed to support dense residential, commercial, and mixed-use development near transit service. Public agencies will need to partner with private developers and community groups to ensure that development near transit meets community needs, including affordable housing and economic opportunities.

Implementing regional and local land use plans requires significant levels of capital investment to finance new developments and provide the necessary infrastructure and transit service. Developers typically seek loans and grants to build new projects that they

pay back with the proceeds once the building is occupied. Cities and counties typically recoup the cost of providing new infrastructure and services by imposing system development charges (SDC) on developers. Transit agencies rely on state and federal funding and farebox revenues to build facilities, purchase vehicles, and operate service, and local and regional agencies rely on a variety of sources to build bicycle and pedestrian facilities. These costs and potential funding sources to cover them are discussed in more detail in the descriptions of related CCAP actions (Implement regional and local land use plans, Implement planned transit service, and Build new bicycle and pedestrian facilities , respectively).

Implementation responsibilities and authority

Local governments hold primary authority over development neat transit, allowing them to shape where and how TOD occurs. Transit agencies build out the transit system and often coordinate with local and regional agencies to create opportunities for development near stations. Regional agencies support transit-oriented development by providing funding, setting regional growth and transportation priorities, and coordinating between jurisdictions to ensure TOD aligns with broader land use and climate goals.

Implementation recommendations

Through engagement and research, the CCAP team identified many ways for local and regional agencies in the metropolitan area to implement this action effectively and to the benefit of all, including:

- **Invest in Metro's Transit-Oriented Development program**, which has a track record of successfully creating new developments that demonstrably reduce GHG emissions, and of regular evaluation and strategic planning that ensures that it remains effective. The 2023 TOD strategic plan expanded the program's focus on land banking, a strategy that has demonstrated high impact results. By owning developable land near high frequency transit, the TOD program is able to require greater energy efficiency, and other climate-friendly design elements.
- **Update regional and local land use plans to reflect today's conditions**. Good planning near transit helps to pave the way for successful TOD. As discussed under the action above (Implement regional and local land use plans), local and regional plans need to be updated in order to reflect rising costs and changing preferences.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. These scenarios were based on the program evaluation included in the Metro's TOD Program's updated strategic plan, which includes information on the number of units the program builds each year. The low scenario assumes that the TOD program will continue to produce new units at the rate that it did during its least productive year of the five years evaluated (2023); the medium and high scenario use more productive years for the program as the basis for their assumptions.

Table 9 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 12** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

Expand electric bike and scooter sharing systems

Overview

Electric bike (e-bike) and electric scooter (e-scooter) sharing systems make fleets of these vehicles available for short-term rental within a defined service area. The City of Portland was an early adopter of bike share with its BIKETOWN system, which it recently upgraded to offer e-bikes and e-scooters (the latter of which are also available from private operators under the City of Portland's e-scooter Program). This draws companies to the metropolitan area who may be interested in operating in other communities. For example, Lime launched service in Tualatin through a 2022 pilot.

Contribution to GHG reduction

Electric bicycles and electric scooters can substitute longer trips than regular bikes and scooters. Expanding and enhancing e-bike and e-scooter sharing systems helps substitute for short driving trips.

Implementation

Related plans, projects, and resources

Metro's Emerging Technology Strategy (2018) identifies steps that Metro and other public agencies can take to harness and regulate the development of new transportation technology, such as electric vehicles and new mobility services like carshare and bike or scooter share. A follow-up analysis evaluated communities' suitability for e-bike and e-

scooter share based on factors like density, mix of uses, and bicycle network density; this action focuses on serving high-suitability communities and continuing existing services. Climate action plans from the cities of Portland, Tigard, and Vancouver all include e-bike or e-scooter share as a climate action.

Resource needs and funding sources

Private operators, especially those already operating in the City of Portland, sometimes are willing to pilot-test service in communities that have the right conditions for bikeshare. This requires staff time to administer programs and coordinate with operators.

Building new bicycle facilities helps make e-bicycles and e-scooters a more appealing travel option. Refer to that action for more information on needs and funding sources.

Implementation responsibilities and authority

Local governments have primary authority over the management and regulation of electric bike and electric scooter sharing systems.

Implementation recommendations

Through engagement and research, the CCAP team identified many ways for local and regional agencies in the metropolitan area to implement this action effectively and to the benefit of all, including:

- **Focus on implementing this action in the communities that are best suited for e-bike and e-scooter share.** These communities tend to be compact, with good access to jobs and destinations and safe, well-connected bicycle facilities.
- **Implement equitable pricing models.** Develop affordable pricing structures, including discounts for low-income users or subsidized programs, to ensure access for all.
- **Collaborate across silos.** Foster strong partnerships between operators, public agencies, and community organizations to understand needs of different neighborhoods, develop effective policies and ensure the successful integration of shared micromobility into the overall transportation network.
- **Integrate systems with public transit.** Explore opportunities to integrate shared micromobility with public transportation systems to create seamless and efficient multimodal travel options.
- **Continue to invest in transportation demand management programs.** The metropolitan area has a robust tradition of conducting outreach and education to

help people make the most of their transportation options. Outreach and education efforts are especially effective when they help people use newly available options or are responding to changing conditions in their lives or on the transportation system—including new e-bike and scooter-share systems. Maintaining these programs ultimately increases the climate benefits of these systems by ensuring that they are widely used.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. These scenarios were based on an analysis for Metro's Emerging Technology Implementation Study that rated communities based on their suitability for e-bike and e-scooter share. The low scenario assumes that e-bike and e-scooter share systems continue to operate in the current BIKETOWN service area. The medium and high scenarios assume that these systems expand to high- and medium-suitability communities within the region.

Table 9 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 12** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

Price and manage parking

Overview

This action involves pricing and managing parking, which involves charging drivers who park in certain spaces and setting time limits or other restrictions on parking. This is especially effective near high-quality transit stations, because it's easy for people to take transit instead of paying the cost of parking. Oregon's Climate-Friendly and Equitable Communities Rules require local agencies in Metro's service area to implement parking pricing and/or management of parking in areas that are well-served by transit.

Contribution to GHG reduction

Pricing and managing parking effectively reduce GHG emissions by increasing the cost of vehicle trips in a way that encourages drivers to take other modes, and by making more efficient use of existing parking spaces in a way that reduces the amount of cruising that drivers do in search of a parking space.

Metro's Climate Smart Strategy (2014) highlights parking pricing as a high-impact GHG reduction strategy.

Implementation

Related plans, projects, and resources

Oregon's Climate-Friendly and Equitable Communities (CFEC) Rules require local agencies in the Metro region to implement parking pricing and/or management in areas that are well-served by transit. These correspond to the Regional Centers, Station Communities, and Town Centers designated in Metro's 2040 Growth Concept. An analysis in Metro's Regional Transportation Plan estimated the increase in parking prices in these areas due to the CFEC rules. The CCAP uses this analysis to estimate the benefits of this action.

Resource needs and funding sources

Implementing parking pricing requires some up-front investment in signage, equipment, and program administration, but agencies typically recoup these costs through parking fees.

Implementation responsibilities and authority

Local governments have the authority to price and manage parking in most cases; transit agencies are responsible for pricing and managing parking on the lots they own next to transit stations.

Implementation recommendations

Extensive guidance on pricing and managing parking is already available from other agencies, including Oregon's Department of Land Conservation and Development, the City of Portland, and the Federal Highway Administration.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. These scenarios were based on an analysis of the impact of CFEC rules from Metro's 2023 Regional Transportation Plan (RTP). The medium scenario uses the same price assumptions as the 2023 RTP. The low scenario assumes no increase in existing parking prices, and the high scenario assumes additional price increases on top of those included in the RTP.

Table 9 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 12** highlights the key differences between the three

implementation scenarios for all actions in the document **Appendix 3** contains the full details of the analysis and these scenarios.

Offer discounted transit passes

Overview

This action captures the benefits of distributing free or discounted transit passes. This is one of many strategies that agency and community partners across the metropolitan area use to reduce driving through transportation demand management (TDM) programs. These programs fund a variety of other complementary activities, including providing materials and staff support to help people understand their travel options and providing shared bikes to help workers connect to the nearest transit station. This action applies to the Metro region, which is currently the only part of the metropolitan area where there are widespread programs to discount transit passes.

Contribution to GHG reduction

There is robust research demonstrating that decreasing the cost of transit leads to higher ridership, which translates into less driving and lower GHG emissions.

Implementation

Related plans, projects, and resources

The region's largest transit agency, TriMet, already offers reduced fares for seniors, youth, people with disabilities, people who qualify based on income, veterans and active-duty military. C-TRAN offers similar reduced fare programs and provides free access to local transit services in Clark County through its Youth Opportunity Program (YOP) for individuals 18 years and younger, and through its Heroes Program for veterans and active-duty military. SMART offers free transit service within the City of Wilsonville.

In addition, transportation management associations and community-based organizations distribute free transit passes to people who work in areas that are well-served by transit through support from TDM programs like Metro's Regional Travel Options program. Metro's Regional Transportation Plan captures these actions by applying discounts to transit trips—both general discounts to capture reduced-fare programs, and specific discounts to trips to areas that are rich in jobs and well-served by transit.

Resource needs and funding sources

This action requires subsidies to cover lost farebox revenues due to free and reduced-cost transit service. These are typically covered by transit agencies, local and regional agencies with TDM programs, or employers.

Implementation responsibilities and authority

Transit agencies have primary authority over implementing discounted transit pass programs, including setting eligibility criteria, pricing structures, and managing distribution. Local governments and major employers may also participate by subsidizing passes or incorporating them into transportation demand management approaches. In 2024, Metro published transportation demand management planning and implementation guidance and a toolbox of strategies to support local implementation actions.

Implementation recommendations

Through engagement and research, the CCAP team identified ways for local and regional agencies in the metropolitan area to implement this action effectively and to the benefit of all, including:

- **Continue to invest in transportation demand management programs.** The metropolitan area has a robust tradition of conducting outreach and education to help people make the most of their transportation options. These programs often fund transportation management associations or community-based organizations to distribute passes to people who need them most and are most likely to use them.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. Research shows a wide range of effectiveness for transit fare discounts, and these scenarios were based on the range of results shown in research.

Table 9 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 12** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

Maximize teleworking

Overview

Teleworking involves working from home or another off-site location part- or full-time instead of commuting to a central workplace. Teleworking has long been on the rise in the Portland-Vancouver metropolitan area. Even before the COVID-19 pandemic made teleworking the norm in many workplaces, the metropolitan area had higher teleworking rates than other ones. Prior to the COVID-19 pandemic, agencies relied on teleworking as a strategy for reducing congestion and emissions, and then during the pandemic teleworking became a public health strategy and surged. Teleworking levels remain high in the metropolitan area, and this action captures the resulting climate benefits, both from the natural increase in teleworking and the potential for agencies to continue to encourage teleworking.

Contribution to GHG reduction

By allowing employees to work from home or other off-site locations, teleworking and remote working decrease the number of vehicles on the road during typical commute times and offer flexibility for workers, supporting better work-life balance and potentially increasing job satisfaction and productivity.

Implementation

Related plans, projects, and resources

Metro's Regional Transportation Plan (RTP) (2023) guides transportation investments in the Portland metropolitan area through 2045. The 2023 RTP update included a scenario analysis to identify likely future levels of teleworking and understand the impacts of increased teleworking on vehicle miles traveled. The CCAP uses this analysis to estimate the benefits of teleworking.

Metro's Regional Travel Options (RTO) program funds and supports transportation demand management strategies to increase the use of travel options, which include carpooling, riding transit, and teleworking. In 2024, Metro published transportation demand management planning and implementation guidance and a toolbox of strategies to support local implementation actions.

Implementation responsibilities and authority

Public agencies routinely operate programs that encourage teleworking and other travel options.

Implementation recommendations

Through engagement and research, the CCAP team identified ways for local and regional agencies in the metropolitan area to implement this action effectively and to the benefit of all, including:

- **Continue to invest in transportation demand management programs.** The metropolitan area has a robust tradition of conducting outreach and education to help people make the most of their transportation options—including programs that focus on helping people telework to reduce commute travel.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. These scenarios were based on the low, medium, and high telework scenarios developed for Metro's 2023 Regional Transportation Plan update.

Table 9 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 12** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

Implement roadway pricing or fees

Overview

In Oregon, state agencies have concluded that road pricing is necessary both to meet climate goals and to continue to fund the transportation system. State plans also agree that pricing should be implemented first in Metro's service area, which has a robust transit network that offers people alternatives to priced trips, and which experiences a lot of congestion, which pricing can help to manage. For the most part, the state has the authority to implement road pricing and fees through tried and tested approaches like highway tolls and vehicle taxes or registration fees.

This action involves levying new fees and tolls on driving to encourage and fund the use of transit and other less carbon-intensive travel options in the Metro service area. Though this action would largely be implemented by the state of Oregon, it is important to include in the CCAP for two reasons. First, local and regional agencies would still need to play a significant role in providing the transit service, bicycle and pedestrian facilities, and travel demand management programs that are needed for pricing to be as effective, equitable,

and affordable for residents as possible. Second, pricing supports many other transportation actions in the CCAP—both by strengthening the incentives for people to shift from driving to transit, biking and walking, and potentially by revenues that can be used to fund additional transit service and transit, bicycle and pedestrian facilities.

Contribution to GHG reduction

Many different resources, including Metro's Climate Smart Strategy (2014), identify road pricing as a high-impact strategy to reduce climate and air pollution from transportation.

Implementation

Related plans, projects, and resources

Oregon Department of Transportation's (ODOT's) Statewide Transportation Strategy (STS) (2013) identifies several different pricing mechanisms that are necessary to meet state climate goals, including:

- Throughway pricing on grade-separated state and federal freeways with an average cost of up to $0.17 per mile.
- Additional fees on all driving of up to $0.22 per mile, which could include:
    - Road user charges that use in-vehicle technology to charge people a small fee for every mile that they drive. This would likely be achieved through a system like OreGo, which ODOT has been testing in the Portland area.
    - New fees on vehicles, such as registration or licensing fees.
    - Additional taxes on carbon, which would effectively amount to an increase in Oregon's gas tax.

Metro's Regional Transportation Plan (RTP) (2023) evaluated whether the Metro region meets climate targets set by the state of Oregon that aim to reduce per capita vehicle miles traveled by 30 percent below 2005 levels by 2045. These targets call for ambitious reductions in driving in part because they assume that the state will implement the extensive pricing described above. Metro's RTP analyzed the impact of different pricing scenarios that included some or all of the pricing mechanisms identified in the STS on vehicle miles traveled and on GHG emissions.

Recent attempts in Oregon to implement road pricing have suffered setbacks due to political controversy. In 2024, Oregon's Governor ordered ODOT to pause the Regional Mobility Pricing Project (RMPP), which was ODOT's flagship effort to price throughways in the Metro region. RMPP would have priced Interstates 5 and 205 within the region in order

to both manage demand and finance several major projects along these interstates. It faced particular concern over plans to toll throughway bridges at the edges of the Metro region, where there are fewer transit options available. In addition, the Oregon legislature failed to pass a transportation funding package that potentially included tolls and other fees during the 2025 legislative session.

In spite of these setbacks, ODOT continues to explore how to implement tolling in the Metro region. Several projects in the Metro region have explored how to best implement tolling and address concerns about affordability, equity, and the limited availability of transit and other alternatives, including:

The City of Portland's Pricing Options for Equitable Mobility (POEM) Task Force, which issued a 2021 report that explored the equity impacts of various types of pricing, including tolls and road user charges, as well as recommendations to ensure that low-income people and other vulnerable travelers benefit from pricing.

Metro's Regional Congestion Pricing Study (2021), which explored various pricing mechanisms (e.g., tolls, per-mile fees, and cordon pricing) and ways of applying these mechanisms to the region's transportation network to identify how pricing can best meet the region's climate, mobility, and equity goals. and high impact strategy.

Resource needs and funding sources

Roadway pricing programs require substantial upfront investments in planning, public outreach, and system design, as well as capital funding for tolling infrastructure, enforcement technology, and payment systems. Ongoing resources are needed for operations, maintenance, data management, and program administration. Successful implementation also often involves increasing funding for transit and other alternatives to priced trips.

The agencies that implement pricing are typically able to recoup the costs of planning, building, and administering pricing systems through the fees that they charge. Funding alternatives to priced trips is more complicated, because it involves coordinating work and distributing funds across the many different local and regional agencies involved. This is especially challenging in Oregon, where the state constitution prohibits the revenues from fees on driving from being spent on transit, biking and walking.

Implementation responsibilities and authority

State agencies have the authority to price and manage state highways, to levy taxes and vehicle registration fees, and to build transit, biking and walking infrastructure along state

highways. Local and regional agencies have the authority to implement other forms of pricing, like parking pricing (see Price and manage parking) and cordon pricing, and are responsible for operating transit service, administering transportation demand management programs, and building transit, bicycle and pedestrian facilities on roads outside of the state highway system.

Implementation recommendations

Through engagement and research, the CCAP team identified many ways for ODOT, WSDOT and local and regional agencies in the metropolitan area to implement this action effectively and to the benefit of all, including:

- **Reinvest pricing revenues in transit and other alternatives.** Pricing can reduce GHG emissions both by disincentivizing driving and by funding the expansion of the transit, bicycle and pedestrian networks. Pricing is most effective and equitable when it does both simultaneously, because this allows people plenty of options to taking a priced trip by car. Reinvesting pricing revenues in transit and other alternatives helps to meet the region's climate goals while charging more affordable prices. For local and regional governments, this means advocating to lift the restriction in the Oregon constitution on reinvesting road revenues in other modes.
- **Provide rebates, discounts and/or exemptions for people with low incomes and people with disabilities.** This is critical to ensuring that tolling doesn't disproportionately impact people who may struggle to cover the costs or who physically need to drive.
- **Vary tolls by time and location.** Charging more when or where there is high demand and less where there is low demand helps to reduce congestion and maximize the climate and equity benefits of tolling.
- **Continue to invest in transportation demand management programs.** The region has a robust tradition of conducting outreach and education to help people make the most of their transportation options. Outreach and education efforts are especially effective when they help people use newly available options or are responding to changing conditions in their lives or on the transportation system. Pricing would likely create widespread interest in learning about alternatives to priced trips, and transportation demand management would help more people find the alternatives that work best for them, which would ultimately increase the climate benefits of tolling.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. The low scenario assumed that no additional pricing is implemented in the Metro region, which could happen if pricing efforts continue to face public opposition. The medium scenario includes the throughway pricing assumed in ODOT's STS, because ODOT's efforts have been focused on tolling throughways, which is a widely used pricing strategy in the U.S. The high scenario includes the additional fees assumed in the STS, which rely more on novel approaches to pricing and increase the cost of driving more significantly.

Table 9 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 12** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

Build high-speed rail

Overview

Over the past decade, transportation agencies across the U.S. have been exploring high-speed rail lines connecting major metropolitan areas to strengthen economies and reduce pollution—including along the Cascadia corridor connecting Greater Vancouver, British Columbia through Seattle and to the Portland-Vancouver metropolitan area. The Washington State Department of Transportation (WSDOT) has been planning for high-speed rail along the Cascadia Corridor, and Metro and other transportation agencies in the Portland-Vancouver metropolitan area are participating in this effort. High-speed rail will take a while to be built, but when it does it will provide a lower-carbon alternative to driving and flying for longer-distance trips for people throughout the metropolitan area.

Contribution to GHG reduction

Investing in high-speed rail reduces GHG emissions by shifting long-distance travel away from cars and airplanes to a cleaner, more efficient mode. By offering a fast, reliable alternative to driving or flying, high-speed rail decreases vehicle miles traveled and associated emissions, while also easing congestion on highways and at airports.

Long construction times are the main factor limiting high-speed rail's climate benefits. WSDOT estimates that high-speed rail between Portland and Vancouver will begin operating in 2035, which means that the project only delivers 15 years of climate benefits before 2050, which is the horizon year for the CCAP climate targets. Additional

construction and permitting delays, such as those encountered in California's efforts to build high-speed rail, would further diminish the climate benefits of this action.

Implementation

Related plans, projects, and resources

WSDOT's Ultra-High-Speed Ground Transportation Business Case Analysis (2019) is the most current document detailing the service, costs, and benefits of a potential Cascadia high-speed rail line. The analysis envisions a high-speed rail line that serves eight to ten station areas between Vancouver, BC and Portland, OR with connections to airports and local transit where feasible, which would allow passengers to travel between each place in under two hours.

This work is supported through federal funding and multi-state collaboration. In November 2024, the Federal Railroad Administration awarded almost $50 million in federal funding to advance planning work on the Cascadia high-speed rail program. In January 2025, the Oregon Legislature established the Cascadia High-Speed Rail Task Force through Oregon Senate Bill 715. The task force is a diverse stakeholder group responsible for assessing the feasibility, funding, land-use impacts, ridership potential, and benefits to constructing high-speed rail within the Cascadia region, which includes parts of Oregon and Washington.

Resource needs and funding sources

High-speed rail projects require extensive capital investment and ongoing funding for operations, maintenance, and system upgrades, WSDOT's analysis considered a mix of traditional funding actions to support high speed rail, including:

- Federal grants and funding from both the U.S. and Canadian Governments to purchase right-of-way and cover the capital costs of rail infrastructure.
- State transportation funds and taxes, including Oregon's Statewide Transportation Improvement Fund and potential new taxes in Washington
- New property taxes on businesses, which could be used to fund operations and maintenance of to pay off construction loans / bonds
- Farebox revenues to fund operations and maintenance.

Implementation responsibilities and authority

State and federal agencies have primary authority over the planning and construction of high-speed rail projects. Local and regional agencies can support implementation

through land use planning, station area development, and community engagement efforts.

Implementation recommendations

Through engagement and research, the CCAP team identified many ways for local and regional agencies in the metropolitan area to implement this action effectively and to the benefit of all, including:

- **Limit the number of high-speed rail stations** and **invest in complementary local/regional transit service** to maximize benefits. In order to draw enough riders to deliver the anticipated climate benefits, high-speed rail needs to save people significant amounts of time compared to driving or flying. WSDOT's service concept involves regular service that makes the journey from Vancouver, BC to Portland in 2 hours and 4 minutes and express service that does so in 1 hour and 45 minutes. In order to maintain these travel times, WSDOT's concept only includes 7 regular stations and 3 express stations. Under this concept, high-speed rail is much quicker than the 5.5 hour free-flow travel time for the same journey by driving—but WSDOT's analysis does not consider the time needed for travelers to travel between a high speed rail station and their ultimate origin/destination. Strong regional transit connections to high-speed rail stations are critical to helping people make their full high-speed rail trip by transit quickly and conveniently.
- **Streamline construction and permitting to the extent possible**. Delays will increase the cost and reduce the benefits of high-speed rail, especially as the cost of construction materials continues to rise.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. These scenarios were based on WSDOT's analysis of the costs, benefits and timeline of high speed rail. The low scenario assumes that high speed rail would encounter significant delays, similar to what other U.S. high speed rail projects have experienced and be completed in 2045 instead of in 2035 as anticipated. It also assumes that the costs of high speed rail will be at the high end of the range estimated by WSDOT. This means that high speed rail produces fewer, less cost-effective climate benefits between completion and 2050, which is the horizon year for the CCAP. The medium and high scenarios assume high speed rail will be

completed earlier and at lower cost, which increases climate benefits and cost-effectiveness.

Table 9 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 12** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

Building actions

State-level policy in Oregon and Washington directly shaped the implementation assumptions of the building emission reduction actions in this CCAP. Clean electricity requirements will reduce the carbon intensity of the grid to zero over the coming decades, which means that actions that reduce emissions from buildings have much greater impact the sooner that they are implemented, because taking action today helps to reduce or displace electricity from high-carbon sources. Additionally, improvements to buildings last for a long time, so acting early increases their cumulative benefit.

One of the challenges of identifying and analyzing actions to reduce emissions from building energy is that there are no regional plans or processes to identify and prioritize resources and/or coordinate projects and policies in this sector. Instead of using existing plans to identify implementation scenarios for building energy actions, as the CCAP does for transportation and for some FGS actions, the CCAP identifies implementation scenarios for these actions by scaling up existing implementation actions.

Energy efficiency in existing homes

Overview

Improving energy efficiency in existing homes is a practical and cost-effective way to reduce greenhouse gas emissions while lowering utility bills and improving comfort. Weatherization measures like insulation improvements, air sealing, and window replacements help maintain indoor temperatures using less energy. Other changes, such as switching to LED lighting, installing smart thermostats, and upgrading to energy-efficient appliances (for example, dryers and refrigerators), also reduce energy use, especially during times of peak demand. Existing homes across the metropolitan area can benefit from these improvements.

Energy efficiency also provides co-benefits including indoor air quality and reduced strain on public energy assistance programs. Publicly sponsored weatherization and rebate

programs make these upgrades more accessible, especially for low- and moderate-income households. There are many existing programs that offer energy efficiency incentives for residents too, but not enough to meet demand, and the variety can be confusing. Local and regional agencies can offer additional incentives or enhance the impact of existing programs by helping people access the incentives that work best for their homes and connect with contractors.

Contribution to GHG Reduction

Energy efficiency reduces the need for energy (primarily electricity and natural gas) in homes, thereby reducing greenhouse gas emissions. Efficiency is an important part of greenhouse gas emissions reductions, because it provides ongoing reductions in demand for energy as other actions reduce the emissions intensity of the energy we use. It is also helpful for reducing the demand for electricity as more sectors continue to electrify and demand increases overall.

Implementation

Related plans, policies, and resources

This action builds upon a variety of existing programs that already support weatherization and efficiency within the metropolitan area. For example, Energy Trust of Oregon offers incentives for insulation, air sealing, windows, smart thermostats, and other efficiency measures for homeowners in both Oregon and Washington. Many utilities offer incentives, rebates, or free direct-install programs to promote home energy efficiency—which are often targeted at low-income homeowners and vulnerable housing types like manufactured homes and multi-family buildings.

Even with these existing programs, there aren't enough resources to meet the needs of the metropolitan area, and it can be challenging for people to figure out which of the many existing programs are available to them and meet their needs. Local agencies can invest in additional incentives for weatherization and efficiency and help people navigate and access the resources that are available, and work in partnership with community-based organizations to boost participation in marginalized communities.

Many other agencies in the metropolitan area include related actions in their climate action plans, including Milwaukie, Multnomah County, Gresham, Portland, Tigard, Tualatin, Beaverton, Hillsboro, Clackamas County, and Vancouver.

Resource needs and funding sources

As discussed above, there are many existing programs that also provide funding to support this action—too many to list here. State and federal agencies maintain resources summarizing available programs, such as:

- ODOE's webpage listing state and federal incentives available in Oregon.
- Resources from US EPA listing state and federal incentives available in Washington.
- Oregon's Climate Equity and Resilience Through Action program, funded through a $197 million grant from the Environmental Protection Agencies, funds a variety of new and existing state programs that help residents, businesses, and government agencies reduce GHG emissions. CERTA funds three programs that issue funding to community-based organizations to support people to weatherize homes:
- The Oregon Health Authority's Healthy Homes Grant Program: This program provides grants to community-based organizations and the Nine Federally Recognized Tribal Governments to work with households to weatherize homes. This program focuses on installing insulation and repairing windows and doors.
- Energy Trust of Oregon and Community Partner weatherization programs: These programs provide incentives for insulation installation and other home improvements for Oregon residents and tribal members who are utility customers of Portland General Electric, Pacific Power, NW Natural Gas, Avista Natural Gas and Cascade Natural Gas.
- The Oregon Department of Energy Weatherization Program: This program supports incentives for weatherization to low-income Oregon residents and tribal members who receive their electricity from consumer-owned utilities such as cooperatives, People's Utility Districts, or utility services provided by a municipality or local government agency.

Implementation authority and responsibilities

Utilities, non-profits, and public agencies all offer programs to help people upgrade to energy-efficient appliances, and community-based organizations are vital partners in helping these programs reach everyone. Since this action is incentive-based, it doesn't require any policy authority. A variety of organizations can contribute to implementation.

Implementation recommendations

Through engagement and research, the CCAP team identified many ways for local and regional agencies in the metropolitan area to implement this action effectively and to the benefit of all, including:

- **Help people navigate the many different resources that are already available**. Local and regional agencies can multiply the benefit of existing programs by helping people identify and apply for the programs that are available in their communities and apply to their projects.
- **Seek new sources of funding to expand existing incentive programs**. Though there are many incentive programs already available for appliance upgrades, there are not enough to meet demand. Most of these existing programs are funded by utility fees, and public agencies can explore new funding sources—potentially including new taxes and fees (such as those that support the Portland Clean Energy Community Benefits Fund, or PCEF), which includes several programs focused on residential energy efficiency, especially those that are challenging to reach with existing incentives) or local philanthropic organizations.
- **Move quickly to maximize climate benefits**. Housing lasts a long time and can cost a lot to heat and cool, so appliance upgrades save people more energy and money the sooner they are available and also reduce more emissions more effectively because the electricity that is available today is more carbon-intensive than the electricity that will be available in the future.
- **Focus on the most vulnerable housing types**. Manufactured or mobile homes and publicly supported multifamily housing units tend to be less energy-efficient and are typically home to lower-income people who especially benefit from saving money. Rental units are also more likely to be occupied by low-income people, and are much harder to reach with existing incentives, because landlords don't have an incentive to cover the cost of upgrades that save tenants money. Many utility-led programs already focus on these housing types, and agency programs can work to support widespread use of these programs.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. The scenarios assume that local and regional agencies offer additional technical support and incentives to help

improve energy efficiency. The low scenario involves implementing a public education and resource navigator program to help residents better take advantage of existing programs. This is assumed to result in efficiency retrofits in five percent of eligible homes within the metropolitan area. The medium scenario adds a small incentive to the public education and resource navigator program. This is assumed to result in efficiency retrofits in 10 percent of eligible homes within the metropolitan area. The high scenario adds a moderate incentive to the resource navigator program. This is assumed to result in efficiency retrofits in 20 percent of eligible homes within the metropolitan area.

Maximum potential for this action includes upgrading all existing homes and would achieve five times the reductions of the high scenario. This action interacts with the Installing electric appliances in existing homes action. weatherization decreases the potential gain from electrification and vice versa. Those interactions are accounted for in this analysis to avoid double counting the benefits of these two actions.

Table 10 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 13** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

As discussed at the beginning of the Building actions subsection, there are no local or regional plans that provide cost estimates for this action. To estimate costs, Metro assumed that:

- Upfront costs for energy efficiency projects are incurred in the year a retrofit happens, and range from $20 to $150 per MWh for different activities.
- Savings from energy use reductions average 19 percent for each retrofitted home for the variety of weatherization and energy efficiency retrofits included, and are deducted in future years following the retrofit.
- The costs considered in this action are primarily carried by the resident or homeowner. To the extent incentives apply in the medium and high scenarios, those costs are borne by the public agencies that develop implementation programs.

Efficiency in commercial/industrial buildings

Overview

Improving energy efficiency in commercial and industrial buildings can significantly reduce greenhouse gas emissions and utility bills while improving comfort and performance. Commercial and industrial efficiency upgrades include improved heating and cooling systems, weatherization, lighting, compressed air, fans and blowers, energy management, material handling, refrigeration, pumps, and water management. These improvements reduce the amount of energy needed to operate buildings for commercial and industrial activities. This action applies to commercial and industrial buildings throughout the MSA.

Publicly sponsored weatherization and rebate programs make these upgrades more accessible, especially for small businesses. Local and regional agencies can offer additional incentives or enhance the impact of existing programs by helping property owners access the incentives that work best for their buildings and connect with contractors.

Contribution to GHG Reduction

Energy efficiency reduces the need for electricity and natural gas in buildings, thereby reducing greenhouse gas emissions. Efficiency is an important part of greenhouse gas reductions, because it provides ongoing reductions in demand for energy as other actions and statewide policies reduce the emissions intensity of the energy we use.

Implementation

Related plans, policies, and resources

Oregon's Climate Protection Program and Washington's Climate Commitment Act are "cap and invest" programs that both require reductions in the carbon intensity of fuels used in commercial and industrial buildings over time and generate funding for the needed investments. Local and regional programs compliment these requirements by helping to reduce demand for energy in commercial and industrial buildings. This is essential for achieving climate targets, particularly in the many cases where commercial and industrial buildings have unique needs and functions that can't be met with conventional energy efficient solutions.

This action builds upon a variety of existing programs that already support commercial and industrial efficiency within the metropolitan area. For example, Energy Trust of Oregon offers audits, technical assistance, and incentives across a wide range of

commercial building types. Many utilities offer incentives, rebates, or free direct-install programs to promote commercial energy efficiency.

Local agencies can further support implementation mainly by connecting property owners with technical resources and incentive programs. This can be especially beneficial when agencies have existing relationships with local companies that allow them to understand their unique energy needs.

Many other agencies in the metropolitan area include related actions in their climate action plans, including Milwaukie, Multnomah County, Gresham, Portland, Tigard, Tualatin, Beaverton, Hillsboro, Clackamas County, and Vancouver.

Resource needs and funding sources

Upgrading energy efficiency of commercial and industrial buildings can be particularly costly, because these properties often use large amounts of energy and have unique needs. In addition, the costs of this action are primarily carried by the building owner, while tenants receive the benefits, which means that many commercial/industrial property owners do not have any incentive to conduct upgrades.

In addition to the resources discussed above, Oregon's Climate Equity and Resilience Through Action program, funded through a $197 million grant from the Environmental Protection Agencies, funds a variety of new and existing state programs that help residents, businesses, and government agencies reduce GHG emissions. CERTA funds incentives for commercial building owners to improve energy efficiency and exceed the Oregon Department of Energy Building Energy Performance Standards. Projects could include updating building HVAC systems and other equipment.

Implementation authority and responsibilities

The authority to regulate emissions from commercial and industrial emissions rests with the state. Utilities and public agencies offer programs to help commercial and industrial property owners upgrade to energy-efficient appliances, and local governments can take action to expand and increase the impact of these programs. Since this action is incentive-based, it doesn't require any policy authority. A variety of organizations can contribute to implementation.

Implementation recommendations

Through engagement and research, the CCAP team identified many ways for local and regional agencies in the metropolitan area to implement this action effectively and to the benefit of all, including:

- **Develop relationships with local businesses and property owners to identify opportunities**. There are fewer one-size-fits-all energy efficiency solutions for commercial and industrial buildings, and owners of leased properties often aren't motivated to invest in these solutions because they don't save any money as a result of doing so. There are still opportunities to make these buildings more efficient, but they are dispersed and vary widely. Agencies can identify the best opportunities by understanding how businesses in their communities use energy and what efficiency strategies might benefit them.
- **Seek new sources of funding to expand existing incentive programs**. Though there are many incentive programs already available for appliance upgrades, there are not enough to meet demand. Most of these existing programs are funded by utility fees, and public agencies can explore new funding sources—potentially including new taxes and fees (such as those that support the Portland Clean Energy Community Benefits Fund, or PCEF), which includes several programs focused on residential energy efficiency, especially those that are challenging to reach with existing incentives) or local philanthropic organizations.
- **Move quickly to maximize climate benefits**. Housing lasts a long time and can cost a lot to heat and cool, so appliance upgrades save people more energy and money the sooner they are available and also reduce more emissions more effectively because the electricity that is available today is more carbon-intensive than the electricity that will be available in the future.
- **Focus on the most vulnerable housing types**. Manufactured or mobile homes and publicly supported multifamily housing units tend to be less energy-efficient and are typically home to lower-income people who especially benefit from saving money. Rental units are also more likely to be occupied by low-income people, and are much harder to reach with existing incentives, because landlords don't have an incentive to cover the cost of upgrades that save tenants money. Many utility-led programs already focus on these housing types, and agency programs can work to support widespread use of these programs.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. The scenarios offer additional education and resource navigators to existing programs and varying levels of incentives. They all assume that the scenario is implemented evenly over the course of 25 years. The

low scenario involves implementing a public education and resource navigator program to help building owners take advantage of existing programs. This is assumed to result in efficiency retrofits in five percent of eligible buildings within the MSA. The medium scenario adds a small incentive to the public education and resource navigator program. This is assumed to result in efficiency retrofits in 10 percent of eligible buildings within the MSA. The high scenario adds a moderate incentive to the resource navigator program. This is assumed to result in efficiency retrofits in 20 percent of eligible buildings within the MSA.

The scenarios for this action take a fiscally constrained approach. The maximum technical potential would be to implement weatherization and efficiency upgrades in all eligible commercial and industrial buildings and would achieve five times the reductions of the high scenario.

Table 10 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 13** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

As discussed at the beginning of the Building actions subsection, there are no local or regional plans that provide cost estimates for this action. To estimate costs, Metro assumed that:

- Upfront costs for energy efficiency projects are incurred in the year a retrofit happens and range from $45 per MWh for commercial buildings to $59 per MWh for industrial buildings.
- Savings from a reduction in energy use average 24 percent in commercial buildings and 18 percent in industrial buildings for the variety of weatherization and energy efficiency retrofits included, and are deducted in future years following the retrofit.

Installing electric appliances in existing homes

Overview

Replacing fossil fuel space and water heating appliances in existing homes with high-efficiency electric alternatives significantly reduces greenhouse gas emissions and improves indoor air quality.

Upgrading appliances provides many additional benefits to residents. Electric heat pumps provide both heat and air conditioning. As the Pacific Northwest experiences

more intense and frequent high heat days, air conditioning improves comfort and can save lives. Making the switch also offers homeowners long-term savings on energy bills and reduces exposure to pollutants from fossil fuel combustion that are linked to asthma and other health risks.

This action involves replacing inefficient space and water heating sources with electric heat pump furnaces and heat pump water heaters in residential buildings across the metropolitan area. There are many existing programs that offer incentives for homeowners to upgrade their appliances, but not enough to meet demand, and the variety can be confusing. Local and regional agencies can offer additional incentives or enhance the impact of existing programs by helping people access the incentives that work best for their homes and connect with contractors.

Contribution to GHG reduction

Air heating and cooling and water heating demand the highest share of energy usage for the average home. Replacing older appliances with more efficient versions can significantly reduce energy consumption, and unlike gas furnaces or water heaters, electric appliances can be powered by clean electricity—which means that shifting to these appliances delivers additional reductions as state-level clean electricity requirements take effect.

Implementation

Related plans, projects, and resources

This action builds upon a variety of existing programs that already support installation of energy efficient electric water and space heating systems within the metropolitan area. For example, Oregon Department of Energy (ODOE) provides funding through the Community heat Pump Deployment Program and Oregon Rental Home Heat Pump Program; Energy Trust of Oregon offers rebates for heating systems and water heaters; Clark Public Utilities offers programs for heat pumps and heat pump water heaters; Washington State offers tax credits for heat pumps and heat pump water heaters; and residents may also be able to take advantage of federal tax credits in some cases. Even with these existing programs, there aren't enough resources to meet the needs of the metropolitan area, and it can be challenging for people to figure out which of the many existing programs are available to them and meet their needs.

ODOE's Cooling Needs Study helps to illustrate the level of need for efficient and electric appliances, as well as where these appliances can have the greatest benefit. The study recommends electric heat pumps as the best technology to both properly heat and cool

homes, and identifies the vulnerable housing types where heat pumps can have the greatest benefits: manufactured/mobile homes, publicly supported multifamily housing, residential recreational vehicles, and agricultural housing. Existing programs typically only cover a small portion of the average costs (which the study estimates at $18,000 per household) of upgrading to an electric heat pump. People also have difficulty navigating the variety of funding and support programs, and selecting contractors and equipment.

Oregon and Washington's clean electricity requirements, which aim to eliminate emissions from electricity by 2040-45, also play a role in shaping this action—which will have less of a climate benefit as the electricity on the grid gets cleaner. Moving ahead quickly with this action will maximize the climate benefits.

Many other agencies in the region also prioritize this action in their climate action plans, including Multnomah County, Tigard, Tualatin, Portland, Vancouver, and Gresham.

Resource needs and funding sources

As discussed above, there are many existing programs that also provide funding to support this action—too many to list here. State and federal agencies maintain resources summarizing available programs, such as:

- ODOE's webpage listing state and federal incentives available in Oregon.
- Resources from US EPA listing state and federal incentives available in Washington.
- Oregon's Climate Equity and Resilience Through Action program, funded through a $197 million grant from the Environmental Protection Agencies, funds a variety of new and existing state programs that help residents, businesses, and government agencies reduce GHG emissions. One of these programs supports this action:
- Oregon Department of Energy's Heat Pump Purchase Program provides $2,000 heat pump incentives for homeowners, rental property owners, and new construction developers/builders to keep homes warm in the winter, cool in the summer and reduce the cost of utilities.

Implementation authority and responsibilities

As discussed above, utilities, non-profits, and state/local/regional agencies all offer programs to help people upgrade to energy-efficient appliances. Since this action is incentive-based, it doesn't require any policy authority. A variety of organizations can contribute to implementation.

Implementation recommendations

Through engagement and research, the CCAP team identified many ways for local and regional agencies in the metropolitan area to implement this action effectively and to the benefit of all, including:

- **Help people navigate the many different resources that are already available**. Local and regional agencies can multiply the benefit of existing programs by helping people identify and apply for the programs that are available in their communities and apply to their projects.
- **Seek new sources of funding to expand existing incentive programs**. Though there are many incentive programs already available for appliance upgrades, there are not enough to meet demand. Most of these existing programs are funded by utility fees, and public agencies can explore new funding sources—potentially including new taxes and fees (such as those that support the Portland Clean Energy Community Benefits Fund, or PCEF, which includes several programs focused on residential energy efficiency, especially those that are challenging to reach with existing incentives) or local philanthropic organizations.
- **Make any new funding as flexible as possible**. There are many different programs that help people buy a heat pump or efficient water heater. There are relatively few that cover the cost of the minor structural repairs and changes that are sometimes needed (especially in homes with deferred maintenance) to install these appliances. This can be a barrier to providing efficient appliances for the homes and people who need them the most; providing flexible funding that can cover the full range of costs associated with appliance upgrades helps to overcome this barrier.
- **Move quickly to maximize climate benefits**. Housing lasts a long time and can cost a lot to heat and cool, so appliance upgrades save people more energy and money the sooner they are available, and also reduce more emissions more effectively because the electricity that is available today is more carbon-intensive than the electricity that will be available in the future.
- **Focus on the most vulnerable housing types**. Manufactured or mobile homes and publicly supported multifamily housing units tend to be less energy-efficient and are typically home to lower-income people who especially benefit from saving money. Rental units are also more likely to be occupied by low-income people, and are much harder to reach with existing incentives, because landlords don't

have an incentive to cover the cost of upgrades that save tenants money. Portland's HEART standards are an example of an effort to provide healthy, energy-efficient, and affordable rental housing.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. The low scenario assumes a modest increase in the current number of upgrades to space and water heating units that could be achievable through additional resource navigation to help people access existing incentive programs. The medium and high scenarios assume that agencies would fund additional incentives for appliance upgrades, resulting in broader implementation. All of these scenarios are well below the maximum technical potential for this action, which would be to upgrade all existing homes' water and space heating in the metropolitan area. Roughly 51% of current residential building energy emissions could be eliminated through the maximum technical potential of this action: close to 50 million MT CO_2e over 25 years.

Table 10 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 13** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

As discussed at the beginning of the Building actions subsection, there are no local or regional plans that provide cost estimates for this action. To estimate costs, Metro assumed that:

- Upgrades would occur at the end of the useful life of existing water and space heating systems.
- The typical cost premium for energy-efficient appliances is $4,000 for an air source heat pump HVAC system compared to an efficient fuel-fired furnace and $1,500 for a heat pump hot water system compared to a fuel-fired water heater.
- Costs for installation are applied in the year of installation, and savings from a reduction in energy use are deducted in future years as the system is in operation.
- Both the initial installation and annual fuel and electricity expenses are primarily carried by the resident or homeowner. To the extent incentives apply in the medium and high scenarios, those costs would be borne by the public agencies that develop implementation programs.

Since this action involves creating new programs within the MSA, more research will need to be conducted to determine the level of monetary incentive that public agencies can offer to result in the number of upgrades and the emissions reductions assumed in this analysis. The benefits of this action in reducing the community-wide social and environmental harms of GHG emissions, referred to as social cost of carbon, are not calculated here and those savings and benefits are shared by the community.

Planting street trees

Overview

Planting street trees is a simple but powerful way to reduce greenhouse gas emissions and adapt to a changing climate. In the Pacific Northwest, where summers are getting hotter due to climate change, expanding urban tree canopy protects public health by cooling neighborhoods, improving air quality, and reducing the urban heat island effect. These benefits are especially important in vulnerable communities that face higher risks from extreme heat. This action involves policies and programs to increase tree planting in the urbanized portions of the metropolitan area, where trees are most needed and most beneficial.

Contribution to GHG reduction

Trees both remove carbon from the atmosphere as they grow and provide shade, which reduces energy needs in adjacent buildings on hot days.

Implementation

Related plans, policies, and resources

Many agencies in the metropolitan area have tree codes or urban forest management plans, which provide a foundation for implementing this action. The Intertwine Alliance's Connecting Canopies Regional Urban Tree Policy and Programs Report documents these plans and regulations. Roughly two-thirds of the region's population lives in communities with comprehensive tree codes that protect both public and private trees. Ambitious local efforts like the City of Vancouver's Tree planting and establishment program and the City of Portland's diverse programs (including the Free Street Tree Program, Yard Tree Giveaway, and Equitable Tree Canopy Program) helped serve as examples of how this action could be implemented. In 2025, the City of Portland updated its approved street tree planting lists and guidance to include new tree species that are better suited to the region's future climate and remove species due to performance concerns.

Other agencies in the region also prioritize street trees as a GHG reduction action in their climate action plans, including Beaverton, Multnomah County, Tigard, Portland, and Vancouver.

Implementation authority and responsibilities

Local governments have the authority to regulate street trees. Responsibility for maintaining these trees is split among public agencies, utilities, and property owners.

Implementation recommendations

Through engagement and research, the CCAP team identified ways for local and regional agencies in the metropolitan area to implement this action effectively and to the benefit of all, including:

- **Focus on the hot, dense communities where this action is most beneficial**. Areas with low canopy cover and lots of activity use the most energy for cooling, and trees in these communities produce the greatest climate benefits. This action can have outsize health benefits in low-income communities, where residents may not be able to afford air conditioning.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. The scenarios vary both in the types of trees planted and the number of trees planted per year. The low scenario assumes plantings of 1,500 trees of a slow-growing conifer species each year. The medium scenario assumes plantings of 1,500 trees of a fast-growing hardwood species. The high scenario assumes plantings of 3,000 trees of a fast-growing hardwood species. The sequestration benefits of the trees are assumed to increase over time as they grow.

Table 10 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 13** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

As discussed at the beginning of the Building actions subsection, there are no local or regional plans that provide cost estimates for this action. To estimate costs, Metro assumed that:

- The lifetime cost per tree for urban tree planting averages $1,000. In this analysis, this cost was allocated in the year the tree is planted.

- The ongoing cost savings were calculated based on US Forest Service estimates of the tree canopy building cooling potential based on tree age. The annual energy savings increase over time as the tree grows.

The costs for this action are incurred by the agency responsible for planting and maintaining the trees. The savings for this action are gained by the payer of the utility bills for whatever property is being shaded.

Increased electric appliances in new buildings

Overview

Installing efficient electric appliances—such as heat pumps, electric water heaters, induction cooktops, and clothes dryers—in new buildings helps reduce greenhouse gas emissions by increasing the share of energy that comes from Oregon and Washington's increasingly clean grid. Installing these appliances during construction is typically more cost-effective conducting retrofits later on. More energy-efficient building codes (see the action below) can also increase the use of efficient and electric appliances in buildings, but the green building codes in Oregon and Washington do not always require the use of these appliances. This action involves using incentives and/or the permitting process to encourage additional use of efficient and electric appliances beyond what building codes require. Several cities in Washington and Oregon, as well as dozens more across the country, are testing different approaches to achieving this outcome. This action considers implementing best-practice approaches to increasing the use of efficient and electric appliances in new buildings in the metropolitan area.

Contribution to GHG reduction

Space heating and cooling and water heating demand the highest share of energy usage for the average home—93 percent for the many existing homes that use natural gas. Other appliances, including cook stoves and clothes dryers, make up most of the remaining energy usage. Even at lower levels of implementation, increasing the share of new homes using heat pumps for space and water heating significantly reduces future emissions. Electric appliances can be powered by clean electricity—which means that shifting to these appliances delivers additional reductions as state-level clean electricity requirements take effect and these systems operate over multiple decades.

Implementation

Related plans, policies, and resources

This action builds upon a variety of existing policies programs that already support energy efficiency in new buildings within the metropolitan area. As discussed in the following section, state building codes in Oregon and Washington aim to create more energy-efficient buildings, especially in Washington, where these codes call for significant increases in energy efficiency. Building codes do, however, still allow installation of efficient gas-powered space and water heating systems. Organizations like Energy Trust of Oregon and Clark Public Utilities offer technical assistance and incentives for builders to build to above state energy code standards.

Other agencies in the region also prioritize electrifying appliances in new buildings as a GHG reduction action in their climate action plans, including the cities of Vancouver, Tualatin, Portland, and Tigard.

Implementation authority and responsibilities

States have authority to create building codes in Oregon and Washington. As discussed in the following section, local agencies are very limited in their ability to customize these codes. This makes it challenging to implement this action through building codes, because current state codes are performance-based, and typically do not explicitly prohibit or encourage the use of specific energy sources or appliances.

Other cities in the U.S., including Oregon and Washington cities like Bend and Ashland, are exploring ways to use incentives and/or their permitting authority to increase use of efficient and electric appliances in new developments, and some of these approaches are still being legally tested. This approach assumes that the local governments that are working on this issue will identify best-practice approaches that work under Oregon and Washington laws and do not significantly increase the costs of building.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. The implementation scenarios for this action vary in terms of what percentage of new homes are subject to requirements and which appliances requirements apply to. The low scenario assumes moderate electric space and water heating upgrades in new residential housing that apply to half of new homes. The medium scenario assumes all-electric space and water heating upgrades for all new homes, and the high scenario assumes all-electric

construction in all new homes. This action overlaps strongly with the More energy-efficient building codes action for collective emissions reductions. To avoid double-counting, the energy efficiency estimated from the building codes action is applied first, decreasing the overall usage, then this electrification scenario is applied to the remaining natural gas use. The low, medium, and high scenarios of the building code action are matched with the low, medium, and high scenarios of this action, respectively.

Table 10 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 13** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

As discussed at the beginning of the Building actions subsection, there are no local or regional plans that provide cost estimates for this action. To estimate costs, Metro assumed that:

- The typical cost premium for installation of electric space and water heating appliances in new construction is $1,500 in all scenarios. For the high scenario, the typical cost premium for installation of an electric induction stove is $6,254.
- The up-front costs were assessed on a per-household basis, based on the number of new housing units constructed each year to keep up with population growth.
- Costs for installation are applied in the year of installation, and savings from a reduction in utility bills are deducted in future years as the systems are in operation.

The upfront costs considered in this action (purchase and installation premium) are borne by developers, who typically pass them onto property owners or renters. The energy savings of this action benefit the residents of the future homes.

More energy-efficient building codes

Overview

Energy-efficient or green building codes are one of the most common and effective actions to reduce energy use in new buildings. These codes, which are overseen by state agencies, include higher energy performance standards for insulation, windows, heating and cooling systems, water heating, and lighting. This approach creates consistency for homebuilders working in different markets while allowing them flexibility to use the best solutions for each home, which reduces emissions while keeping the costs of

compliance low. Green building codes also save residents money, improve indoor comfort, and make buildings more climate-resilient.

Washington's energy code, which regulates efficiency in new buildings, is among the most climate-forward in the country. Oregon's Reach Code is a voluntary, high-efficiency alternative to Oregon's Building Energy Code that agencies can apply in projects that they fund and incentivize for developers, and so far no local agencies have adopted the Reach Code as required. Washington's mandatory energy code significantly exceeds the energy efficiency requirements and standards in Oregon's Building Energy Code. Specifically, Washington's building code requires all HVAC and water heating residential systems to be heat pumps but allows for dual fuel systems (using both electricity and natural gas)[13], whereas Oregon's Reach Code still allows for high efficiency natural gas water and air heat[14]. Washington's building code also has stringent prescriptive requirements for insulation, mandatory blower door testing with tight air leakage thresholds, and occupancy and daylighting controls. The Oregon Reach Code provides recommendations for many of these things, but not stringent requirements. This action explores the benefits of implementing more energy-efficient building codes in the Oregon portions of the metropolitan area, either through local jurisdictions adopting Oregon's Reach Code[15] or through aligning Oregon's mandatory energy code with Washington's.

Contribution to GHG reduction

Improving building codes reduces energy use and fossil fuel consumption in new buildings, which in turn reduces GHG emissions. Buildings last a long time, so implementing this action early increases its cumulative benefits, especially in the near term before clean electricity standards take effect. While Oregon's Reach Code encourages more efficient building envelope, lighting, and space and water heating, it does not specifically require the use of electric systems. Advanced codes—like those in Washington—encourage or require electrification of appliances and heating systems,

[13] Measures R403.13 and R403.5.7 in Table 2 https://sbcc.wa.gov/sites/default/files/2023-03/Draft%202021%20Report_2_Feb2023.pdf

[14] Measures 1 and 2 in Table N1101.1(2) https://codes.iccsafe.org/content/ORRC2023P1/chapter-11-energy-efficiency#ORRC2023P1_Pt04_Ch11_SubCh01_SecN1101.1_TblN1101.1_2

[15] Specifically, the energy star compliance option Section N1101.2 Compliance paths 1 https://www.oregon.gov/bcd/codes-stand/Documents/2023-oregon-residential-reach-code.pdf

which multiplies the benefits of this action since state policies also require that utilities deliver lower-carbon electricity in the future.

Implementation

Related plans, policies, and resources

Policies in both Oregon and Washington direct state agencies to update their building codes in order to achieve net-zero energy use in buildings by 2030, and agencies report progress regularly. In Oregon, this will be achieved through updates to the optional Reach Code. In Washington, the mandatory State Building Code must be crafted to "construct increasingly energy-efficient homes and buildings that help achieve the broader goal of building zero fossil-fuel greenhouse gas emission homes and buildings by the year 2031". As discussed below, Energy Trust of Oregon and other organizations also offer technical assistance and financial support for buildings that exceed energy codes.

Resource needs and funding sources

Building energy codes are complex and updating them requires extensive agency staff time. Builders bear the costs of complying with these codes, which involves paying the extra costs for energy-efficient appliances and materials. Builders typically pass these costs on to owners and renters. There are a number of resources that can help homebuilders cover these costs, including:

- Federal tax credits of up to $5,000 per home for builders who meet various federal efficiency standards, such as Energy Star program requirements or Zero Energy Ready Homes.
- Many of Oregon's state programs that can fund energy efficiency actions in new housing, which are discussed in more detail under other actions in this section, also apply to new construction. These programs are summarized here.
- Oregon's Climate Equity and Resilience Through Action program, funded through a $197 million grant from the Environmental Protection Agencies, funds a variety of new and existing state programs that help residents, businesses, and government agencies reduce GHG emissions, including two programs that support this action:
    - The Oregon Housing and Community Services Oregon Multi-Family Energy Program provides funds to all income projects to construct housing that is at least 10% more energy efficient than those built under Oregon's Energy Efficiency Specialty Code.

- Energy Trust of Oregon's EPS program offers technical and financial assistance (up to $4,100 per unit) to help builders construct homes that exceed the average efficiency of newly-built homes in Oregon that is at least 10% more energy efficient than those built under Oregon's Energy Efficiency Specialty Code.

These resources can help implement this action. However, the overall level of resources available is designed to support small-scale, voluntary adoption of energy-efficient building codes. This action involves requiring more extensive construction of energy-efficient buildings, which would likely require significantly greater technical and financial support than is currently available.

Implementation authority and responsibilities

States have the authority to adopt and update building codes. Local governments are limited in their ability to deviate from state building codes—especially in Oregon, where state laws pre-empt them from doing so. Oregon does allow local governments to adopt the Oregon Reach Code if they meet certain requirements, such as demonstrating that code implementation will not significantly increase local building costs. So far, no local governments in Oregon have gone through this process, so it is unclear whether the benefits of doing so are worth the cost. For local and regional agencies, implementing this action involves both testing Oregon's local reach code adoption process and advocating for more energy-efficient codes statewide.

Implementation recommendations

Through engagement and research, the CCAP team identified many ways for local and regional agencies in the metropolitan area to implement this action effectively and to the benefit of all, including:

- **Advocate for changes to state codes and policies** to allow local governments to require use of Oregon's Reach Code in the short term and create more energy-efficient mandatory building codes in the long term. States have authority over building codes, and keeping codes consistent at the state level helps to provide consistency and flexibility for builders, which ultimately increases the speed and lowers the cost of implementation. There are other ways that some local governments can incentivize (and in some cases, require) more energy-efficient housing, depending on their authority and context, but working with state agencies to update policies is likely more broadly beneficial and ultimately more effective at meeting climate goals than pursuing these custom approaches. **Pursuing**

increased local representation on the committees that help to advise on building energy codes could be a first step.

- **Collaboratively work to test Oregon's local Reach Code adoption process**. Oregon does allow local governments to require use of the Reach Code if they can demonstrate that doing so will not place significant additional costs on construction and meet other requirements. This approach is untested, and regional and local agencies could collaborate to test this process in a way that allows a variety of cities in the metropolitan area to create consistent requirements to meet the reach code. Because this approach is untested, it may not result in local governments being approved to require the Reach Code. But even if it doesn't, the experience and relationships developed will help local and regional agencies be more effective advocates for changes to building codes and policies.
- **Coordinate with builders, trades and others who build housing**. There is a risk that requiring more energy-efficient construction will slow the production and increase the cost of housing, further exacerbating the metropolitan area's affordable housing shortage. Talking with builders and contractors about how to address this challenge up front will help to address these risks, and could help local and regional agencies advocate more effectively.
- **If capacity is limited, consider focusing on multi-family energy efficiency through the commercial building code.** It is not clear how the state would respond to local advocacy for more energy-efficient building codes given the many concerns about cost and consistency. If regional and local agencies metropolitan need to take a more targeted approach to advocacy, they could focus on the commercial building code, which also governs larger multi-family buildings. In Oregon, most of these buildings are located in the metropolitan area. Making these buildings more energy efficient would benefit lower-income people, who are more likely to live in multi-family buildings. This strategy could also help local and regional agencies in the metropolitan area advocate more effectively for changes to building codes since they may have unique insights into developers' and builders' needs.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. The quickest way for local

agencies in Oregon to implement stricter building codes is for local governments to implement the already existing Reach Code. There are several paths to compliance with the Reach Code, but for simplicity, this analysis assumes compliance via Energy Star Home standards. In the low scenario, 50% of the local agencies on the Oregon side of the metropolitan area would implement Reach Code building standards, covering 50% of all new construction. The medium scenario would have all Oregon local agencies within the MSA implement the Reach Code. The high scenario assumes that Oregon updates its baseline, mandatory codes to be consistent with Washington's codes, effectively requiring all new construction in Oregon to exceed Oregon's current Reach code. The low and medium scenarios still allow for natural gas furnaces and water heating while the high scenario requires all heat pumps, but allows for dual fuel systems and other natural gas uses such as cooking.

The maximum technical potential for this action is not quantified due to uncertainties around legal feasibility, market readiness, and enforcement capacity. In theory, building codes could require net-zero performance in all new buildings, practical limitations make full implementation of that standard unlikely in the near term. Instead, this CCAP assumes a progressive adoption pathway, where jurisdictions incrementally adopt reach codes and Oregon updates the minimum code over time informed by Washington's actions.

Table 10 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 13** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

As discussed at the beginning of the Building actions subsection, there are no local or regional plans that provide cost estimates for this action. To estimate costs, Metro assumed that:

- The total square footage to be built increases along with population growth and the current square feet per resident in the MSA.
- The increase in upfront costs to meet the Oregon Reach Code was estimated based on Energy Star's reporting of a $1.84 premium per square foot of new building. The increase in price to meet Washington's energy code was estimated as a linear increase from the Energy Star premium based on the additional energy savings.

- The costs associated with this action are borne by the developers of new housing and ultimately passed along to the end buyers. The savings result from reduced utility bills for residents of the new housing.

Net-zero public buildings

Overview

As discussed throughout this section, there are many new technologies and design approaches that can reduce energy use in new buildings. However, Oregon and Washington's climate goals ultimately require that every new building produce no new net GHG emissions. State policies, as well as many local climate action plans, direct public agencies to lead by example in the buildings they use. However, even with advances in building science, it can still be challenging and costly to build a building that uses zero net energy. Agencies facing these challenges can purchase Renewable Energy Credits (RECs)[16] and carbon offsets,[17] which fund projects that reduce GHG emissions in other communities to offset emissions impacts, to effectively achieve net-zero construction in local and regionally-owned public buildings across the metropolitan area.

Contribution to GHG reduction

Public agencies can lead by example by sourcing RECs and offsets from high-quality, third-party verified programs that meet rigorous standards to demonstrate that the

[16] RECs are nontangible commodities that represent the property rights to the environmental and social benefits of renewable energy. Every megawatt hour of electricity produced through renewable sources produces one REC. One must own RECs to make renewable energy claims until the electric utility (or power purchase agreement) is confirmed to sell 100% carbon-free electricity. In Oregon and Washington, RECs will no longer be needed after 2044 when the region-wide grid emissions factor (EF) is required to be zero by state level legislation.

[17] Carbon offsets are a tradable instrument that represents the reduction or removal of one metric ton of carbon dioxide equivalent. Unlike RECs, which specifically represent clean electricity generation, carbon offsets fund a broader range of projects that reduce greenhouse gases. These projects range from natural carbon removal (e.g., reforestation and soil carbon sequestration) to methane capture (e.g., landfill gas systems and agricultural digesters) to energy efficiency and clean cooking initiatives (primarily in developing countries). Offsets can be bought and sold in open markets to transfer climate benefits between entities. It is important to note that the quality and impact of carbon offsets can vary significantly depending on factors such as geographic proximity, emissions matching, credibility, third-party verification standards, project performance, and additionality.

credits represent real GHG reductions. Purchasing such RECs and offsets allows the public agencies to immediately claim net-zero emissions for any energy use covered by the purchase. While not a substitute for direct emissions reductions, these purchases are a useful bridging strategy to reduce GHG emissions in the short term while net-zero building strategies and materials become more affordable and widely available.

Implementation

Related plans, policies, and resources

Both Oregon and Washington encourage public agencies to be leaders in energy-efficient building construction. Oregon's State Energy Efficient Design (SEED) program, established in 1991, requires state agencies to build new or renovate existing buildings using energy efficient design methods, and Oregon Department of Energy provides guidance and technical assistance for local agencies to follow this approach in their facilities. Public agencies were early adopters of Washington's Clean Building Performance Standards, and Washington provides technical assistance and incentives to help public agencies do so. At the local and regional level, agencies' commitment to clean buildings is reflected in the many climate plans from the metropolitan area that prioritize net-zero public buildings and/or purchasing RECs and offsets in their climate action plans, including Vancouver, Portland, Tigard, TriMet, Tualatin, Gresham, Beaverton, Multnomah County, and Metro.

Oregon and Washington's clean electricity requirements, which aim to eliminate emissions from electricity by 2040-45, also play a role in shaping this action—which will have less of a climate benefit as the electricity on the grid gets cleaner. Moving ahead quickly with this action will maximize the climate benefits.

Implementation authority and responsibilities

Public agencies in the metropolitan area often have authority over energy efficiency standards and goals for the buildings they own as long as they also address the baseline requirements in state building codes. Agencies are also responsible for covering the costs of meeting these standards. The funding programs that can support Efficiency in commercial/industrial buildings can also be used to implement this action, but those programs are not limited to public agencies, and there is high demand for these resources.

Implementation recommendations

Through engagement and research, the CCAP team identified many ways for local and regional agencies in the metropolitan area to implement this action effectively and to the benefit of all, including:

- **Collaborate when purchasing RECs and offsets to ease implementation and lower costs**. There are a variety of options available, and it can be confusing to determine which ones best meet agencies' goals and produce verifiable GHG reductions. Agencies can collaborate to share information on available RECs and offsets, establish procurement standards for these purchases, and even collaborate on bulk purchases to reduce costs for all partners involved.
- **Focus on local sources of RECs and offsets**. Local utilities, including PGE and Pacific Power, as well as non-profit organizations like Bonneville Environmental Foundation offer RECs and carbon offsets for purchase. Purchasing RECs and offsets from local sources helps to support the variety of organizations that are working to meet Oregon and Washington's climate goals.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. The scenarios represent a range of investment and more implementation timeline of REC and offset purchases. The low scenario assumes lower investment for a gradual annual increase of REC and offset purchases over 10 years, covering 100% building energy use by 2035. The medium scenario assumes moderate investment for gradual annual increase of REC and offset purchases over 5 years, covering 100% building energy use by 2030. The high scenario assumes a larger investment for REC and offset purchases to cover 100% of building energy use beginning in 2026. This reaches the maximum technical potential, immediately eliminating 100% of operational emissions from electricity and natural gas use in local and regional public buildings throughout the duration of the CCAP planning period. These emissions represent approximately 2% of total MSA-wide building energy emissions.

Table 10 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 13** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

As discussed at the beginning of the Building actions subsection, there are no local or regional plans that provide cost estimates for this action. To estimate costs, Metro assumed that:

- Purchase of RECs and offsets ramp up evenly over the five- or 10-year implementation period in the scenarios.
- Costs for RECs are $5.90 per MWh and offsets are $10 per MT CO_2e.
- Costs considered in this action are borne entirely by the public agencies purchasing them.

Rooftop solar

Overview

Installing solar panels on rooftops is one of the most effective ways to produce clean, renewable energy directly where it's used. Rooftop solar systems convert sunlight into electricity, allowing homes, businesses, and public buildings to reduce their dependence on fossil fuels and utility-provided electricity. This shift helps lower greenhouse gas emissions, stabilize energy costs, and improve local energy resilience—especially during summer peak demands.

This action captures the benefits of installing additional rooftop solar on existing buildings within the MSA to displace grid electricity usage and applies to all electricity usage across sectors throughout the MSA.

Contribution to GHG reduction

Installing rooftop solar directly replaces dirtier grid electricity with zero emissions renewable electricity. In both Oregon and Washington, implementing rooftop solar supports state clean energy targets that require utilities to transition to 100% clean electricity by mid-century. Local and regional agencies can use incentives, streamlined permitting, and outreach and education—especially to especially for low- and moderate-income households—to advance rooftop solar.

Implementation

Related plans, policies, and resources

Several existing programs offer incentives and support for people to install rooftop solar, including:

- Energy Trust of Oregon's Solar for Your Home program offers cash incentives for solar and energy storage systems, and its Community Solar program supports community-wide investments.
- Portland General Electric and Pacific Power offer utility net metering programs that allow customers with solar panels to sell excess energy back to the grid.
- Clark Public Utilities offers support for installing solar.

Additional action/funding to support the implementation of rooftop solar can increase the pace and scale of implementation. Finding additional resources to support solar is critical given that the federal tax credit for residential solar installations expires at the end of 2025. There may also be opportunities to help people navigate and access the different solar incentive programs that are available in the metropolitan area.

Oregon Department of Energy's Oregon Solar Dashboard tracks current solar installations in Oregon. The CCAP team used this to estimate current and potential solar production in the metropolitan area, and the dashboard can also be used to track the impact of future policies and programs.

State clean energy mandates including Oregon's Clean Energy Targets (which requires 100% clean electricity by 2040) and Washington's Clean Energy Transformation Act (which requires 100% clean electricity by 2045) shaped the implementation assumptions of this action. The implementation scenarios focus on rapid implementation in order to displace dirtier electricity and reduce more GHG emissions.

Other agencies in the region also prioritize encouraging and incentivizing solar on public and private buildings as a GHG reduction action in their climate action plans, including Lake Oswego, Milwaukie, Gresham, Multnomah County, Tigard, Tualatin, Portland, Beaverton, Hillsboro, and Vancouver.

Resource needs and funding sources

The expenses for this action, including installation of new rooftop solar, solar incentives, and grid electricity cost savings, could be carried out by a combination of residents, homeowners, businesses, property owners, or public agencies by providing incentives or installing solar on public buildings. Savings apply to whomever is paying utility bills in the buildings with new solar offsetting those prices.

In addition to the programs listed above, Oregon Department of Energy's Community Renewable Energy Program (CREP) provides grants for public agencies to plan and implement community-scale renewable energy projects, including for solar energy. The

program provides planning grants of up to $100,000 and construction grants of up to $1,000,000.

Implementation authority and responsibilities

Utilities, non-profits, and state agencies all offer incentives and support to help people install solar. In most cases, local agencies are responsible for permitting solar installations in the metropolitan area. A variety of organizations can contribute to implementing this action.

Implementation recommendations

Through engagement and research, the CCAP team identified many ways for local and regional agencies in the metropolitan area to implement this action effectively and to the benefit of all, including:

- **Help people navigate the many different resources that are already available**. Local and regional agencies can multiply the benefit of existing programs and incentives by helping people identify and apply for those that are available in their communities.
- **Seek new sources of funding to expand existing incentive programs**. There are no dedicated regional sources of funding for this action, and few local ones.
- **Move quickly to maximize climate benefits**. Implementing this action as quickly as possible reduces emissions more effectively because the electricity that is available today is more carbon-intensive than the electricity that will be available in the future.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. The scenarios vary in terms of the amount, speed, and impact of public investments in rooftop solar. The low scenario assumes that relatively small public investments in rooftop solar will increase current solar production by fivefold over 10 years. The medium scenario assumes more significant investments create a tenfold increase over 10 years; the high scenario further accelerates investment and assumes a tenfold increase in 5 years. Current production is roughly 89,000 mW, so even a tenfold increase is well short of the estimated total capacity (21,000,000 mW) for the metropolitan area.

Table 10 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 13** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

As discussed at the beginning of the Building actions subsection, there are no local or regional plans that provide cost estimates for this action. To estimate costs, Metro assumed that:

- Net costs per kW of solar capacity (factoring in purchase and installation costs and existing incentives) ranged from $2,002 for large systems over 10 kW to $2,548 for small systems of 3-5 kW.
- Costs for installation are applied in the year of installation and operation, and maintenance costs are applied annually. Savings from the avoided cost of electricity based on expected kWh generation are deducted in future years as the system is in operation.
- Panel degradation reduces the production of electricity each year.

Food, goods and services actions

Increase reuse of products and materials

Overview

This action involves reusing products like clothing, building materials, and electronics. The main climate benefits of reusing products come from displacing the manufacturing of new products, and there are also benefits to reducing emissions associated with landfilling used products. Many of the items that are thrown away by people and businesses each year, such as electronics and clothing, are both reusable and have a high carbon footprint.

This action applies to Metro's service area. Metro is unique among regional agencies in that it has the authority to oversee, manage, and coordinate the solid waste system within its jurisdiction; Metro operates several transfer stations where waste is sorted for reuse, recycling, composting, and landfilling. Metro uses this authority to manage the environmental and health impacts of the goods that people use, including by planning and implementing actions that reduce the climate impacts of these goods. This action captures adopted plans by Metro that work to reduce emissions from goods by opening new facilities that accept goods for reuse; creating outlets where people can buy these

goods at affordable prices; supporting the many non-profits already operating in the region that accept goods for reuse, repair, and resale; and conducting outreach and education to promote these new facilities and opportunities.

Contribution to GHG reduction

According to recent consumption-based greenhouse gas inventories conducted by both Oregon Department of Environmental Quality[21] and Metro, producing and disposing of items like clothing and electronics creates significant climate pollution. According to Metro's Greenhouse Gas Inventory, discussed above, goods account for 9 percent of the metropolitan area's consumption-based household emissions. Clothing, furniture and appliances, and entertainment goods, account for the majority (80 percent) of emissions from household goods. Building materials, which are captured in the housing category, are also reusable and have high climate impacts.

Implementation

Related plans, projects, and resources

Metro's Regional System Facilities Plan (2025) identifies capital improvements to the regional reuse, recycling and garbage system. This action reflects a package of investments in the plan that are designed to reduce emissions from goods, including:

- Building a network of six community drop-off facilities across the region that accept reusable items from residents and businesses, as well as items for recycling and composting. Construction of these new facilities is phased and extends from 2025 to 2037.
- Establishing a reuse warehouse and a reuse mall by 2032 to support the region's reuse sector in increasing the collection and distribution of used items.
- Providing ongoing funding to support nonprofit organizations that reuse, repair, and share products and materials. There are several nonprofits in the region that already operate in this space, reusing and repairing items like building materials and personal computers. The Regional System Facilities Plan calls for the creation of a Reuse Impact Fund that will provide grants designed to increase the number and capacity of nonprofits to participate in the regional reuse system.
- Conducting outreach and education to help people and businesses make use of new reuse facilities and to promote the consumption of used goods and materials.

This action captures the benefits of coordinating across all three of these work areas to maximize reuse and deliver associated greenhouse gas reductions.

Resource needs and funding sources

Implementing this action involves building new facilities, launching new programs, and funding their ongoing operations. The Regional System Facilities plan includes detailed estimates of the costs of this action and identifies sources that can cover these costs. Metro plans to cover the capital costs of this action by issuing revenue bonds, which borrow against user fees and charges to cover up-front costs. Metro will pay back these bonds and operate programs using the customer fees (which Metro facilities charge customers for accepting materials) and regional system fees (which are levied on every ton of garbage generated within the Metro boundary) that it charges to fund the ongoing operation of the solid waste system.

Implementation responsibilities and authority

Within the Metro service area, Metro has the authority and responsibility to manage and oversee the solid waste system, including building and operating facilities, regulating haulers, and charging fees on the system. Metro partners with businesses, local governments, and community organizations to collect waste, distribute bins and signage, and run programs that reduce waste.

In the portions of the metropolitan area that are outside of the Metro service area, cities and counties have the authority to manage the solid waste system. These local governments do not have the same resources or authority to coordinate waste management across an entire region as Metro does, but many of them are also engaged in efforts to reduce emissions from goods.

Implementation recommendations

Through engagement and research, the CCAP team identified many ways for local and regional agencies in the metropolitan area to implement this action effectively and to the benefit of all, including:

- **Focus on reusing the highest-impact goods**. Many goods can be reused, but focusing on the high-impact goods identified in Metro's consumption-based inventory (including building materials and electronics in particular) increases the climate benefits of this action.
- **Develop new markets for reused goods**. Separating reusable goods from the waste stream is only the first step in implementing this action. The second, and

more challenging step, is to make it easy and affordable for people to purchase those reused goods instead of new ones. Metro's planned reuse mall is one way to make reused goods available, but it is only one facility. The Reuse Impact Fund included under this action is designed to partner with community organizations to ensure that people throughout the Metro service area have access to reused goods. This is a new approach, and Regional System Facilities Plan puts significant resources into pilot testing it. Metro can build on this work by monitoring the success of the Reuse Impact Fund and fully resourcing the program if it proves successful.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. These scenarios were based on the analysis of the costs and benefits of this action in the Regional System Facilities Plan. The low scenario is based on conservative assumptions that Metro will collect fewer, less carbon-intensive materials for reuse and fund the Reuse Impact Fee at lower levels than anticipated in the Regional System Facilities Plan. The medium scenario assumes the same amount and mix of materials and program funding levels as the plan, and the high scenario includes incremental adjustments to these factors that further increase the benefits of this action.

Table 11 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 14** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

Prevent and recover business food waste

Overview

This action involves reducing business food waste by implementing new policies, improving facilities to recover food for composting more efficiently, and creating supportive partnerships and programs.

This action applies to Metro's service area. Metro is unique among regional agencies in that it has the authority to oversee, manage, and coordinate the solid waste system within its jurisdiction; Metro operates several transfer stations where waste is sorted for reuse, recycling, composting, and landfilling. Metro uses this authority to manage the environmental and health impacts of the goods that people use, including by planning

and implementing actions that reduce the climate impacts of these goods. This action captures adopted plans by Metro that work to reduce emissions from food used in businesses, which compliments the many existing efforts to reduce household food waste.

Contribution to GHG reduction

According to recent consumption-based greenhouse gas inventories conducted by both Oregon Department of Environmental Quality (DEQ)[21] and Metro, producing, transporting and disposing of food creates significant climate pollution. According to Metro's Greenhouse Gas Inventory, discussed above, food accounts for 12 percent of the metropolitan area's consumption-based emissions. DEQ estimates that businesses are responsible for toughly 55 percent of emissions from food, or which would mean that business food waste contributes around 6.6 percent of the metropolitan area's emissions.

Implementation

Related plans, projects, and resources

Metro's Regional System Facilities Plan (2025) identifies capital improvements to the regional reuse, recycling, composting and garbage system. This action reflects a package of investments in the plan that are designed to reduce emissions from business food waste, including:

- Implementing policies that reduce business food waste. These include the Business Food Waste Requirement,[18] which requires businesses to separate out food waste and transport it to a facility authorized by Metro to accept food waste, as well as an under-development policy prohibiting the landfill disposal of food waste generated within the Metro region that was authorized by Metro Council in 2024 and is expected to be implemented in 2027.[33]
- Operating facilities that make it easy and efficient to recover food waste for composting and anaerobic digestion. These include new depackaging equipment at Metro's central waste processing facility that separates non-compostable packaging materials from compostable waste, enabling Metro to compost a

[18] https://www.oregonmetro.gov/sites/default/files/2025/03/05/Metro-Code-complete-effective-20250305.pdf sections 5.15.410-470.

greater share of the food waste that it receives and secure stable and affordable access to facilities that accept the material for composting or anaerobic digestion. Additionally, under the Regional System Facilities Plan, Metro will continue to pursue different types of public-private partnerships to develop additional facilities that can accept food waste from haulers in the region, which will make it easier and cheaper for haulers to recycle food waste and reduce barriers for businesses to compost.[34]

- Engaging in partnerships and programs that help reduce food waste, such as Food Waste Stops with Me, a partnership with food businesses that reduces food waste at the source, which is particularly effective in reducing emissions because it affects the large share of emissions that are involved in food production. Through this program, Metro and local governments provide information and technical assistance to food waste-generating businesses aimed at implementing actions to prevent food waste, connecting businesses with agencies that accept donated food to help people who experience hunger and helping businesses set up successful composing programs that their staff can easily implement.

This action captures the costs of coordinating across all three of these work areas to maximize food waste reduction through prevention, donation and composting practices.

Resource needs and funding sources

Implementing this action involves building new facilities, launching new programs, and funding their ongoing operations. The Regional System Facilities plan includes detailed estimates of the costs of this action and identifies sources that can cover these costs. Metro plans to cover the capital costs of this action by issuing revenue bonds, which borrow against user fees and charges to cover up-front costs. Metro will pay back these bonds and operate programs using the customer fees (which Metro facilities charge customers for accepting materials) and regional system fees (which are levied on every ton of garbage generated within the Metro boundary) that it charges to fund the ongoing operation of the solid waste system.

Implementation responsibilities and authority

Within the Metro service area, Metro has the authority and responsibility to manage and oversee the solid waste system, including building and operating facilities, regulating haulers, and charging fees on the system. Metro partners with businesses, local governments, and community organizations to collect waste, distribute bins and signage, and run programs that reduce waste.

In the portions of the metropolitan area that are outside of the Metro service area, cities and counties have the authority to manage the solid waste system. These local governments do not have the same resources or authority to coordinate waste management across an entire region as Metro does, but many of them are also engaged in efforts to reduce emissions from food.

Implementation recommendations

Through engagement and research, the CCAP team identified many ways for local and regional agencies in the metropolitan area to implement this action effectively and to the benefit of all, including:

- **Focus on the businesses that supply the most food and generate the most waste.** Working with these businesses creates especially effective opportunities to reduce climate pollution.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. These scenarios were based on the analysis of the costs and benefits of this action in the Regional System Facilities Plan. The low scenario reflects the planned investments in the Regional System Facilities Plan. The medium and high scenarios assume that Metro takes additional steps to implement this action by increasing the number of facilities that can accept food waste for depackaging and increased investment in programs that help businesses, especially large food service providers, reduce food waste.

Table 11 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 14** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

Low-carbon construction materials

Overview

Using low-carbon construction materials helps reduce greenhouse gas emissions from building construction. Traditional materials like concrete and steel are carbon-intensive to manufacture, and using low-carbon materials helps to reduce their embodied emissions. By using alternatives with lower embodied emissions, builders can reduce the climate impact of new construction and major renovations while supporting innovation in

sustainable materials. This action focuses in particular on using low-carbon substitutes for concrete and cement, rebar, metals, glass, insulation, and finishing materials. These are some of the most carbon-intensive and commonly-used building materials, and a growing number of substitutes are available.

This action captures the total potential benefits of selecting construction materials with lower embodied emissions. This action applies to buildings throughout the metropolitan area except for agency-owned buildings to avoid double-counting with the Government procurement action, below, which involves broader use of low-carbon goods—including low-carbon building materials—for public agencies.

Contribution to GHG reduction

This action reduces GHG emissions by displacing the (often significant) amount of emissions that are created when building materials are produced or transported to the region. The climate benefits of this action are only captured by consumption-based emissions inventories that capture emissions produced outside of the region. See the Greenhouse gas inventory for information on consumption-based emissions. Large-scale use or adoption of low-carbon materials can shift supply chains, create green jobs, and demonstrate leadership in climate-smart development.

Implementation

Related plans, policies, and resources

Oregon and Washington's building codes, discussed under many of the Building actions, focus on reducing energy use in buildings, not on reducing emissions from building materials. Both states have new policies and programs in place that support are already encouraging public agencies and manufacturers to adopt climate-friendly construction practices, including:

- Oregon's HB 4139 requires state regulators to conduct life cycle assessments for select construction and maintenance materials used for public infrastructure projects. The law also identifies funding for medium- and heavy-duty zero-emissions charging infrastructure.
- Washington's Buy Clean, Buy Fair Act requires environmental and labor reporting for public building construction and renovation materials. This law promotes transparency around public spending, leverages state spending to cut embodied carbon, and promotes high-labor standards in manufacturing.

- Washington's State Building Code Council (SBCC) is reviewing an optional appendix to the commercial building code that would establish embodied carbon reporting and reduction requirements covering new construction and renovations above 50,000 ft. This is still under consideration.
- Washington's Clean Materials Manufacturing Program (funded through the Climate Commitment Act) directs the Commerce Department to develop a strategy and funds to help decarbonize, revitalize, and grow clean manufacturing.

States have also led the way in producing guidance on reducing consumption-based emissions, including emissions from building materials. In particular, Oregon DEQ's Consumption Based Emissions Inventory (CBEI) and the companion document Opportunities to Reduce Greenhouse Gas Emissions Caused by Oregon's Consumption informed the definition and analysis of this strategy. States are also leading the way in testing approaches to reducing consumption-based emissions:

- Oregon Department of Environmental Quality is testing approaches to implementing low-embodied carbon housing using funding from Oregon's Climate Equity and Resilience Through Action program.
- Oregon and Washington State departments of transportation both have federal Low Carbon Transportation Materials Discretionary Grants, which support the use of low-carbon materials in the transportation system while also aiming to boost domestic production of these materials.

Other agencies in the region also prioritize actions low-carbon construction materials in their climate action plans, including the city of Tualatin, Metro and TriMet. The City of Portland's deconstruction requirement, which requires the disassembly of older buildings in a way that allows materials to be reused. Reusing materials is an important way to support low-carbon construction, but it is only a viable strategy in communities with a large stock of older housing, because older homes were built with higher-quality materials that are easier to reuse. This action focuses more broadly on new and reused low-carbon materials to benefit the entire metropolitan area.

Implementation authority and responsibilities

Low-carbon building materials is an emerging area of focus for government agencies, and as best practices become clearer, so do pathways to implementation. One on land, local agencies can use their authority over permitting to implement low-carbon building requirements, as Portland's deconstruction requirement generates. On the other hand, state-level building codes are generally used to regulate energy use and GHG emissions

in buildings, and Oregon and Washington are exploring how to best address emissions from materials in their building codes.

Implementation recommendations

Through engagement and research, the CCAP team identified many ways for local and regional agencies in the metropolitan area to implement this action effectively and to the benefit of all, including:

- **Collaborate with state agencies and builders to maximize effectiveness**: There is a risk that this action will the production and increase the cost of housing, further exacerbating the metropolitan area's affordable housing shortage, if low-carbon alternatives are not readily available to builders at a reasonable cost. It is critical to coordinate with builders when developing requirements in order to address these risks. Coordinating with state agencies is also important, both because they are thought leaders on reducing consumption-based emissions and because states have the potential to create new markets for low-carbon materials in Oregon and Washington, which would support local implementation.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. The scenarios assume that targeted action, education, and incentives would lead to 100% implementation by contractors and developers of certain building types. This is technically feasible given the availability of low-carbon materials including optimized concrete mix, high recycled content metals, low- or no-embodied emissions insulation, low-embodied emissions glazing, low- or no-embodied emissions finish materials, and renewable fuel. However, it is unclear whether there are enough of these materials available within the metropolitan area to avoid the risk of increasing building costs with this action.

Construction emissions represent roughly 10% of MSA-wide consumption-based emissions. The low scenario assumes that 100% of non-government commercial construction (business capital and inventory) uses low-carbon construction materials, effectively reducing 29% of construction emissions. The medium scenario assumes that 100% of residential construction (housing) utilizes low-carbon materials, which reduces 40% percent of construction emissions. The high scenario assumes that both commercial and residential builders 100% low-carbon construction materials, reducing 68% of MSA-wide construction emissions.

The CCAP team is less confident in the results for this action than for most other actions included in the CCAP. Analysis of most other actions is based on established, highly localized research and data, whereas analysis of this action is based on emerging research about the general technical potential of this action to reduce consumption-based emissions. This approach is more likely to overestimate climate benefits and/or underestimate costs compared to other analyses, because projects rarely work in reality as well as they work on paper or because local conditions create additional constraints on implementation.

Table 11 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 14** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

There are no local or regional plans that provide cost estimates for this action. To estimate costs, Metro assumed that:

- Upfront annual building costs for non-governmental construction across the MSA increase due to a one percent cost premium for low-carbon materials.
- All costs would be incurred directly by the owner or by a developer and indirectly paid by the end-buyer.

This method is limited in that it is based on emerging research about the general technical potential of this action to reduce consumption-based emissions. The other methods used throughout the CCAP draw on research that is based on evaluating the impacts of implementation projects and/or on local data that reflects actual conditions within the metropolitan area. Cost and benefit analyses that are based on theoretical and/or generic research are likely to overestimate climate benefits and/or underestimate costs compared to analyses that are based on observed and/or localized data, because projects rarely work in reality as well as they work on paper or because local conditions create additional constraints on implementation. The method we use likely leads us to overestimate the benefits of this action relative to others in the CCAP, because it only considers whether sustainable building materials are likely to be available at the national level—not whether they are available to builders in the Portland-Vancouver metropolitan area in a way that allows builders to use them without significantly increasing costs or slowing production.

Government procurement

Overview

Local and regional governments can significantly reduce consumption-based greenhouse gas emissions by using low-carbon goods and services—including construction materials (discussed under Low-carbon construction materials, above) as well as food, furniture, vehicles, electronics and technology, professional services. Many of these goods and services are carbon-intensive to produce, and using low-carbon materials helps to reduce their embodied emissions. This action involves local and regional agencies in the metropolitan area using low-carbon substitutes for some of the most carbon-intensive and commonly-used goods and services agencies procure.

Contribution to GHG reduction

This action reduces GHG emissions by displacing the (often significant) amount of emissions that are created when goods and services are produced or transported to the region. The climate benefits of this action are only captured by consumption-based emissions inventories that capture emissions produced outside of the region. See the Greenhouse gas inventory for information on consumption-based emissions. Large-scale use or adoption of low-carbon materials can shift supply chains, create green jobs, and demonstrate leadership in climate-smart development.

Implementation

Related plans, policies, and resources

Almost all local and regional climate plans in the metropolitan area aim to reduce carbon emissions due to their own operations. These efforts traditionally focus on reducing emissions from energy and fuel use, not on reducing consumption-based emissions. However, the emerging focus on reducing consumption-based emissions, highlighted by Oregon DEQ's Consumption Based Emissions Inventory (CBEI) and its companion document Opportunities to Reduce Greenhouse Gas Emissions Caused by Oregon's Consumption, led local and regional agency partners to recommend including this action in the PCAP. State policies that aim to create transparency around embodied emissions in materials, such as Oregon's Buy Clean policy (HB 4139) and Washington's Buy Clean & Buy Fair Act, help provide the information that local and regional agencies need to identify low-carbon goods and services.

Implementation authority and responsibilities

Public agencies in the metropolitan area have the authority to set standards for the goods and services they procure, and are also responsible for covering the costs of meeting these standards.

Implementation recommendations

Through engagement and research, the CCAP team identified many ways for local and regional agencies in the metropolitan area to implement this action effectively and to the benefit of all, including:

- **Collaborate when setting low-carbon procurement policies to ease implementation and lower costs**. There are a variety of options available, and it can be confusing to determine which ones best meet agencies' goals and produce verifiable GHG reductions. Agencies can collaborate to share information on available RECs and offsets, establish procurement standards for these purchases, and even collaborate on bulk purchases to reduce costs for all partners involved.
- **Focus on materials for which Environmental Product Declarations (EPDs) are available.** EPDs are an emerging standard for describing the embodied emissions of materials, and are the best resource for identifying verified low-carbon goods and materials.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. The scenarios vary by the type of purchases covered by sustainable procurement policies and on the depth of emissions reductions that these policies require. For the construction components, these scenarios include the replacement of traditional building materials with lower embodied emissions materials, such as optimized concrete mix, high recycled content metals, low- or no-embodied emissions insulation, low-embodied emissions glazing, and low- or no-embodied emissions finish materials. For the other supply chain purchases, these scenarios also include procurement of alternative goods, food, and services with lower embodied emissions. This is technically feasible given the current availability of low-carbon goods and materials, it is unclear whether there are enough of these materials available within the metropolitan area to avoid the risk of increasing agency costs with this action.

The low scenario assumes all local agencies implement policies for low-embodied emissions construction materials. For the medium and high scenarios, the analysis assumes that local and regional government supply chain comply with guidance from the Science Based Targets Initiative (SBTi), which helps organizations create climate targets that are aligned with science-based global targets. In the medium scenario, local and regional governments are assumed to meet a 30 percent reduction in embodied emissions from all consumption-based purchases by 2050. The high scenario assumes a 50 percent reduction by 2030, with annual increases to reach 90 percent reduction by 2050.

The CCAP team is less confident in the results for this action than for most other actions included in the CCAP. Analysis of most other actions is based on established, highly localized research and data, whereas analysis of this action is based on emerging research about the general technical potential of this action to reduce consumption-based emissions. This approach is more likely to overestimate climate benefits and/or underestimate costs compared to other analyses, because projects rarely work in reality as well as they work on paper or because local conditions create additional constraints on implementation.

Table 11 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 14** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

There are no local or regional plans that provide cost estimates for this action. To estimate costs, Metro assumed that:

- Upfront annual building costs for the local and regional government construction across the MSA increases due to a one percent cost premium for low-carbon materials in the low scenario.
- Additional costs were not available for the medium or high scenario and will vary agency to agency based on what the agency procures.

All costs and potential savings, if applicable, would be incurred by the local governments working to reduce their emissions.

Residential composting

Overview

Many communities already offer curbside composting for single-family housing (SFH), but access is often limited or inconsistent for multi-family housing (MFH). This action promotes expanded access to composting across both single-family and multi-family housing types, with clear education and infrastructure support to ensure participation. Curbside composting is already widely available to SFH in Metro's service area, as well as parts of Clark County. This action involves expanding composting service to all SFH throughout the MSA and to MFH in areas that already provide composting services to SFH.

Contribution to GHG reduction

This action reduces emissions from disposing of waste food in landfills. Disposal contributes a small but important share of overall emissions from food. When food and other organic materials break down in landfills without oxygen, they generate methane—a potent greenhouse gas that is more than 80 times stronger than carbon dioxide over a 20-year period. Composting allows these materials to decompose aerobically, avoiding methane emissions and producing nutrient-rich soil that can be used to support local agriculture and landscaping.

Implementation

Related plans, policies, and resources

Residential composting is already widely available for SFH in many parts of the metropolitan area through the efforts of Metro (which oversees, manages, and coordinates the solid waste system within the Metro service area—including adopting policies and operating facilities that support composting, as well as working with haulers to provide composting services) and the City of Vancouver, which offers composting service for residents. Agencies typically cover the costs of composting services by charging residents fees to use the solid waste system.

Implementation recommendations

Through engagement and research, the CCAP team identified many ways for local and regional agencies in the metropolitan area to implement this action effectively and to the benefit of all, including:

- **Take a pilot-testing approach to implementing composting in MFH.** Providing composting service for MFH is particularly challenging because these buildings have more complex systems for collecting, sorting, and binning waste. Because of this, the City of Beaverton is pilot-testing multifamily composting in order to understand whether and how it might offer this service community-wide.
- **Provide up-front technical and financial support for implementation.** Expanding composting involves covering the ongoing cost of composting service, as well as up-front costs associated with expanding composting, such as providing new bins and guidance for local governments to pass on to residents and supporting haulers in planning for expanded service. Providing technical and financial support to cover these up-front costs accelerates implementation.

Scenarios and results

Metro analyzed different implementation scenarios in order to understand the range of GHG emissions reductions that this action might produce. The scenarios vary based on the extent to which they expand composting service and the number of new households covered. The low scenario would expand composting coverage to 50 percent of the SFH in the MSA that currently lack it. The medium scenario would expand composting coverage to 100 percent of the SFH in the MSA, and the high scenario includes service to MFH as well.

Table 11 captures the estimated GHG emission reductions, costs, and cost-effectiveness of the scenario analysis. **Table 14** highlights the key differences between the three implementation scenarios for all actions in the document. **Appendix 3** contains the full details of the analysis and these scenarios.

There are no local or regional plans that provide cost estimates for this action. To estimate costs, Metro assumed that:

- Upfront implementation costs to launch the program average $90 per household and are applied in the year that composting services are assumed to be added.

However, it is important to note that this analysis may underestimate the total costs. The local agencies with the authority to implement composting requirements would be responsible for initial costs, such as providing compost bins and educating residents on how to use new services. Solid waste haulers would be responsible for operational costs related to hauling and disposal and would presumably pass on the costs to residents in the absence of additional government subsidies. Haulers would not need to haul more waste but would need to haul food waste to a different location than the landfill.

Equity and benefits analysis

In addition to reducing GHG emissions, there are several co-benefits to implementing the actions in the CCAP. Where possible, the CCAP quantifies these benefits for each action based on established practices and available data. In other cases, the CCAP discusses benefits qualitatively based on related research and information from local and regional plans within the metropolitan area.

The CCAP quantifies the following benefits:

- **Air quality:** There is compelling evidence to demonstrate that implementing the actions in this CCAP would reduce exposure to air pollution, including air toxics, which improves public health outcomes. The CCAP quantifies the reductions in different air pollutants due to these actions based on established tools and guidance.
- **Household savings:** Many of the actions in the CCAP save people money on things like gasoline, utility bills, and vehicle maintenance. Some of them also place additional costs on people. The CCAP quantifies these impacts for actions that reduce transportation and building energy emissions because there is established guidance on how to do so for these sectors. No such guidance is in place for actions related to food, goods and services, so the CCAP discusses these co-benefits qualitatively.

The CCAP qualitatively discusses the following benefits:

- **Health and safety:** Many of the actions in the CCAP improve public health or safety independent of the air quality benefits described above, for example by helping people stay cool on hot days or reducing the risk of fatal crashes.
- **Economic development:** In addition to the direct cost savings described above, some of the CCAP actions involve broader long-term benefits, like creating new opportunities for development that can accommodate new growth in the region. Some actions also place additional costs on businesses that may pose barriers to economic development.
- **Resilience and access to nature:** Though the actions in the CCAP are focused on reducing the impact of climate change by cutting pollution, many of them can also help communities be more resilient in the face of climate change and other disasters. Many of the same steps that create resilient communities also improve

access to natural areas, which helps to keep people cool during extreme heat events.

This analysis focuses on the co-benefits that are most likely to benefit people of color, low income people, and other marginalized people. Metro has conducted extensive analysis and research on which issues are priorities for these communities. *The italicized text in this section highlights findings from this work*.

Table 15 summarizes the benefits of different CCAP actions qualitatively and at a glance. A plus sign indicates that an action has positive benefits, a minus sign indicates concerns about negative impacts, and both indicate mixed results. Blank cells indicate that neutral results or no available information on this particular benefit/action combination.

Table 15. Summary of benefits by action

Action name	Air quality	Household savings	Health and safety	Economic development	Resilience and access to nature
Transportation					
Implement local and regional land use plans	+	+	+	+/-	+
Implement transit-oriented development programs	+	+	+	+	
Price and manage parking	+		+		
Implement planned transit service	+	+	+	+	+
Offer discounted transit fares	+	+	+	+	
Build high-speed rail	+		+	+	
Build new bicycle and pedestrian facilities	+	+	+	+	+
Expand electric bike and scooter sharing systems	+	+	+	+	+
Maximize teleworking	+	+		+	
Offer discounted transit passes	+	+	+		
Implement roadway pricing and/or fees	+		+		
Building energy					
Energy efficiency in existing homes	+	+	+	+	+
Efficiency in commercial/ industrial buildings	+	+		+	+
Installing electric appliances in existing homes	+	+	+		
Planting street trees to reduce cooling needs and sequester carbon	+	+	+		+
Increased requirements for electric appliances in new buildings	+	+	+	+/-	
More energy-efficient building codes	+	+	+	+/-	
Net-zero public buildings	+		+		
Rooftop solar	+	+	+	+	+
Food, goods and services					
Residential composting	+				
Low-carbon construction materials	+	-		+/-	
Government procurement	+				
Prevent and recover business food waste, with a focus on prevention	+		+		+
Increase reuse of products and materials	+	+		+	

The following subsections describe the analysis and results for each type of benefit in more detail.

Air quality benefits

In addition to reducing greenhouse gas (GHG) emissions, climate action planning offers significant public health and environmental benefits through the reduction of co-

pollutants such as particulate matter ($PM_{2.5}$), nitrogen oxides (NO_x), sulfur dioxide (SO_2), and volatile organic compounds (VOCs). These pollutants—often emitted alongside greenhouse gases during the combustion of fossil fuels—contribute to respiratory illness, cardiovascular disease, and environmental degradation. The transportation, building energy, and food, goods, and services actions in this CCAP also help reduce harmful air pollutants that impact everyone in the community and have disproportionate impacts for frontline and vulnerable communities.

These co-benefits amplify the value of climate investments, creating healthier and more equitable communities while supporting state and federal climate goals. Recognizing and quantifying these additional benefits strengthens the case for climate mitigation and ensures a more holistic approach to environmental justice and public well-being.

The total co-pollutant reductions for all actions in this CCAP are shown in **Table 16**. They are broken out by sector in **Table 17**. Calculation methodology and action by action co-pollutant reductions are in **Appendix 2**.

Table 16. Co-pollutant reductions: all actions

Co-pollutant reductions (kg)	Low	Medium	High
NO_x	12,467,700	20,881,787	32,463,059
PM2.5	100,403	191,472	362,312
PM10	886,379	1,761,467	3,238,480
VOC	386,535	654,454	1,044,139
CO	2,873,506	4,913,746	7,867,284
Black carbon	287	703	1,263
Organic carbon	96	234	421
Sulfur Dioxide (SO_2)	2,731,918	9,196,638	6,678,331
Ammonia	1,238,959	2,042,355	3,126,940
Lead	43	86	171
Arsenic	19	38	76
Beryllium	14	29	57
Cadmium	14	29	57
Chromium (VI)	3	5	10
Chromium III	12	23	47
Manganese	29	57	114
Mercury	14	29	57
Nickel	14	29	57
Selenium	71	143	286

Table 17. Co-pollutant reductions by sector

Transportation			
Co-pollutant reductions (kg)	**Low**	**Medium**	**High**
NOx	1,437	3,330	5,872
PM2.5	76	183	326
PM10	86	206	367
VOC	2,721	6,605	11,827
CO	88,078	214,016	383,362
Black carbon	287	703	1,263
Organic carbon	96	234	421
Sulfur Dioxide (SO2)	-	-	-
Ammonia	-	-	-
Lead	-	-	-
Arsenic	-	-	-
Beryllium	-	-	-
Cadmium	-	-	-
Chromium (VI)	-	-	-
Chromium III	-	-	-
Manganese	-	-	-
Mercury	-	-	-
Nickel	-	-	-
Selenium	-	-	-
Building energy			
Co-pollutant reductions (kg)	**Low**	**Medium**	**High**
NOx	12,466,262	20,878,456	32,457,187
PM2.5	100,327	191,289	361,986
PM10	114,690	218,054	411,207
VOC	383,815	647,849	1,032,312
CO	2,785,428	4,699,730	7,483,922
Black carbon	-	-	-
Organic carbon	-	-	-
Sulfur Dioxide (SO2)	2,622,869	8,978,541	6,278,811
Ammonia	1,238,959	2,042,355	3,126,940
Lead	43	86	171
Arsenic	19	38	76
Beryllium	14	29	57
Cadmium	14	29	57
Chromium (VI)	3	5	10
Chromium III	12	23	47
Manganese	29	57	114

Mercury	14	29	57
Nickel	14	29	57
Selenium	71	143	286
Food, goods, and services (Residential composting only)			
Co-pollutant reductions (kg)	**Low**	**Medium**	**High**
NOx	-	-	-
PM2.5	-	-	-
PM10	771,603	1,543,207	2,826,906
VOC	-	-	-
CO	-	-	-
Black carbon	-	-	-
Organic carbon	-	-	-
Sulfur Dioxide (SO2)	109,049	218,098	399,520
Ammonia	-	-	-
Lead	-	-	-
Arsenic	-	-	-
Beryllium	-	-	-
Cadmium	-	-	-
Chromium (VI)	-	-	-
Chromium III	-	-	-
Manganese	-	-	-
Mercury	-	-	-
Nickel	-	-	-
Selenium	-	-	-

Note: Low-carbon construction materials and government procurement were not analyzed due to the varying nature of the potential activities.

It is important to note that many of the pollutants above have highly localized impacts, which often means that they pose significant health concerns for people living near sources like roads, power plants, and industrial businesses—and less significant concerns for others. The CCAP does not analyze these localized impacts. This is because the plans on which the CCAP actions are based do not provide enough detail on how investments will be distributed throughout the metropolitan area to support such an analysis.

Household savings

The first CCAP online open house found that people especially value climate actions that save them money. This open house asked people to rate the 3 actions in each sector that benefited themselves and their communities most. Affordability was a common theme

among the most highly rated actions in each sector (which included improving transit service, providing energy efficiency retrofits in existing buildings, and helping people reduce food waste) and in the open-ended comments that people left. Actions that save people money are especially important for low-income people.

Table 18 below summarizes the savings to households in the region due to each CCAP action in the transportation and building energy sectors. Household savings for transportation actions are calculated based on the estimated reduction in vehicle miles traveled for each action, the Internal Revenue Service's estimates of the average cost of driving per mile, and on any additional household costs (e.g., transit fares, tolls, parking fees, etc.) associated with these actions. Household savings for building energy are based on the estimated reduction in energy use for each action and the average cost of different fuels and electricity.

Table 18. Estimated cost savings by action for CCAP transportation and building energy actions

Action / category	Estimated cumulative household cost savings, 2025-50 ($2023)	Notes
Transportation actions		
Implement local and regional land use plans	$16,861	
Implement transit-oriented development programs	$3,357	
Price and manage parking	$-	
Implement planned transit service	$10,814	Includes user cost of transit
Offer discounted transit passes	$171	
Build high-speed rail	$-	
Build new bicycle and pedestrian facilities	$1,780	
Expand electric bike and scooter sharing systems	$12	
Maximize teleworking	$2,853	
Implement roadway pricing and/or fees		Results vary depending on how toll revenues are reinvested
Building energy actions		
Energy efficiency in existing homes	$542	
Efficiency in commercial/industrial buildings	$607	
Installing electric appliances in existing homes	$339	
Planting street trees to reduce cooling needs and sequester carbon	$4	
Increased requirements for electric appliances in new buildings	$547	
More energy-efficient building codes	$812	
Net-zero public buildings	$-	
Rooftop solar	$1,847	

These costs are separate from the upfront costs of each action, which are summarized in **Table 9**, **Table 10**, and **Table 11**. Climate action plans often present combined costs and savings to emphasize that the short-term costs of implementing actions are often offset by the long-term savings. The CCAP keeps these estimates separate for two reasons. First, costs and savings are accrued to different people—government agencies typically cover the up-front costs of implementation, whereas households save money. Second, governments and other implementing organizations typically need to spend up-front before people save money. Combining costs and savings obscures this issue and can mislead people into thinking that climate actions are easier to pay for and implement than they actually are.

Health and safety co-benefits

Many actions in this CCAP have additional benefits for safety and health beyond the air quality benefits discussed above, including:

- **Increased physical activity:** The health and safety benefits of building bicycle and pedestrian facilities to provide additional opportunities for active transportation are well-documented in research. Many transportation actions provide similar benefits by generally encouraging the use of alternatives to driving (though bicycling and walking obviously involve physical activity, studies demonstrate that public transit users also get significantly more physical activity than drivers). Research-based tools like the Integrated Transport and Health Impact Modelling Tool (ITHIM) document and quantify the benefits of increased physical activity due to changing travel behaviors.
- **Reduced serious and fatal crashes:** Most transportation actions also reduce the risk of serious crashes on the region's roadways. FHWA's research on Proven Safety Countermeasures documents the reduction in fatal and serious injury crashes associated with sidewalks, bike lanes, and other active transportation facilities. Research also finds that generally reducing the number of vehicles on the road also helps to reduce serious crashes. *Metro's Regional Transportation Plan finds that serious crashes are concentrated in communities with high concentrations of people of color, people with low incomes and people who speak limited English. Community outreach conducted for this plan emphasized the importance of investing in safer facilities in these communities*.
- **Reduced risk of extreme heat-related illnesses and fatalities:** The many building energy actions that involve making the appliances, windows and walls of both existing and new homes more efficient also help to keep homes cool during extreme heat. This can be especially true for installing heat pumps, which also double as air conditioning units. *Public opinion research conducted by Metro finds that marginalized people are particularly concerned about the impacts of extreme hear in their communities*.
- **Improved indoor air quality:** Upgrading residential appliances, windows and walls makes indoor air cleaner. Older gas appliances sometimes release pollution inside of homes, and people who live in homes that lack air conditioning or proper insulation are also more likely to rely on opening their windows to cool off during

extreme heat, which can expose people to harmful pollution when heat coincides with wildfire smoke.

These health and safety benefits can be challenging to quantify, but existing analyses suggest that they are significant. For example, Metro's Climate Smart Strategy, which includes most of the transportation actions in the CCAP, estimates that reducing GHG emissions from transportation, would save $100 million in public health costs and save 129 lives *each year* by reducing pollution, increasing physical activity, and avoiding crashes.

Economic development co-benefits

Several of the actions in this CCAP have documented economic benefits, including:

- **Creating new opportunities for development:** As the cost of land and buildings rises, developers—especially those looking to build denser and more sustainable communities—are increasingly looking for high-quality development opportunities that offer easy access to jobs and shopping and that are well-served by transit and bike/ped facilities, because high demand for these communities makes it more likely that their developments will turn a profit. Transportation actions that create compact communities and that improve transit, bicycling and walking networks can also increase opportunities for new development. Actions that improve existing buildings can also help to foster nearby development:
- **Increased access to jobs:** The same transportation actions discussed above also make it easier for people to access jobs by allowing them to live nearer to employment centers and enjoy convenient and affordable commutes. The short-term benefits of this are captured under household cost savings. Over the longer term, increasing access to jobs also makes it easier for companies to attract the talent they need, which strengthens the economy overall. *Metro conducted in-depth outreach to marginalized communities through its 2023 Regional Transportation Plan update, and this outreach emphasized the importance of improving transit access to jobs and other destinations*.
- **Investing in new jobs:** Many building energy actions would generate new economic opportunities and increase local employment, especially in construction and building renovation. According to the City of Tigard's Climate Action Report, "Every $1 million of capital investment in renovating buildings generates an estimated 5.5 direct jobs and an additional 10.9 indirect jobs."

- **Equitable workforce development:** Metro's Construction Careers Pathway (C2P2) program recommends actions to provide reliable career pathways for women and BIPOC in the construction trades. Nine agencies throughout the Metro service area — many of which were active participants in developing this CCAP: Metro, TriMet, and Clackamas, Multnomah and Washington counties—have formally agreed to implement the C2P2 framework. This commits participating agencies to include specific clauses that implement C2P2 actions in all construction contracts for agency-led projects. This means that any implementation project led by one of the agencies mentioned above would prioritize hiring workers of color, women, and other marginalized people. *This framework was developed specifically in response to feedback from marginalized workers in the metropolitan area*.

During development of the CCAP we also heard concerns that some actions might stymie or increase the cost of growth, including:

- Actions that impose regulatory burdens on businesses including strengthening building codes, requiring the use of low-carbon construction materials, and requiring collection of additional residential composting. These actions impose costs on businesses including builders, trades, and waste haulers. Sometimes businesses pass these costs on to people in ways that are not captured in our analysis of household savings, and sometimes they absorb these costs—which can make it harder for businesses to return a profit and may ultimately depress growth in professions that are necessary partners in implementing the CCAP.
- Land use practices that create barriers to development in regional centers. As discussed above, implementing adopted land use plans is critical to accommodating new growth and creating new development opportunities. However, CCAP partners highlighted some land use practices that can create barriers to climate-friendly development—especially charging high system development fees in regional centers (discussed under Implement regional and local land use plans) or imposing extensive new requirements on areas near transit, which makes it harder for developers to work in these areas, without also taking steps to disincentivize development in communities where people tend to drive more.

Resilience and access to nature co-benefits

Several of the transportation actions in this CCAP have documented resilience and access to nature benefits, including:

- **Improving emergency transportation networks:** transportation actions that improve transit service and bicycle and pedestrian infrastructure can help people access essential goods and services in the event of a disaster. In particular, pedestrian and bicycle infrastructure provide viable alternative routes if roadways are damaged or blocked by an earthquake or debris.
- **Improving access to nature and cool areas:** The Portland-Vancouver metropolitan area has an abundance of parks and natural areas, and people often rely on these areas to cool off during extreme heat. Improving bicycle, pedestrian and walking networks and planting street trees helps people stay cool when it is hot outside. *Metro's Cooling Corridors study finds that this is an especially high priority for unhoused people and older adults, who are particularly vulnerable to the risks of extreme heat*.
- **Creating resilient buildings:** Building energy actions that improve the walls, windows, and appliances of new and existing homes also provide increased comfort and safety in the face of extreme heat or cold and can prevent smoke intrusion.
- **Building local economies:** Actions that provide new opportunities to reuse expensive and high-carbon goods can help people maintain access to the things that they need if natural disasters or economic shocks disrupt supply chains.

Workforce planning analysis

Though the actions in the CCAP are led by Metro, local governments and other partners, a variety of businesses and workers are involved in implementing them. The CCAP includes a workforce planning analysis to identify any workforce needs that may hamper implementation of the plan.

Metro is working to complete this climate-focused workforce development analysis for the CCAP as part of a broader workforce analysis for the metropolitan area; this broader analysis is still in progress. The draft CCAP identifies the primary occupations involved in implementing the actions described above, describes the resources that are available to support workforce development in these fields, and outlines the information that will be

used to identify workforce-related needs that may affect the CCAP, opportunities to address these needs, and opportunities to expand economic opportunities for marginalized workers.

Potential priority occupations

In order to see the actions in the CCAP through, there need to be enough workers in priority occupations that are necessary to implementing the plan. Potential priority occupations include:

- **Public transportation services**: Bus drivers and transit workers are needed to increase transit service in the region.
- **Engineering and technician services; residential construction and retrofitting; HVAC and basic mechanical systems; and energy efficiency outreach and education:** These sectors are all critical to offering energy efficiency upgrades for buildings—especially for existing homes.
- **Landscaping and green infrastructure installation**: Planting more trees requires more ongoing maintenance.
- **Recycling/composting/waste management services**: These professions are involved in implementing actions that reduce emissions from food, goods and services.
- **Public sector procurement; transportation/urban planning and analysis; and community engagement and program management/coordination/delivery:** These professions are all involved in coordinating and raising funds to implement the actions in the CCAP, and especially important for implementing the many actions that involve changes to regulations, expanding public programs, or reducing public agency emissions.

Positions in these areas do not typically require advanced degrees, but may benefit from short-term training, pre-apprenticeship, or credentialing programs that align with career pathways in construction, utilities, and facilities management.

The CCAP has a different relationship to the workforce than other climate plans, especially state-level plans, often do. State-level plans often focus on increasing the support of clean energy, which requires specialized, technology-focused workers, such as solar installers or EV technicians. The CCAP focuses on general-skill workers because:

- **These are the jobs needed to implement the CCAP.** The CCAP is focused on climate actions that local and regional agencies can lead, which tend to focus on helping people drive less, reduce waste, and save energy–and which requires general-skill labor like bus drivers, community engagement staff, and residential contractors.
- **Focusing on these jobs provides broader and deeper benefits for workers.** There are many more general-skill workers and job opportunities in the Portland-Vancouver metropolitan area than there are openings for specialized jobs. Developing general-skill positions provides opportunities for more workers–both to enter the workforce and to develop their skills as the economy continues to evolve.
- **Growing these occupations delivers benefits beyond climate.** For example, increasing the number of contractors is critical to boosting housing production and addressing the metropolitan area's housing crisis, and recruiting bus drivers helps to provide affordable transportation options for everyone.

Potential partners and resources

A variety of organizations and resources support workforce readiness, training, and upskilling in the fields listed above. These include:

- **Community-Based Organizations (CBOs)** such as Verde, Constructing Hope, and Oregon Tradeswomen for workforce recruitment and culturally responsive training
- **Workforce Investment Boards** (e.g., Worksystems Inc., Clackamas Workforce Partnership, and Workforce Southwest Washington) for labor market data, career navigation services, and co-funding opportunities
- **Community Colleges** (e.g., Portland Community College) for curriculum development and credentialing in high-demand trades
- **Municipal and State Agencies** such as the Bureau of Planning and Sustainability, Energy Trust of Oregon, and Oregon Higher Education Coordinating Commission for technical support and policy alignment
- **Funding Sources** including Portland Clean Energy Fund (PCEF), federal Inflation Reduction Act (IRA) workforce dollars, and Oregon's Future Ready Oregon program

Completing the analysis

The workforce planning analysis in the final CCAP will include:

- More detailed and comprehensive information on the occupations that are needed to support CCAP implementation. Occupations may include but are not limited to bus drivers, technicians, construction laborers, construction equipment operators, truck drivers, supervisors of construction trades and extraction workers, construction managers, carpenters, electricians, plumbers, pipefitters, steamfitters, installers, landscaping and groundskeeping workers, procurement officers, refuse and recyclable material collectors and coordinators.
- A detailed assessment of recent and projected growth in these occupations, including information on current regional employment, historical employment trends, future employment projections, as well as the most recent average hourly wage. When data are available, ECOnorthwest will also research the share of workers of color and female workers in each occupation. **Table** 19 below shows an example of how these results might look.
- Qualitative research on the strategies and trends affecting these occupations, including a review of approaches that support training and retention and insights from recent media coverage that highlight relevant trends, which can serve as valuable case studies and raise public awareness around the workforce dimensions of climate pollution reduction work.
- Findings and recommendations about how to fill workforce gaps and increase opportunities for all workers through implementation of the CCAP.

Table 19. Draft table template analyzing recent and projected growth in key CCAP occupations

Occupation	Current employment	10-year employment change	Projected employment	% BIPOC workers	% Female workers	Average hourly wage (2024)	Related CCAP actions
Priority occupation 1							
Priority occupation 2							
Priority occupation 3							
Etc.							

Coordination and outreach

Metro conducted extensive and varied engagement to develop the CCAP, including convening a dedicated steering group for the project, presenting at the many committees in the metropolitan area that coordinate on climate-related issues, and holding open houses to collect public feedback. This section summarizes these outreach efforts.

Climate Partners' Forum

The Climate Partners' Forum consists of agency and non-profit staff from across the metropolitan area who work on climate-related issues. It is the main technical steering group for the CCAP. New members were added on a rolling basis in order to engage people with the relevant expertise as the plan developed. In addition to guiding the development of CCAP, the Forum offered members the opportunity to share information about relevant climate work across the metropolitan area.

The forum provided input on this CCAP throughout its development, including:

- recommending source material, such as plans and research
- offering feedback on how to best conduct engagement and communicate results
- reviewing analyses and results
- guiding the selection of climate actions

The Forum met roughly bi-monthly throughout development of the CCAP. Metro staff also followed up with individual forum members outside of meetings to follow up on discussions. Full meeting materials and summary information from Forum meetings are available at the project website. These meetings covered the following:

- **July 2024**: Debrief the Priority Climate Action Plan (PCAP) process and lessons learned; discuss the CCAP development process. Discussion focused on the types of data analysis that are used to identify actions and on engagement opportunities.
- **October 2024**: Provide an overview of how the Climate Partners' Forum will be engaged in developing the CCAP; review the PCAP greenhouse gas inventory and discuss the approach to updating the inventory for the CCAP. Clark County and the City of Vancouver presented about what they learned from their recent greenhouse gas inventories. Discussion focused on clarifying the method and actions used to create the inventory, and on the trends and issues that shape results.
- **December 2024**: Introduce approach for developing emission projections and targets for the CCAP. Washington State Department of Ecology presented their approach to projecting GHG emissions. Members conducted small group discussions on which different programs and policies should be captured in the projections, how they should be forecasted, and the uncertainties involved in implementing these policies.
- **March 2025**: Share draft CCAP inventory results and discuss the criteria and process for selecting actions to include in the CCAP. Multnomah County presented their community-driven approach to developing their Climate Action Plan. Members conducted small group discussions on the role of regional agencies in implementing policies, how scenarios should be developed to represent different levels of implementation, and the challenges of accurately estimating implementation levels and impacts.

- **April 2025**: Share and collect feedback on the results of the initial screening of potential CCAP actions. The State of Oregon presented the actions in their draft CCAP and about where they see opportunities for local/regional leadership. Members conducted small group discussions to provide feedback on specific actions and how to best communicate their benefits, describe agency roles and responsibilities, and align them with available funding opportunities. Participants also discussed the roles of regional agencies and the challenges of implementing actions in different communities across the metropolitan area.
- **June 2025**: Finalize the analysis and presentation of the actions in the draft Comprehensive Climate Action Plan. Members reviewed the draft list of Comprehensive Climate Action Plan actions and the results of the analysis of costs and benefits. Participants asked clarifying questions and provided feedback on the results. The discussion focused on highlighting low-hanging fruit, interpreting the high cost of transportation actions, and clarifying the relationship between results and assumptions. Overall, agencies emphasized the importance of context, realistic assumptions, and transparent communication when presenting emissions and cost data.

Future Forum meetings are planned for:

- **September 2025**: discuss comments on draft CCAP
- **November 2025**: update on CCAP implementation and funding sources
- **January 2026**: debrief CCAP, discuss next steps

Climate Partners' Forum participants

Public agencies

- Beaverton
- Clackamas County
- Clark County
- Columbia County
- Gresham
- Hillsboro
- Lake Oswego
- Milwaukie
- Multnomah County

- Oregon Department of Transportation
- Oregon Department of Environmental Quality
- Port of Columbia County
- City of Portland
- Portland Public Schools
- Southwest Washington Regional Transportation Commission
- Skamania County
- Southwest Clean Air Agency
- Tualatin Hills Park and Recreation District
- Tigard
- TriMet
- Tualatin
- Vancouver
- Washington County

Community-based organizations and environmental non-profits

- Blueprint Foundation
- Earth Advantage
- Energy Trust of Oregon
- Fourth Plain Forward
- Getting There Together
- Latino Network
- Neighbors for Clean Air
- Oregon Walks
- The Street Trust
- WorkSystems

Regional advisory committees

Local and regional agencies across the MSA convene monthly technical and policy committees focused on transportation, land use, and other topics relevant to this CCAP. All of these committees include public agency representatives, and several also include community representatives and/or representatives of key private-sector organizations including utilities, home builders, and businesses. Metro staff presented on the CCAP at a variety of these committees.

These presentations focused on supporting coordination among governments by ensuring that agency and non-agency partners across the MSA were well-aware of the CPRG planning grant and knew how to engage with the Climate Partners' Forum. Through these presentations, people at all levels of these organizations—including technical staff, directors and managers, and elected officials—were engaged in the CCAP.

Technical committees

The Metro team presented at Metro's Transportation Policy Alternatives Committee (TPAC), the Metro Technical Advisory Committee (MTAC), and county-level technical committees:[19]

- **July 2024**: Metro presented an overview of the CCAP and announced the results of CPRG Implementation Grant applications submitted by Oregon, Washington, and local and regional partner agencies. The committees discussed how the CCAP is aligned with other climate planning efforts—including the Climate Smart Strategy update, Regional Transportation Plan, and CFEC implementation—aiming to improve coordination and clarity across this work.
- **February 2025**: Metro provided a summary of progress to date on key elements of the CCAP, including public engagement and the greenhouse gas inventory and projections. The committees' discussion focused on the relationship between the CCAP and the Regional Transportation Plan and on how to translate between the different metrics used by different climate plans.
- **May 2025**: Metro presented how the assumptions and scenarios used to analyze transportation- and land use-related CCAP actions were aligned with local and regional plans. The committees discussed the relationship between these actions and related local and state work and raised questions about how these scenarios would be reflected in the analysis of costs and benefits.
- **July 2025**: Metro presented the draft list of CCAP actions, including information on their costs, benefits, and implementation readiness. The committees discussed how to best interpret this information and compliment it with additional context

[19] These committees coordinate transportation and land use decisions at the county level. Metro presented the May and July 2025 items to the Washington County Coordinating Committee Technical Advisory Committee (WCCC TAC). Future technical presentations are available to county committees upon request.

and information on co-benefits, as well as how to present results at a time when agencies face uncertainty and resource limitations.

Metro will present at these committees in **September 2025** to discuss comments on the draft CCAP and recommended changes to finalize the plan, and also seek feedback on the plan from technical committees at the Southwest Washington Regional Transportation Commission and the RTC Regional Transportation Advisory Committee (RTAC).

Policy committees

The Metro team presented the CCAP at the Metro Policy Advisory Committee (MPAC), the Metro Joint Policy Advisory Committee on Transportation (JPACT), the Metro Council. and at county-level policy committees:[20] Policy committee presentations included:

- **February 2025**: Metro staff briefed Metro Council members about the CCAP inventory, projections, and process, with a focus on getting feedback on key issues to address in the draft plan and on selecting greenhouse gas reduction targets. Council members provided feedback on how to best communicate results and on actions and issues that they considered high priorities for the CCAP to address.
- **May 2025**: Metro presented an update on the CCAP inventory, projections, and engagement at MPAC in order to prepare members to offer feedback on the draft plan. Members offered feedback on how to best analyze and communicate results when analyzing actions.
- **June 2025**: Metro presented the draft CCAP transportation actions for feedback at the Washington County Coordinating Committee.
- **July 2025**: Metro presented the draft CCAP actions for feedback at a Metro Council work session. Members asked clarifying questions about the definitions and assumptions related to certain actions and on how community-based

[20] These committees coordinate transportation and land use decisions at the county level. Future technical presentations are available to county committees upon request; Metro has already scheduled presentations in Washington and Clackamas County.

organizations are being engaged in the planning process. Members discussed how to balance ambition and realism in the draft plan.

Metro will present at these committees in **September and October 2025** to discuss comments on the draft CCAP and recommended changes to finalize the plan and bring the final plan to Metro Council for action on **November 2025**.

Coordination with other CCAPs

The Portland-Vancouver metropolitan area is covered both by this metropolitan area CCAP and by the state-level CCAPs created by Oregon and Washington. Metro staff participated in monthly calls with EPA staff, lead staff on these state plans, and with tribal representatives to identify key areas of coordination and focus for the state and metropolitan area CCAPs based on their respective roles and responsibilities.

Online open houses

Two online open houses to inform development of this CCAP. The first online open house was held during winter 2024 and is summarized below. A second online house is planned for August-September 2025 to collect feedback on this draft plan.

Metro hosted the first CCAP online open house from November 19, 2024, to January 6, 2025. More than 115 people participated in the online open house, including two who participated in Spanish and 21 who submitted feedback via adaptive screen-reader technology. Open house participants could view a video, text and graphics about the CCAP and about climate work to date in the region and then respond to a series of four surveys about which greenhouse gas reduction actions most benefit their communities. These surveys were organized according to the key sources of greenhouse gas emissions in the region: transportation; commercial/industrial buildings and processes; residential emissions; and food, goods and services. Each of the four surveys presented a list of seven to nine greenhouse gas reduction actions, described in non-technical language at a general level of detail (i.e., with few details on when, how, or where within the region actions would be implemented). Participants were asked to select the three actions in each survey that they saw as most beneficial to themselves and their communities.

Most beneficial actions by sector

Below is a list of the three actions that were seen as most beneficial in each emissions category, as well as information on the percentage of participants who selected that action as one of their top three.

Transportation

- **Make transit faster**, more convenient, and more reliable (73%)
- **Expand transit service** to neighborhoods that lack it (46%)
- Create **compact and walkable communities** (46%)

Commercial and industrial buildings

- **Increase energy efficiency** of commercial and industrial buildings (55%)
- Install solar panels or other equipment that **generates clean energy** on commercial and industrial properties (48%)
- Support new, **local renewable energy development projects** (43%)

Residential buildings

- **Upgrade older home heating, cooling, and hot water** heating systems with newer, more energy-efficient models (82%)
- **Upgrade the windows and walls of older homes** so that they stay cooler in the summer and warmer in the winter (70%)
- **Require new homes to have energy-efficient appliances** and/or meet energy efficiency standards (54%)

Food, goods, and services

- **Recover more food waste** for donation, energy and composting (64%)
- Help people and businesses **reduce food waste by changing purchasing practices** (52%)
- Increase **reuse of building materials in construction projects**, and salvage valuable materials when buildings are demolished or retrofitted (44%)

Summary of findings

Findings from the survey include:

- **Four actions—improving transit service, upgrading HVAC systems in older homes, upgrading windows and walls of older homes, and recovering more food waste—scored significantly higher than the rest.** In each case, at least 64 percent of respondents said that these strategies benefited them and their

communities. There is a significant gap between the popularity of these actions and other actions included in the open house.

- **Responses emphasized the value of climate actions that have multiple benefits.** Many open-ended comments recommended climate actions that have other co-benefits related to the environment (e.g., planting more trees and better preserving them, wetlands preservation, reducing plastic use and pollution), equity (increased affordable housing, supporting community-led climate projects), and health (reducing transportation-related deaths, improving air quality). Some of these options were not included in the survey because research has demonstrated that they have little to no impact on climate emissions, and the CCAP is focused on identifying significant actions that can meet ambitious climate targets. Nonetheless, this feedback highlights the need to prioritize actions that not only benefit the climate, but also have safety, health, environmental, and equity co-benefits.
- **Respondents were skeptical about efforts to reduce emissions through education and outreach alone.** Three of the four categories included actions designed to help people understand the climate impacts of their current choices and/or make more climate-friendly choices. Fewer than 35% of respondents identified these actions as beneficial, putting them in the lower-scoring end of the range wherever they were included. However, many education and outreach efforts seek to connect people with opportunities to reduce emissions that were seen as highly beneficial. For instance, transportation education and outreach programs are often focused on helping people take advantage of new or improved transit service, and residential outreach programs often help people connect with free home energy audits and retrofits. This suggests that outreach and education programs benefit people to the extent that they are designed to help people make the most of opportunities created by investments in other GHG reduction actions.
- **Making older buildings more energy efficient is seen as more beneficial than greening newer buildings.** Both categories that were related to building emissions included both actions focused on older buildings and actions focused on newer ones. In every case more people saw the former as more beneficial than the latter. This makes sense given that older homes make up the majority of the region's building stock, so investing in existing buildings stands to benefit more people.

- **Many people recommended actions to promote a large-scale shift to cleaner energy sources**. Local and regional agencies have typically focused on smaller-scale renewable energy systems or greening energy sources for the municipally owned utilities that serve some communities. Larger-scale shifts to cleaner energy among the investor-owned utilities that serve most of the metropolitan area are typically led at the state level by Public Utilities Commissions with the authority to regulate these utilities. As discussed below, both Oregon and Washington already have ambitious requirements to shift to cleaner energy sources, which the CCAP will account for in its GHG projections. The CCAP team will coordinate with state agencies to determine whether there are additional local/regional actions that can effectively advance clean energy.
- **Respondents have a broader range of opinions about actions to reduce transportation and residential emissions than they do about other actions.** The percentage of respondents who selected each action ranged from 5-73% for transportation and 12-82% for residential, versus 24-55% for commercial/industrial buildings and 30-64% for food, goods, and services. This could be because transportation and residential buildings have often been the focus of climate work in Oregon and our region, so people have more knowledge of and have formed stronger opinions about these actions. The low-end scores in the transportation and residential categories (both of which included actions that fewer than 20% of people identified as beneficial, including actions related to parking pricing, electric vehicles, and energy efficiency education) could indicate that people see these actions as having negative impacts, such as increasing household costs or diverting resources from more impactful actions. Notably, multiple open-ended responses explicitly encouraged agencies not to pursue a specific transportation action—widening or expanding throughways. When evaluating potential CCAP actions, particularly in the transportation and residential categories, it is important to not only consider actions' GHG reductions and co-benefits, but also consider the potential negative impacts that might result from increasing household costs or diverting resources away from more beneficial strategies.

Strategies to overcome linguistic, cultural, institutional, geographic, and other barriers to participation

Engagement for the CCAP included the following steps to overcome barriers to participation:

- **Climate Partners' Forum meetings:** Meetings were hosted online on Zoom, which included closed captioning for participants. Activities and discussions for these meetings allowed participants to either speak or type their feedback based on their comfort level. Staff offered participation stipends and follow-up discussions for representations of community-based organizations.
- **Online open houses:** Online open houses are available in screen-reader format, and the Winter 2024-25 open house was available in Spanish. Metro will offer follow-up language assistance upon request for the upcoming online open house.

In general Metro has a policy of writing public materials in plain language and making documents accessible. Project factsheets and publicly posted materials followed this guidance where relevant.