Oregon Climate Action Commission

Biennial Report to the Oregon Legislature

December 2024

Oregon Climate Action Commission

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EXECUTIVE SUMMARY

The Oregon Climate Action Commission (OCAC) is responsible for tracking and evaluating the impacts of climate change in Oregon, Oregon's greenhouse gas (GHG) emissions and progress in reducing GHG emissions, and the effectiveness of Oregon's policies and programs to reduce GHG emissions. The 2024 Report to the Legislature presents the OCAC's current findings.

In this biennial report, the OCAC strongly recommends that the Legislature direct new actions and fully fund existing priority climate programs. The Commission highlights additional actions the Legislature and agencies should take to help Oregon stay on track toward its greenhouse gas mitigation goals as outlined in the OCAC's *Oregon Climate Action Roadmap to 2030* (*Roadmap*). The *Roadmap* concluded that Oregon needs to act with greater ambition to advance a just and equitable clean energy transition and achieve the state's GHG reduction goals on an accelerated timeline, with a recommendation to achieve at least a 95 percent reduction below 1990 levels by 2050.

Climate change is already having a measurable impact on Oregon's landscape, communities, and economy. Oregon is experiencing increased temperatures, changing precipitation patterns, reduced snowpack, drier summers, and more frequent and damaging wildfires. Multiple sectors, industries, and communities across the state are highly vulnerable to future climate risk. Climate change is also a significant equity issue, multiplying a series of threats—from food and housing insecurity to health hazards—that disproportionately impact disadvantaged and vulnerable communities.

Actions to mitigate and adapt to climate change can significantly benefit Oregon's communities, economy, and environment. The OCAC's *Transformational Integrated Greenhouse Gas Emissions Reduction (TIGHGER) Project*, which informed the *Roadmap,* identified a set of additional actions that Oregon could take to accelerate achievement of the state's interim 2035 GHG reduction goal to 2030. The analysis estimated that these additional near-term actions will create more than $120 billion in cumulative *net economic and public health benefits* for Oregonians each year by 2050 and create up to 357,000 jobs, among other benefits.

Oregonians should be proud of the recent climate actions taken by the Legislature and state agencies since the Commission published its *Roadmap* and *2023 Biennial Report to the Legislature.* Although progress on implementing these actions has been made, Oregon's sector-based emissions continue to trend flat, and its consumption-based emissions have dramatically increased. In addition, several key climate programs designed to significantly reduce emissions have not had time to effect change, have had setbacks, or need complementary action and funding to meet their potential. New programs and investments are needed to maintain progress in reducing emissions, especially those associated with transportation, the built environment, and materials management.

The OCAC's *2024 Biennial Report* uplifts several key *Roadmap* recommendations that still require action by the Legislature. In addition, priority recommendations relating to implementing natural climate solutions and actions to reduce consumption-based emissions are important to advance the state's GHG reduction goals comprehensively. The following principles and actions are recommended based on their GHG emissions reduction potential; importance to a rapid and equitable transition to a clean energy and sustainable future; as well as the opportunities the Commission anticipates for advancing climate action in 2025 and 2026.

Several recommendations have accompanying sub-recommendations and context that can be viewed in Section IX. The OCAC encourages the Legislature to support these near-term climate actions that will help us reach a more sustainable future:

Goal Updates

1. Adopt updated state greenhouse gas goals consistent with the best available science.[i]

Existing Programs

2. Support robust and continuous implementation of Oregon's existing climate programs and regulations.

New Programs

3. Advance a set of additional climate actions to help Oregon meet an accelerated greenhouse gas reduction goal of 45 percent below 1990 levels by 2030.

Cross-Cutting Recommendations

4. Position the state to take full advantage of federal investments in climate action.[ii]
5. Design policies and programs with effective Tribal and community engagement and ensure equitable implementation of climate action in Oregon.[iii]
6. Design policies, programs, and practices to advance climate resiliency in Oregon's natural and working lands, communities, and economy.
7. Investigate options and create a sustained source of state funding for climate action, including establishment of a Green Bank to use the state's bonding capacity and incentivize private investments in a clean energy transition and natural climate solutions.[iv]
8. Fund the Oregon Department of Energy, in partnership with Oregon Health Authority, to improve data and evaluation for the public health co-benefits of the state's climate investments.

This Report to the Legislature is available online: https://climate.oregon.gov/reports

[i] (*Roadmap* Recommendation 2D; Natural and Working Lands Proposal; Opportunities to Reduce Greenhouse Gas Emissions Caused by Oregon's Consumption, Emissions Recommendation 1).
[ii] (Roadmap Recommendation 6; Natural and Working Lands Strategy 1).
[iii] (*Roadmap* Recommendation 1C and 3C; Natural and Working Lands Proposal Adopted Principles; Opportunities to Reduce Greenhouse Gas Emissions Caused by Oregon's Consumption).
[iv] (*Roadmap* Recommendation 6B; Natural and Working Lands Strategy 2).

INTRODUCTION

The Oregon Climate Action Commission (OCAC) was originally established in 2007 as the Oregon Global Warming Commission to track and report on Oregon's progress toward achieving the state's greenhouse gas reduction goals. The Commission is directed by statute to track and evaluate:

- The economic, environmental, health, and social assessments of climate change impacts on Oregon;
- Greenhouse gases emitted by various sectors of the state economy;
- The state's progress toward the greenhouse gas emissions reduction goals established by the Legislature; and
- Existing greenhouse gas emissions reduction policies and measures.[1]

The OCAC is also authorized to make recommendations for new policies and actions that should be taken to meet the state's greenhouse gas (GHG) emissions reduction goals.

This 2024 Biennial Report to the Legislature presents the OCAC's current findings and recommendations in support of comprehensive state climate action.[v]

The report is responsive to OCAC's statutory and executive directives: Part I provides an overview of climate impacts in the state. Part II reports on the growing costs of inaction of addressing the climate crisis and the benefits of action. Part III presents an overview of Oregon's GHG emissions reduction goals and progress toward achieving these goals. Part IV and V provide updates on how Oregon's climate policies and programs are being implemented, and Parts VI and VII provide examples for how the state is implementing equity and resiliency through its climate programs. Part VIII is an update on state agency climate priorities, and Part IX concludes with recommendations for future action.

The recommendations focus on reinforcing those actions from the Oregon Climate Action Roadmap to 2030 (*Roadmap*) and Natural & Working Lands Proposal, and identify where additional actions may be needed to achieve the state's climate objectives.

Oregon Climate Mitigation and Adaptation Information Resources

In addition to the information contained in this Report, several other resources are available to help Oregonians better understand the climate mitigation and adaptation challenges and opportunities facing our state:

- The Oregon Climate Change Research Institute produces reports on current and projected impacts of climate change. The Sixth Oregon Climate Assessment Report was released in January 2023.
- The Oregon Department of Energy produces a Biennial Energy Report (BER) with information on state and local policies and actions to reduce GHG emissions. The 2022 BER includes a catalog of state climate programs.
- The Oregon Health Authority reports on public health impacts of climate change on people in Oregon, particularly those at inequitable risk, by issuing the Climate and Health in Oregon annual reports and the 2021 Climate Equity Blueprint.

[v] With the adoption of HB 3409, the OCAC is required to submit its biennial report to the Legislature by December 1 in even numbered years so that the latest information is available by the start of the regular legislative session. The previous biennial report to the Legislature was submitted in March 2023.

- The Oregon Department of Environmental Quality produces an annual assessment (inventory) of GHG emissions in Oregon.
- The Every Mile Counts multi-agency partnership collaborates on actions to implement the Oregon Statewide Transportation Strategy to reduce GHG emissions from transportation.
- The Oregon Transportation Emissions Website provides a deep dive on Oregon's public sector actions to reduce GHG emissions from transportation.
- The Oregon Department of Land Conservation and Development updated Oregon's Climate Change Adaptation Framework and is developing a Climate Change Social Vulnerability Assessment.

I. IMPACTS OF CLIMATE CHANGE IN OREGON

Oregon is already experiencing the physical impacts of climate change. According to the Oregon Climate Change Research Institute's sixth Oregon Climate Assessment, these impacts include increasing temperatures, changing precipitation patterns, reduced snowpack, drier summers, and more frequent and larger wildfires.[2] Even if emissions decline considerably, these impacts will intensify over the coming decades, although reducing emissions will decrease the magnitude and duration of the impacts. This section describes some of these key impacts.

Extreme Heat

Oregon is becoming warmer and drier. Oregon's annual average temperature increased by more than 2°F over the past century. Without significant reductions in greenhouse gas emissions, Oregon's annual average temperature is projected to increase by 5°F by mid-century and by 8.2°F by the 2080s, with temperature increases being the most pronounced in the summer. This level of warming is expected to exacerbate impacts to both the natural and human environments that have already started to manifest in the state.[3]

Extreme heat presents a growing threat to Oregon's human communities and some elements of its natural environment. Over the past 70 years, the number of extremely warm (90°F or above) days increased substantially across Oregon, and climate change is projected to increase the intensity and frequency of extreme heat events in the state.

In summer 2024, parts of the western United States experienced record-breaking temperatures, with excessive heat warnings in place for extended periods of time. The two hottest days recorded on Earth occurred in July 2024.[4] July was also the hottest on record for Oregon, with maximum temperatures in several communities exceeding all-time records.[5] In several cities across the state, temperatures were over 100˚F on five or more consecutive days. The higher temperatures led to fatalities and contributed to an active wildfire season in Oregon.

Multiple scientific studies have found that **climate change is already contributing** to heat waves, widespread drought conditions, severe wildfires, coastal erosion, and other extreme weather conditions in Oregon.

On July 5, 2024, Governor Tina Kotek declared a statewide emergency due to the record-setting heat.[6] Extended durations of heat pose substantial health risks, particularly for children, older adults, people with disabilities, and outdoor workers. Seventeen deaths were attributed to the extreme heat.[7] State, local, and tribal agencies responded to requests for emergency cooling shelters, transportation assistance, and distribution of life-sustaining supplies, including water and medical supplies. The extreme

heat also strained Oregon's energy grid and critical infrastructure, posing a risk of utility outages and equipment and transportation disruptions.[8]

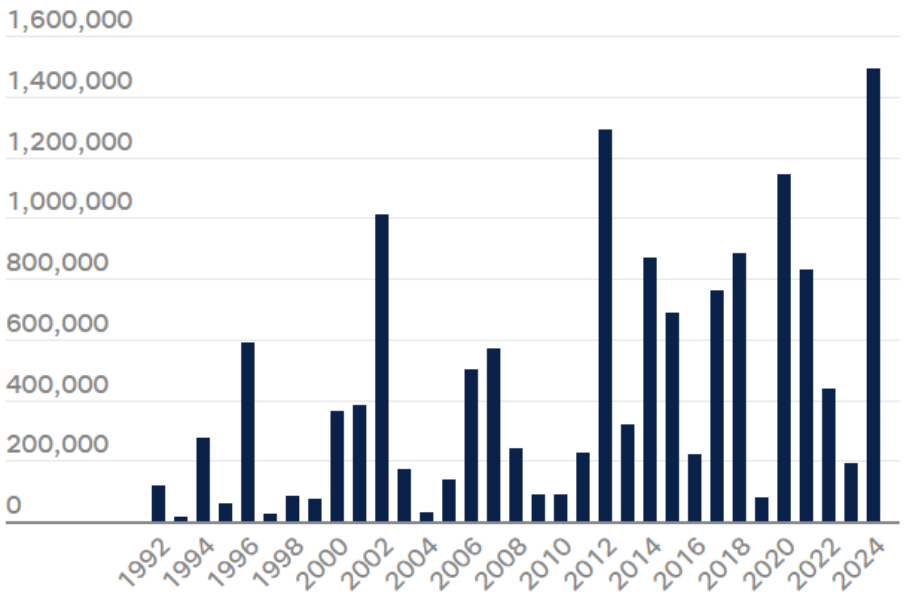
Drought

Over the last 20 years, the frequency, extent, and severity of drought in the Pacific Northwest has increased.[9] From 2020 through 2022, drought was present across most of Oregon. While the state had a relatively wet spring, as of October 15, 2024, approximately 63 percent of Oregon is under drought conditions and 29 percent is categorized as Abnormally Dry.[10] Under current emissions trends, seasonal droughts are projected to last 11 to 33 percent longer and be at least 40 percent more severe by the end of the century.[11] Reduced water availability from drought can result in fisheries closures, emergency conservation measures, and reduced hydropower generation.[12]

Wildfire Impacts

As global temperatures increase, wildfires are expected to become larger and more frequent in Oregon and across the West. In the Pacific Northwest and California, the number of days with extreme wildfire danger has more than doubled since 1979.[13] Drought and increased aridity also contribute to increased fire risk in Oregon. If GHG emissions do not decrease, concentrations of fine particulate matter from wildfire smoke could double or triple by the end of the century.[14] A recent DEQ air quality study found that smoke from wildfires is causing an increase in the number of days with impaired air quality considered unhealthy or hazardous for sensitive groups.[15]

Figure 1: Total Acres Burned by Wildfires in Oregon Per Year



*2024 numbers through Aug 5. Majority of acres burned in grassland
2002: **Biscuit fire** - 500,000 acres in southwest Oregon,
2012: **Holloway, Long Draw, Miller Homestead fires** - 964,051 acres in SE Oregon
2020: **Labor Day Fires** - almost 1 million acres burned around Sept. 7-8 in W. Oregon
2021: **Bootleg Fire** - 413,762 acres near Klamath Falls

Source: Forest Service Research Data Archive, National Wildfire Coordinating Group

More area in Oregon burned during the 2024 wildfire season than in any previous year on record.[vi] In July 2024, Governor Tina Kotek declared a state of emergency over the threat caused by wildfires burning tens of thousands of acres throughout Oregon. During that month, nearly 40 wildfires were burning across the state. Four fires exceeded 100,000 acres, leading to closures of large areas of public land, including areas in the Willamette National Forest and the entire Malheur National Forest.[16] The Durkee fire, the largest fire in the United States at that time, closed Interstate 84 in eastern Oregon, negatively affecting interstate travel and commerce.[17]

[vi] The most destructive wildfire year in Oregon history in terms of mortality and structures lost remains 2020, when the Labor Day Fires burned 1.14 million acres, destroyed 4,009 homes, and killed nine people.

At the end of the fire season in October, more than 2,000 fires had burned over 1.93 million acres across the state, with a majority of acres burned in rangelands.[18] This surpassed the 2012 total of 1.2 million acres burned, and the 2020 total of 1.14 million acres.[19] Fires destroyed at least 42 homes and 132 other structures and caused severe disruptions to transportation, utility infrastructure, and social services. Ranchers in Eastern Oregon lost access to critical resources for their livestock, leading to long-term challenges in restoring the land and significant lost business revenue.[20] These impacts led Governor Kotek to issue a Major Disaster Declaration following the 2024 wildfire season.[21]

Precipitation Impacts

Climate change is affecting seasonal precipitation, resulting in more precipitation in winter and less in summer. Many parts of Oregon depend on seasonal meltwater, and climate change is causing declines in snowpack that threaten local water supplies. In some recent years, Oregon has experienced below-average snowpack due to above-average temperatures or below-average winter precipitation.[22] The water content of the annual snowpack across Oregon is currently projected to decline by 25 percent by 2050 but could decline by more than 60 percent by mid-century if emissions continue to rise. The supply of water for irrigation in parts of the state likely will decrease as a result. Reductions in snowpack also contribute to declines in soil moisture, which can exacerbate wildfire risk.[23]

The intensity of extreme precipitation events, including heavy downpours that can cause flooding, may increase in some parts of the state by 2050. Extreme precipitation events can affect waterways and trigger landslides, posing a threat to lives, property, and infrastructure. In December 2023, a powerful atmospheric river made landfall in the Pacific Northwest, resulting in heavy rainfall, snowmelt, and damage and fatalities from flooding and landslides.[24] This event closed highways and schools, and damaged local roads and railways across the region.[25]

II. COSTS OF INACTION—AND BENEFITS OF ACTION

The costs of societal inaction on climate change are significant and continue to grow, with multiple sectors, industries, and communities affected across the planet. In June 2024, an international study found that climate change is projected to cost society $38 trillion per year by 2049.[26] In the United States, the number of costly extreme weather disasters continues to rise. In 2023, the U.S. experienced a record 28 weather disasters exceeding a billion dollars in damages, with a total cost of $94.9 billion.[27] 2023 also produced the 8th highest disaster-related fatalities for the contiguous U.S. since 1980, with at least 492 direct or indirect fatalities caused by extreme weather events.[28]

As of November 1, 2024, there have been 24 confirmed weather and climate-related disaster events in the U.S., each with losses exceeding $1 billion, including the extreme winter storm event that hit the Pacific Northwest in January 2024.[29] In September 2024, Hurricane Helene devasted the Southeastern U.S. Early estimates have damages at $35 billion but it will take months for a complete accounting due to the scale of the damage.[30] It was followed by Hurricane Milton in October 2024, another devasting extreme weather event. Overall, the U.S. has sustained 400 weather and climate disasters since 1980 where costs from damages reached or exceeded $1 billion (adjusted for inflation) with total costs in excess of $2.785 trillion.[31]

Figure 2: Climate Impacts by Sector

	Sector	Threat
	**Agriculture**	Warmer temperatures, decreasing irrigation water supplies, wildfire, adverse outdoor working conditions
	**Forests and Timber Production**	Warmer and drier conditions, increasing size and intensity of wildfires
	**Fisheries**	Rising water temperatures, algal blooms, ocean acidification, reduced stream flows
	**Recreation**	Snowpack declines, heat waves, shifts in precipitation patterns, wildfires

Across Oregon, climate change threatens a range of economic sectors and communities, including agriculture, fishing, forestry, and recreation.[32] For example, increased wildfire activity has had devastating impacts on the state's forest ecosystems and rural communities over the last several years. From 1992 to 2001, wildfires in the state burned an average of 198,000 acres per year. In the years between 2002 and 2017, that number jumped to an average of 433,541 acres burned each year.[33] Over the past five years, Oregon has averaged over $100 million annually in emergency wildfire suppression costs.[34] Oregon fire officials have documented the catastrophic 2020 wildfires – which caused over $541 million in damages – as Oregon's highest wildfire damage assessment to date.

Actions to mitigate and adapt to climate change have the potential to significantly benefit Oregon's communities, economy, and environment. The benefits of action are well-documented, for example, by the OCAC's *Transformational Integrated Greenhouse Gas Emissions Reduction (TIGHGER) Project*, which informed the Commission's *Roadmap to 2030*. The TIGHGER analysis identified a set of additional actions the Oregon could take to accelerate achievement of the state's interim 2035 GHG reduction goal to 2030. The analysis estimated that these additional near-term actions, above and beyond actions taken to comply with HB 2021 and the CPP, could create $47 billion in cumulative ***NET*** economic benefits by 2050 and an additional $76 billion in public health benefits, producing more than $120 billion in cumulative benefits for Oregonians per year by 2050. Implementing the proposed TIGHGER actions was also projected to create up to 357,000 jobs and provide substantial other co-benefits.[35]

The TIGHGER analysis illustrates that the long-term benefits from achieving Oregon's emission reduction goals will far outweigh the near-term investments that will be required to mitigate emissions. Although conducting additional TIGHGER modeling analysis to reflect recent progress and updated costs/benefits achieved with climate program implementation was not feasible in time for this report, these results will be updated through ODOE's (TIGHGER 2.0) analysis effort in 2025.

III. PROGRESS TOWARD MEETING OREGON'S GHG EMISSION REDUCTION GOALS

The Oregon Legislature adopted the following GHG emission reduction goals in 2007, which reflected the best available science at that time:

- By 2010, Oregon will arrest the growth of greenhouse gas emissions and begin to reduce emissions;
- By 2020, Oregon will achieve greenhouse gas levels that are 10 percent below 1990 levels; and
- By 2050, Oregon will achieve greenhouse gas levels that are at least 75 percent below 1990 levels.

In 2020, Governor Brown's Executive Order 20-04 established an interim goal for Oregon to achieve at least a 45 percent reduction in emissions below 1990 levels by 2035 and a more ambitious mid-century goal to achieve at least an 80 percent reduction by 2050.

To inform its *Roadmap to 2030*, the OCAC evaluated the emissions reduction recommendations presented by the Intergovernmental Panel on Climate Change (IPCC) and emissions reduction goals adopted by the Biden Administration and by Oregon's neighboring states. Oregon's current statutory GHG goals have not been updated since their initial adoption in 2007 and do not reflect the best available current science. Drawing from this analysis, the OCAC recommended the Oregon Legislature update the state's GHG reduction goals to reflect the best available science and align with other federal and state climate targets.

Assessing progress toward meeting Oregon's GHG emission reduction goals requires both a look at recent and historical emissions as compared with the state's emission targets. The Oregon Department of Environmental Quality maintains two GHG emissions inventories: a sector-based inventory and a consumption-based emissions inventory. DEQ's sector-based inventory, updated annually, is a statewide accounting of emissions generated from Oregon's transportation, residential, commercial, industrial, and agriculture sectors. This inventory only includes emissions produced within the state, with one exception: emissions associated with electricity that is consumed in Oregon are included in the sector-based inventory, regardless of where that electricity was generated.[36] Emissions from electricity produced in Oregon and exported for use outside of the state are not included in the inventory.

DEQ's consumption-based emissions inventory is separate and supplemental to the sector-based inventory. The consumption-based inventory includes emissions produced globally due to Oregon's consumption of energy, goods, and services. Over half of Oregon's consumption-based emissions occur in other states or nations and are not included in the sector-based inventory. While DEQ has produced periodic updates of the sector-based inventory (typically on a five-year cycle), the agency is not required to track consumption-based emissions on an ongoing basis. Through this report, the OCAC is advancing recommendations that the legislature adopt a consumption-based emissions reduction goal for Oregon and a directive to track and regularly report these emissions.

Recent and Historical Emissions Trends

The OCAC uses Oregon's sector-based GHG emissions inventory to track progress toward the state's GHG goals. To present the most current picture of Oregon's emissions and recent emissions trends, this report applies preliminary 2022 inventory data from DEQ.[37] In 2022, Oregon's sector-based emissions totaled 59 million metric tons of carbon dioxide equivalent (MTCO2e), which reflects a reduction of 1 million MTCO2e from 2021 emissions. The almost 2 percent decrease in emissions from 2021 to 2022 is mainly attributed to the transportation and industrial sectors. The decline in transportation emissions appears to coincide with increased sales of low-carbon fuels in the state, such as renewable diesel. In the

industrial sector, there were declines in certain process-based GHG emissions, particularly from electronics and semiconductor manufacturing.[38]

Looking back over the past four years, Oregon's emissions trends generally tracked economic activity in the state. From 2019 to 2020, Oregon's emissions dropped by approximately 5 million MTCO2e due to economic slowdown caused by the COVID-19 pandemic. In 2021, emissions increased by 3 million MTCO2e as economic activity rebounded in the state, before a decreasing by 1 million MTCO2e in 2022. In 2022, emissions were 14 percent above the 2020 goal and were 5 percent higher than 1990 levels.

In 2020, at the start of the pandemic, Oregon's per capita emissions were 13.5 MTCO2e per person.[vii] [39] Based on preliminary emissions data, Oregon's 2022 per capita emissions saw a minor increase per person – reflecting an increase in emissions since the pandemic.[viii] [40] As points of comparison with available data, Oregon's per capita emissions were lower than U.S. 2020 per capita emissions, but higher than those found in certain other states.[ix] [41] [42] [43] Oregon's per capita emissions have been declining even with an increasing population. For example, between 2010 and 2022, the state's per capita emissions decreased by 2.3 MTCO2e per person, even as the state experienced a population increase of over 400,000 people.[x] [44] Although the trend for sector-based emissions has been flat or decreasing, this has not been the case for the state's consumption-based emissions (see explanation further in this section).

The tables and figures that follow present the state's historical emissions by sector, and by sector and source. Viewing the data across multiple decades and methods of categorization can reveal new insights.

Table 1 and Figure 2 present the state's emissions data from 1990 to 2022 by sector, using the DEQ sector-based inventory data.[xi]

Table 1: Oregon Emissions in Million Metric Tons of CO2e by Sector: 1990-2022 (Source: DEQ, 2024)

Sector	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Transportation	21	22	24	24	22	21	21	20	21	22	22	24	24	23	19	21	20
Residential & Commercial	16	20	23	22	23	22	20	21	20	21	19	20	20	22	20	20	20
Industrial	13	16	17	13	11	11	11	11	12	12	11	11	12	12	12	13	13
Agriculture	6	6	5	7	6	7	6	6	6	6	6	6	6	6	5	5	5
Totals	**56**	**65**	**70**	**66**	**62**	**61**	**59**	**59**	**59**	**61**	**59**	**61**	**61**	**62**	**57**	**60**	**59**

[vii] Calculated using DEQ GHG emission inventory data of 57 million metric tons of CO2e in 2020 and 2020 population data from the U.S. Census Bureau of 4.24 million.

[viii] Calculated using DEQ GHG emission inventory data of 59 million metric tons of CO2e in 2022 and 2022 population data from the U.S. Census Bureau of 4.24 million.

[ix] U.S. per capita emissions were calculated by using U.S. 2020 emissions data from the U.S. EPA of 5981.35 million metric tons of CO2e and 2020 population data from the U.S. Census Bureau of 331.45 million people.

[x] Calculated using DEQ GHG emission inventory data of 62 million metric tons of CO2e in 2010 and 59 million metric tons of CO2e in 2022, and population data from the U.S. Census Bureau of 3.83 million (2010) and 4.24 million (2022).

[xi] In the 2022 sector-based inventory, DEQ revised some GHG emissions totals for previous years due to correct errors and incorporate updated adjustment factors, particularly for transportation, agricultural, industry, and natural gas sources.

Figure 2: Oregon Emissions in Million Metric Tons of CO2e by Sector: 1990-2022 (Source: DEQ, 2024)

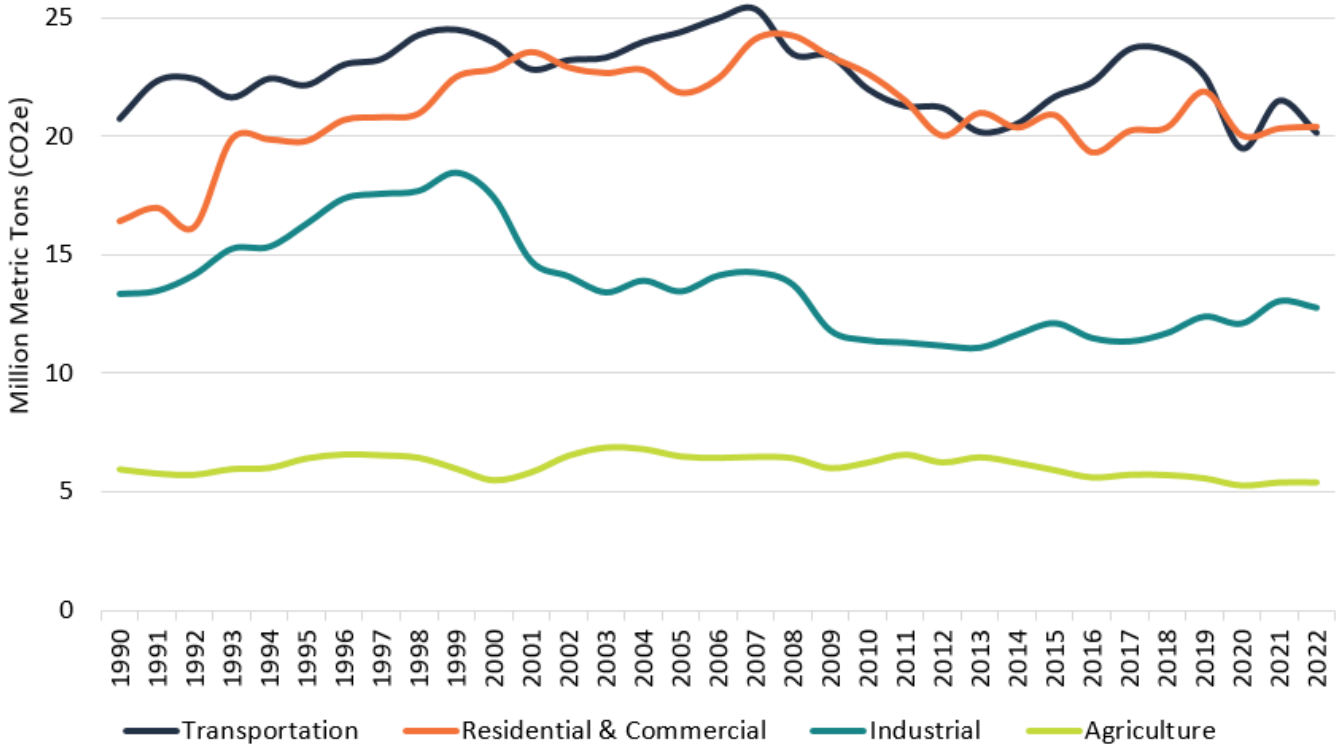


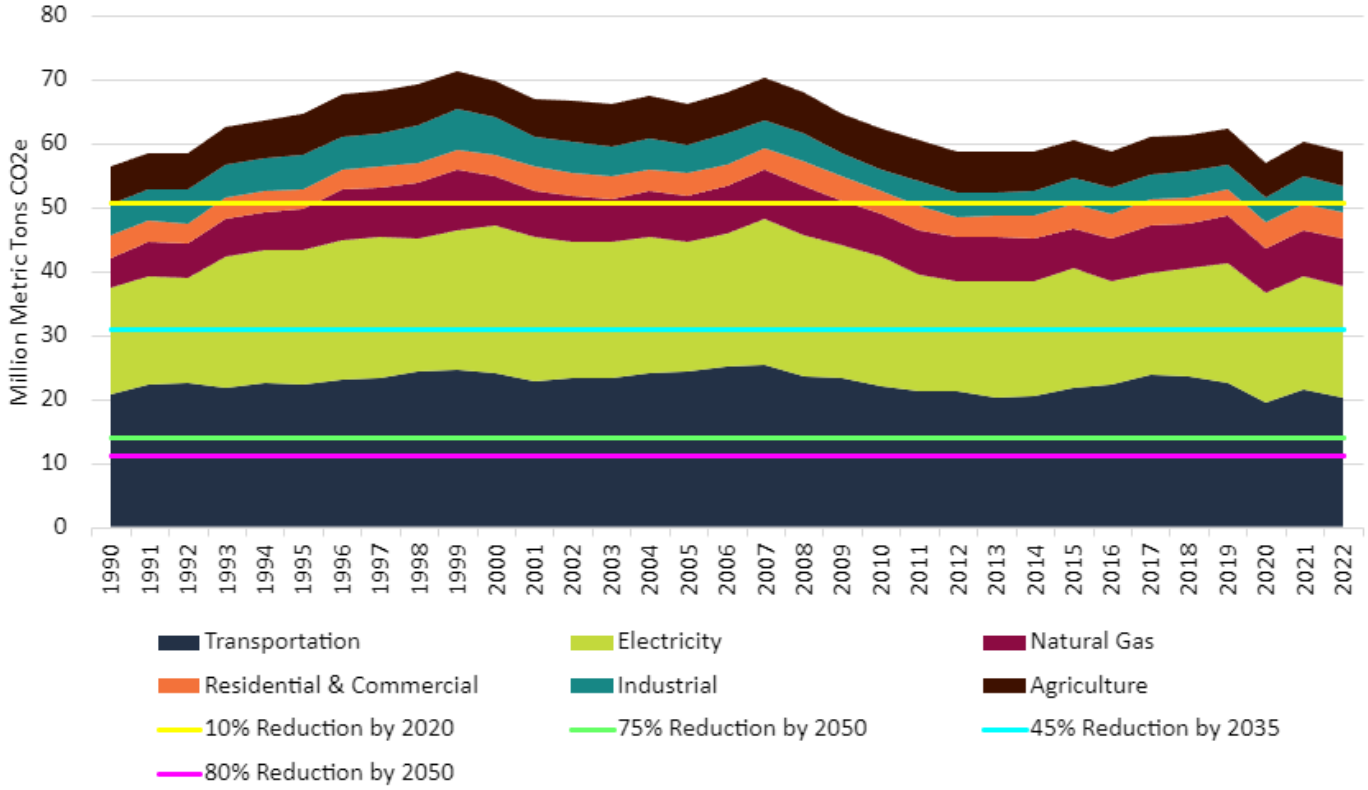
Table 2 and Figure 3 presents the state's emissions data from 1990-2022 using the DEQ inventory data by sector and source.[xii]

Table 2: Oregon Emissions in Million Metric Tons of CO2e by Sector and Source: 1990-2022 (Source: DEQ, 2024)

Sector	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Transportation	21	22	23	24	22	21	21	20	21	22	22	24	24	23	19	21	20
Electricity	17	21	23	20	20	18	17	18	18	19	16	16	17	19	17	18	18
Natural Gas	5	6	8	7	7	7	7	7	7	6	7	8	7	7	7	7	7
Residential & Commercial	3	3	3	3	4	4	3	3	3	4	4	4	4	4	4	4	4
Industrial	5	5	6	4	3	4	4	3	4	4	4	4	4	4	4	4	4
Agriculture	6	6	5	7	6	7	7	6	6	6	6	6	6	6	5	5	5
Totals	**56**	**65**	**70**	**66**	**62**	**61**	**59**	**59**	**59**	**61**	**59**	**61**	**61**	**62**	**57**	**60**	**59**

[xii] In the 2022 sector-based inventory, DEQ revised some GHG emissions totals for previous years due to correct errors and incorporate updated adjustment factors, particularly for transportation, agricultural, industry, and natural gas sources.

Figure 3: Oregon Emissions in Million Metric Tons of CO2e by Sector and Source: 1990-2022 (Source: DEQ, 2024)



Transportation is Oregon's largest source of emissions by sector, just above that of the residential and commercial sector. While transportation emissions have fluctuated year over year, they have remained relatively constant over the last 30 years with 2022 emissions levels about the same as they were in 1990 (Table 1, Figure 2). Following a slight pandemic-related decline in 2020, Oregon's transportation emissions has since rebounded to 20 million MTCO2e in 2022, contributing 34 percent of the state's total 2022 emissions.

Emissions from Oregon's **industrial sector** have remained largely flat over the past decade, while emissions from the **residential and commercial sectors** declined by approximately 1 million MTCO2e over that period.

Emissions from Oregon's **agriculture sector** have declined by 2 million MTCO2e since 2012. Oregon's sector-based GHG inventory includes CO2 emissions from urea fertilizer use and soil liming; methane emissions from enteric fermentation, manure management, and agriculture residue burning; and nitrous oxide emissions from agricultural soil management, manure management, and agricultural residue burning. Oregon's sector-based inventory only tracks anthropogenic GHG emissions resulting from human activity; it does not track biogenic emissions and removals that occur through the biological carbon cycle. The sector-based inventory therefore does not include carbon dioxide emissions from the burning of plant residues or removals associated with carbon sequestration in soils and crops.[xiii]

[xiii] The OCAC adopted its Natural and Working Lands Proposal in 2021; it included recommendations for increasing carbon sequestration in Oregon's natural and working lands, including setting goals for carbon sequestration separate from the sector-based emission reduction goals.

Oregon's GHG emissions can be broken down by their source (in addition to sector) to evaluate emissions trends associated with electricity and natural gas use (Table 2, Figure 3).[xiv] While natural gas use fluctuates slightly from year to year depending on weather conditions, annual emissions from natural gas used in buildings and industrial facilities remained relatively constant over the past decade. Similarly, while electricity use and the amount of electricity from different generation sources (e.g., hydropower) fluctuates from year to year, electricity emissions are close to the levels they were a decade ago.

Oregon's Consumption Based Emissions

In consultation with the OCAC and ODOE, DEQ produced an updated 2024 consumption-based emissions (CBE) inventory for Oregon.[45] In contrast to the state's progress in reducing sector-based emissions, the 2024 CBE inventory shows that Oregon's emissions associated with the consumption of materials, energy, and services has risen dramatically since 1990. A portion of Oregon's consumption-based emissions (31 percent) are also reflected in the sector-based emissions inventory, such as emissions from energy consumed within the state.

Consumption-based emissions represent a larger and growing percentage of Oregon's total carbon footprint, and these emissions are increasing (as opposed to sector-based emissions which have remained relatively flat).[46] In 2021, Oregon's consumption-based emissions were 53 percent higher than 1990 levels. Oregon's consumption-based emissions have also risen steadily over time. Importantly, the gap between the state's sector-based and consumption-based emissions has grown by nearly seven times between 1990 and 2021 (see Table 3).

Table 3: Comparison of Sector and Consumption Based Emissions, 1990-2021(DEQ, 2024)

Year	**Consumption-Based** (emissions in million MTCO2e)	**Sector-Based** (emissions in million MTCO2e)	**Difference Between CBEI and SBI** (emissions in million MTCO2e)
1990	62.4	57.3	5.1
2005	79.6	67.0	12.6
2010	80.2	63.6	16.6
2015	88.7	62.6	26.1
2021	95.6	61.4	34.2

DEQ's 2024 CBE inventory evaluates the potential to reduce consumption-based emissions through a variety of actions. DEQ found that many policy actions to reduce consumption-based emissions can also save money for Oregon consumers and businesses, and can provide other environmental and social benefits (such as public health benefits resulting from lower-carbon diets and more walkable communities), while benefitting those most vulnerable to climate change. The OCAC has recommended actions in this report in support of DEQ's findings, see Section IX.

[xiv] Almost all of Oregon's electricity and natural gas emissions are from the residential, commercial, and industrial sectors. The DEQ GHG emissions data for the transportation sector includes a very small amount of electricity emissions from light rail and a small amount of emissions from natural gas. DEQ does not separate out specific electricity and natural gas emissions for the agriculture sector.

IV. PROGRESS IMPLEMENTING THE ROADMAP TO 2030

In the past two years, the state has made significant progress implementing the recommendations presented in the Commission's *Roadmap to 2030.* This progress was made possible through clear support and direction from the Oregon Legislature and the concerted actions of state agencies. In recent years, the state adopted several new programs to reduce Oregon's GHG emissions. The 2023 Climate Resilience Package included several new initiatives that advance *Roadmap* recommendations, including new directives that implement natural climate solutions and quantify consumption-based GHG emissions.[47] At the same time, state agencies continue to develop and implement the state's existing climate programs and regulations.

The Commission's *Roadmap to 2030* recommends six overarching strategies for maintaining and increasing Oregon's climate action ambition.

Roadmap to 2023: Overarching strategies for maintaining and increasing Oregon's climate action ambition

1. Support robust and continuous implementation of existing climate programs and regulations.
2. Adopt updated state greenhouse gas goals consistent with the best available science.
3. Advance a set of additional climate actions – the TIGHGER Actions – that can help Oregon meet an accelerated greenhouse gas emission reduction goal of 45 percent below 1990 levels by 2030.
4. Support further study and analysis to continue to guide effective climate action over time.
5. Strengthen governance and accountability for Oregon climate actions.
6. Position Oregon to take full advantage of federal investments in climate action.

The following sections summarize key actions taken to implement the *Roadmap* strategies since the prior OCAC Biennial Report (March 2023) and adoption of supporting Legislation. The updates are presented in order of the *Roadmap* strategies listed above. Refer to Appendix A for a full status table for Roadmap recommendations as completed, underway, or where action is needed.

1. Support robust and continuous implementation of existing climate programs and regulations.

The Roadmap to 2030 recommends the continued implementation and resourcing of existing climate programs and regulations. Important strides have been made to allocate funding and design and implement climate programs. The follow section outlines the status of these key programs and implementation efforts.

The 2023 TIGHGER Project analyzed 15 state and one federal existing climate programs and regulations (Programs and Regulations Adopted) that if implemented and funded as planned, would put Oregon on track to meet the state's interim goal to reduce GHG emissions at least 45 percent below 1990 levels by 2035.[xv] The TIGHGER analysis showed that two state climate policies are particularly essential to reduce Oregon's GHG emissions: the Department of Environmental Quality's Climate Protection Program (CPP)

[xv] The Programs and Regulations Adopted (PRA) analyzed in the TIGHGER include: Advanced Clean Cars; Advanced Clean Cars II; Advanced Clean Trucks; Clean Fuels Program; Clean Fuels Program Expansion; Community Renewable Energy Program; Climate Protection Program; Energy efficiency standards for appliances; HB 2021 Heat Pump Rebate Program; Healthy Homes Grant Program; Landfill Program; Manufactured home replacement; Recycling Modernization Act; and Solar + Storage Rebate Program.

and the 100 percent clean energy targets established by HB 2021. If implemented as intended, these two significant lever policies are projected to achieve a large majority of the emissions reductions necessary to meet the state's 2035 goal.[48] While progress has been made implementing these landmark climate programs, existing challenges and barriers requires the OCAC and Legislature to regularly reassess progress and new policy priorities that can help sustain the continued and effective delivery of the state's climate programs.

Climate Protection Program (CPP)

The CPP sets a declining limit, or cap, on GHG emissions from fossil fuels, including diesel, gasoline, natural gas, and propane used in Oregon's transportation, residential, commercial and industrial sectors.[49] The program cap is designed to achieve a 90 percent reduction in GHG emissions from covered fuels by 2050. In December 2023, the Oregon Court of Appeals invalidated the original CPP rules on procedural technical grounds. In November 2024, the Environmental Quality Commission (EQC) is scheduled to vote on new rules to reinstate the program. If adopted, the new CPP rules are expected to go into effect in January 2025.

Oregon Clean Fuels Program Expansion

The Oregon Clean Fuels Program (CFP) is a market-based program to reduce the carbon intensity of transportation fuels sold in the state.[50] In September 2022, the EQC adopted rules to expand and extend the program's clean fuels standards to require a 20 percent reduction in carbon intensity by 2030 and a 37 percent reduction in carbon intensity by 2035.[51] The 2022 rulemaking also made additional modifications to the program to support achievement of the new standards along with the effectiveness and integrity of the overall program.[52]

Clean Vehicle Standards

As authorized by the federal Clean Air Act, the Oregon EQC has adopted zero-emissions vehicle (ZEV) sales mandates that are identical to California's Advanced Clean Trucks and Advanced Clean Cars II rules.[xvi] [53] The EQC adopted the Advanced Clean Trucks (ACT) Rule in November 2021. The rule requires an increasing percentage of new, on-road trucks sold in the state to have zero tailpipe emissions. The medium- and heavy-duty ZEV sales targets vary depending on truck size and phase in through 2035, at which time 40 to 75 percent of new trucks sold in Oregon must be zero-emissions. Oregon adopted the Advanced Clean Cars II (ACCII) Rule in December 2022. Like the ACT Rule, the ACC II Rule phases in through 2035, at which time 100 percent of new passenger vehicles sold in the state must be zero-emissions (including battery electric and plug-in hybrid electric vehicles). The rules also include provisions to ensure new gasoline and diesel vehicles sold through 2034 have the cleanest emissions possible.[54]

The Advanced Clean Trucks Rule was adopted by DEQ in November 2021. The rule requires an increasing percentage of truck sales in the state to have zero tailpipe emissions, between 40-75 percent of sales by 2035 depending on truck size.

Clean Vehicle Rebates

Oregon DEQ administers several rebate programs to incentivize purchases or leases of zero-emissions vehicles. The Oregon Clean Vehicle Rebate Program offers two rebate options for the purchase or lease of light-duty electric vehicles.[55] Standard Rebates of up to $2,500 are available for purchase or lease of eligible new EVs. Charge Ahead Rebates of up to $7,500 are available for low- or moderate-income

[xvi] Oregon is one of the Section 177 (Clean Air Act) states that has opted to adopt California's vehicle and truck emission standards that are more stringent than federal standards.

households that purchase or lease eligible new or used EVs.[xvii] Rebates are offered on a first-come, first-served basis as funding allows. Demand for EV rebates far exceeds the Program's available funding.

Zero-Emissions Rebates for Oregon Fleets (Zero Fleet) offer incentives for the purchase or lease of zero-emissions medium- and heavy-duty (MHD) vehicles.[xviii] Zero Fleet rebates range from $2,500 to $120,000 depending on vehicle weight.[xix] From November 2022 through March 2023, DEQ's pilot Zero-Emission Fueling Infrastructure Grant Program offered incentives to support the installation of MHD EV charging infrastructure.[56] The pilot grant program was funded through a one-time $15 million General Fund appropriation. DEQ will also deliver over $23 million in Climate Pollution Reduction Grant (CPRG) funding in support of MHD vehicle rebates and charging infrastructure.

Clean Electricity Standard

In 2021, House Bill 2021 established a 100 percent clean energy standard for most of the electricity used in Oregon.[57] Large investor-owned electric utilities and electricity service suppliers are required to reduce GHG emissions associated with electricity sold to Oregon consumers to 80 percent below baseline emissions levels by 2030, 90 percent below baseline emissions levels by 2035, and 100 percent below baseline emissions levels by 2040. The Oregon Public Utility Commission (PUC) is responsible for evaluating compliance and ensuring progress toward the clean energy targets in HB 2021. Oregon electric companies subject to the standard must submit clean energy plans to the PUC that describe the strategies and investments the companies plan to implement to achieve their clean electricity targets.[58] Clean energy plans must meet statutory requirements set forth in ORS 469A.415(4) and demonstrate continual progress toward meeting clean energy targets in a way that results in "an affordable, reliable and clean electric system."[59]

In 2022, the PUC conducted a robust public engagement process and adopted initial guidance for the utilities developing their clean energy plans.[60] In 2023, the state's largest investor-owned electric utilities, Portland General Electric and PacifiCorp/Pacific Power, submitted their first clean energy plans to the PUC. In March and April 2024, the PUC declined to acknowledge the proposed clean energy plans (CEP) from Oregon's two largest utilities.[61] The PUC recognized that the utilities had made major strides in adapting their planning frameworks to meet HB 2021's clean energy planning requirements. However, the PUC concluded that more analysis was needed to demonstrate how the utilities will meet their 2030 compliance obligations. The PUC determined that Portland General Electric (PGE) was making continual progress toward its 2030 emissions reduction goals but required the utility to resubmit their clean energy plan with GHG and transmission modeling necessary to demonstrate that its plan, if executed, will be consistent with HB 2021's clean energy targets. The PUC determined that PacifiCorp's clean energy plan did not reflect changed and current conditions and did not specify what actions it was actually planning to take to comply with HB 2001. The PUC directed the utilities to submit additional analyses in 2025 to instill confidence in their clean energy plans.

[xvii] The Oregon Environmental Quality Commission amended the Charge Ahead Rebate rules in September 2024 to increase the maximum rebate amount to $7,500 for new EVs purchased or leased on or after January 1, 2025. The rule amendments also eliminated the eligibility to stack a Standard Rebate and a Charge Ahead Rebate for a single vehicle purchase.

[xviii] The Oregon Legislature established a $3 million Zero-Emission Medium and Heavy-Duty Vehicle Incentive Fund through the adoption of HB 3409 (2023) and authorized DEQ to establish a rebate program for zero-emissions MHDVs. The Oregon Environmental Quality Commission adopted rules establishing the Zero Fleet rebates in September 2024.

[xix] In Oregon, medium and heavy-duty vehicles are currently responsible for an estimated 9.3 million metric tons of greenhouse gas emissions annually—approximately 42 percent of all greenhouse gases from the on-road vehicle fleet. This new rebate program will provide critical support for Oregon's transportation fleets to transition to zero emissions technologies and reduce these emissions statewide.

Renewable Energy Programs

The state's existing renewable energy programs have been effective and will need robust and continuous implementation for Oregon to meet its GHG reduction goals. Two examples that demonstrate clean energy deployment and GHG reductions are ODOE's Community Renewable Energy Grant Program (C-REP) and the Solar + Storage Rebate Program. Created by HB 2021, ODOE awarded its first round of $12 million in C-REP grants in 2022 and has made additional rounds of funding through 2024 totaling over $40 million.[62] Projects eligible for CREP funding include small-scale and community based renewable energy generation systems like solar or wind, energy storage systems, EV charging stations, and microgrid technologies paired with renewable energy systems. The Oregon Solar + Storage Rebate Program has expanded access to renewable solar across the state, particularly for Oregonians with lower incomes. Homeowners can receive a rebate of up to $5,000 for a solar electric system and up to $2,500 for an energy storage system.[63]

ODOE's Community Renewable Energy Grant Program in Action

A community solar project in Ontario was the first fully constructed project supported by the program. The City of Ontario's nearly 3-magawatt solar project was awarded $900,000 in the first round of grants (2022) and began producing renewable energy in December 2023.

2. Adopt updated state greenhouse gas goals consistent with the best available science.

The *Roadmap to 2030* recommends the legislature adopt updated and ambitious state GHG reduction goals. Action is still needed to update Oregon's GHG reduction goal to reflect the current climate science, provide policy consistency, and address the misalignment between Oregon's statutory goal to reduce GHG emissions 75 percent below 1990 levels by 2050 and the goal established by Executive Order 20-04, which calls for an 80 percent reduction in emissions by 2050. Oregon's statutory goal was adopted by the Legislature in 2007, and Governor Kate Brown issued EO 20-04 in March 2020. Neither goal reflects the most current scientific consensus regarding the magnitude of emissions reductions necessary to prevent severe climate impacts.[xx]

The OCAC has uplifted the need for legislative action to update Oregon's GHG reduction goals to reflect the best available climate science (see OCAC Recommendation 3). According to the IPCC, limiting warming to 1.5℃ would greatly reduce the scale, intensity, and frequency of extreme climate events in comparison to 2℃ of warming, and to do so requires immediate action to substantially reduce emissions.[64] In 2023, the OCAC investigated what it would take to limit this warming and identified additional TIGHGER Actions to reduce Oregon's annual emissions by another 8 million metric tons of GHG emissions by 2030.[65]

3. Advance the TIGHGER Actions that can help Oregon meet an accelerated GHG emission reduction goal of 45 percent below 1990 levels by 2030.

The *Roadmap* recommends that the Legislature direct and fund state agencies to develop plans for implementing all of the TIGHGER Actions as soon as possible. Implementing a priority subset of TIGHGER Actions as outlined in the *Roadmap* will provide the largest GHG emission reductions and maximize benefits for environmental justice communities. Several of these plans are underway and continued legislative support is needed to ensure proper resourcing. The state's comprehensive Climate Change

[xx] The 2023 Legislature put forward SB 1559, which would have increased the stringency of Oregon's greenhouse gas emissions reduction goals. This concept was initially introduced in SB 522 and in HB 3409 (in 2023), based on the Commission's *Roadmap*, but SB 1559 did not pass out of committee prior to the adjournment of the session.

Action Plan (CCAP), to be submitted to the EPA in December 2025, will provide additional background and guidance for future action. The CCAP will involve extensive public engagement and be informed by an updated TIGHGER analysis and refined GHG reduction forecasts. The CCAP will also evaluate program gaps and identify strategies to reduce emissions from hard-to-abate sectors, and present pathways to decarbonize the state's energy sectors developed through the Oregon Statewide Energy Strategy (OSES).

The CCAP's analysis will draw from three GHG and carbon inventories: 1) the state's sector-based GHG emissions inventory, which will inform the GHG reduction projections for the CCAP's quantifiable measures; 2) the consumption-based GHG inventory, which will inform an analysis of additional actions to reduce emissions from the consumption of imported products and services; and, 3) the forthcoming net biological carbon sequestration and storage inventory for Oregon's natural and working lands, which will inform an analysis of Oregon's carbon sinks and strategies to implement natural climate solutions. The CCAP will be an important foundation for guiding future actions that are aligned with the TIGHGER Actions and *Roadmap to 2030*.

4. Support further study and analysis to guide effective climate action over time.

The 2023 Legislature enacted several provisions that support further climate studies and analysis to inform decision makers and guide effective climate actions over time.[66] The adoption of HB 3409 provided funding for ODOE and the OCAC to produce a detailed forecast of projected emissions reductions, and track and evaluate progress towards Oregon's GHG reduction goals.[67] The bill also established a state policy for natural climate solutions and provided direction and funding for ODOE and the OCAC to produce an inventory of net biological carbon sequestration and storage on Oregon's natural and workings lands, evaluate strategies and workforce needs for deploying natural climate solutions, and identify metrics for evaluating progress in increasing net biological carbon sequestration and storage.[68] HB 3409 also directed DEQ to evaluate and report on opportunities to reduce Oregon's consumption-based emissions in consultation with the Commission.[69]

HB 3630 directed ODOE to develop a State Energy Strategy in consultation with relevant agencies, federally recognized Tribes, and stakeholders that identifies pathways to equitably achieve Oregon's climate and clean energy targets.[70] The strategy is due November 1, 2025.

5. Strengthen governance and accountability for Oregon climate action.

HB 3409 outlined several actions recommended in the Commission's *Roadmap to 2030* to strengthen governance and accountability, including modernizing the Commission's membership and responsibilities. The bill changed the Commission's name from the Oregon Global Warming Commission to the Oregon Climate Action Commission and provided new resources to support the Commission's work, including additional staffing under the supervision of ODOE.

HB 3409 also expanded the Commission's voting members to include environmental justice, fishing industry, and manufacturing sector representatives, as well as a youth member that serves a two-year term. Membership changes on the Commission also included the Directors from eight additional state agencies as ex-officio non-voting members.[xxi] Finally, the bill directs state agencies to regularly report on their climate work and progress to the Commission.

6. Position Oregon to take full advantage of federal investments in climate action.

Oregon has taken actions to ensure coordination across state and local agencies to apply for and leverage federal funding made available through the Infrastructure Investment and Jobs Act (IIJA) and Inflation

[xxi] State agency Directors added to the OCAC include: Business Oregon, Department of Administrative Services, Department of Consumer and Business Services, Department of Land Conservation and Development, Oregon Department of Fish and Wildlife, Oregon Health Authority, Oregon Housing and Community Services, and Oregon Watershed Enhancement Board.

Reduction Act (IRA). HB 3630 (2023) established a Community Navigator program administered by ODOE to enhance coordination in response to these new and significant federal funding opportunities. The program provides education and coordination services to help local governments and community-based organizations understand and pursue available funding opportunities. ODOE also maintains an energy investment tracker for IIJA and IRA funding opportunities. The goal of this tracker is to help Oregonians learn more about opportunities relevant to their work and to maximize funding for the state's energy and climate programs.

The IRA provides $5 billion to support efforts by states, Tribes, and local and regional governments to develop and implement measures to reduce GHG emissions. The U.S. EPA is administering these funds through its Climate Pollution Reduction Grant (CPRG) program. Oregon was awarded two grants from the U.S. EPA's CRPG program to plan and implement climate actions to reduce GHG emissions across the state's economy. The state received a $3 million CPRG planning grant to produce two climate action plans: a Priority Climate Action Plan (PCAP) that identifies near-term actions to achieve cost-effective GHG reductions, and a Comprehensive Climate Action Plan (CCAP) that will identify a portfolio of measures that will reduce GHG emissions from all economic sectors and enable Oregon to achieve its 2050 climate goals. Oregon submitted its PCAP to U.S. EPA in March 2024.

A history of collaboration among state agencies and strong relationships with external partners have positioned Oregon to optimize available funding. For example, strong agency partnerships built the foundation for the successful CRPG grant and existing collaboration between agencies and community partners facilitated a successful Solar for All grant application. Legislative support has also been critical to enable agencies to optimize and leverage federal funding. Creation and funding of state programs, such as the Oregon Solar + Storage Rebate Program, allowed the agencies to demonstrate to federal funding agencies that the state was committed to clean energy deployment and could successfully and responsibly spend federal money. Continued legislative support for Oregon's existing climate programs is needed to help state agencies seek and secure the maximum amount of federal funding available. This support ensures that the state can accept federal investments and get them implemented quickly.

In April 2024, the state applied for additional CPRG funds to support the implementation of the priority measures identified in its PCAP. Oregon's Climate Equity and Resilience Through Action (CERTA) proposal was awarded a $197 million CPRG implementation grant, which will fund a variety of GHG reduction measures across several agencies.[71] Oregon's proposal was funded in full and the application itself was recognized by U.S. EPA as model for how states should approach their climate action planning in meeting program goals.[xxii] Funding will be allocated to programs administered by DEQ, ODOE, Oregon Department of Transportation, Oregon Housing and Community Services, Oregon Health Authority, and Energy Trust of Oregon.

[xxii] In addition to the state-administered CPRG award, the Nez Perce Tribe was awarded over $37 million in CPRG funding for residential energy efficiency and weatherization retrofits, wood stove replacements, renewable energy infrastructure, and electric vehicle transportation networks on the Tribe's facilities in Oregon and Idaho.

Table 4: Oregon's U.S. EPA CPRG Award

US EPA Climate Pollution Reduction Grant Award	
Oregon's Climate Equity and Resilience Through Action (CERTA) – July 2024	
Anticipated Award Amount:	**$197,181,796**
Sectors covered:	❖ Buildings ❖ Transportation ❖ Waste and Materials Management
Cumulative 2025-2030 Estimated GHG Reductions:	**1.2 million metric tons** CO_2 equivalent
Cumulative 2025-2050 Estimated GHG Reductions:	**6.6 million metric tons** CO_2 equivalent

Oregon's historic infusion of CPRG funds will support investments that help achieve the emissions reductions identified in the *Roadmap to 2030* and the implementation of key climate programs and regulations. Of the total CPRG award, $94.4 million (or nearly half) will directly support existing climate incentive programs considered as part of the TIGHGER analysis, such as for ODOE's residential heat pump programs.

Figure 4: Oregon CPRG Implementation Award Allocations to State Agencies

In October 2023, the U.S. Department of Energy selected the Pacific Northwest Hydrogen Association, made up of public and private partners in Oregon, Washington, and Montana, to enter into award negotiations for up to $1 billion in federal funding for clean hydrogen projects in the region. In July 2024, the Pacific Northwest hub received the initial $27.5 million portion of funding to support the creation of a robust network of clean hydrogen suppliers and end-users in the Pacific Northwest.[72]

As of November 1, 2024, Oregon has been allocated more than $1.1 billion (FY 2022-2026) in federal funding for a wide range of climate, clean energy, and transportation electrification programs through the IIJA and IRA.[73] In addition, the state has received significant funding from the IRA and IIJA for natural and working lands investments that support climate resilience and mitigation. A recent national assessment of state-level IRA utilization estimates that Oregon's full IRA funding potential through 2031 could reach as high as $8 billion.[74] The sectors with the highest IRA funding potential include transportation ($3 billion), electricity ($2 billion), buildings ($1 billion), and industry ($800 million).

V. PROGRESS IMPLEMENTING THE NATURAL AND WORKING LANDS PROPOSAL

In 2021, the OCAC issued a Natural and Working Lands Proposal (Proposal) recommending that the state adopt an outcome-based goal for increasing biological carbon sequestration on natural and working lands, and to establish activity-based and community impact metrics to evaluate progress toward the recommended goal.

Significant progress has been made to implement elements of the Proposal through new policy direction, outreach, and funding activities. In 2023, HB 3409 provided funding to help leverage federal investments, expand forest resiliency treatments, and to conduct studies. ODOE and the OCAC are working to complete several directives established by HB 3409, including a natural climate solutions workforce and training needs study by the Fall of 2025, and Biological Carbon Sequestration and Storage inventory, baseline, metrics, and goals by the end of 2025.

In Fall 2023, the Governor's Natural Resources Office worked with ODA, ODF, OWEB, and Oregon Department of Fish and Wildlife to develop a Natural and Working Lands Fund Proposal. In January 2024, the OCAC approved the Fund Proposal's $10 million spending plan for use by the four agencies to increase sequestration in natural and working lands and the Legislature authorized allocations to the fund in April 2024. Funding advances natural climate solutions through incentives, technical assistance, and on-the-ground projects with a focus on accessibility and support for Tribes, landowners, and environmental justice communities to engage with and implement natural climate solutions.

Most agencies are still in the early stages of preparing funded programs for implementation, however several projects have succeeded in leveraging funds to attract additional funding from other state, federal, and non-governmental sources. For example, ODFW and the Confederated Tribes of Grand Ronde are on schedule to reestablish 30 acres of floodplain forest in the Chahalpam Wildlife Area. These investments provide important co-benefits, including increasing the climate resilience of fish and wildlife, and their habitats; improving soil health and productivity; and improving forest and stream health, wetland recovery, and riparian functionality.

A Natural & Working Lands Fund Annual Report was submitted to the Legislature in September 2024. The OCAC will also submit a biennial report to the Legislature on December 1, describing Fund expenditures and outcomes.

Tribal and community outreach is a high priority for the Natural and Working Lands program. The OCAC is developing and implementing a Tribal consultation process for the Commission to gather and consider Tribal input on natural climate solutions, with engagement ongoing through 2024-25. The Legislature also directed the Commission to appoint an Advisory Committee to inform the OCAC on new and ongoing work products for natural and working lands, to be established in Winter 2024.

Refer to Appendix B to view a status table for the Natural and Working Lands Proposal recommendations as completed, underway, or where action is needed.

VI. UPDATE ON STATE EFFORTS TO ADVANCE EQUITABLE CLIMATE SOLUTIONS

Climate change is a threat multiplier that can impact a community's access to food and housing, and present health hazards—challenges that are already facing Oregon's historically marginalized and vulnerable communities, including low-income, Black, Indigenous, and rural households. Oregon has made progress to advance equity and environmental justice through state climate actions and policies designed to address past inequities, protect low-income Oregonians, and provide for a just transition. In recent sessions, the Legislature has authorized funding to support agency equity work, passing several equity-focused bills, and including equity provisions in climate-related legislation. However, more work remains to be done to help communities and businesses adapt to the impacts of climate change, and additional efforts by state agencies and the Legislature will be needed to advance equitable climate solutions moving forward. The following program examples demonstrate how equity considerations are being implemented through state agency climate programs.

The Oregon Health Authority (OHA)'s annual *Climate and Health in Oregon* reports and special reports such as *Climate Change and Youth Mental Health* present key findings on the public health impacts of climate change on people in Oregon. These reports spotlight how climate change affects the physical and mental wellbeing of Oregonians, and the need for state policies to prioritize the communities that are most vulnerable to those impacts, including Tribes, people experiencing low incomes, and communities of color. Informed by this work, the legislature has resourced OHA to implement short and longer-term public health interventions that are top priorities for the agency.

OHA continues to implement its successful Healthy Homes Grant Program, which provides financial assistance to Tribes and organizations across the state to keep people housed and safe from climate impacts and other hazards. OHA provides grants to a wide array of third-party organizations, which in turn provide financial assistance to eligible homeowners and landlords to repair and rehabilitate dwellings to address climate and other environmental hazards, ensure accessible homes for disabled residents, and make general repairs needed to maintain a safe and healthy home.[75] The program is funded through a $30 million legislative appropriation, and will receive an additional $2.2 million for weatherization upgrades from Oregon's EPA Climate Pollution Reduction Grant award.

In April 2024, the U.S. EPA announced that Oregon will receive an $86.6 million Solar for All grant to support renewable energy adoption for low-income Oregonians. The Solar for All program is designed to advance equity, environmental, and energy justice priorities in support of federal Justice40 Initiative goals to deliver benefits to disadvantaged communities. The Oregon Solar for All Coalition (the program applicants) includes ODOE, Energy Trust of Oregon, and the Bonneville Environmental Foundation.[76]

The IRA provided up to $1.5 billion for the United States Forest Service Urban and Community Forestry Program to provide multi-year, programmatic, competitive grants for urban and community forestry investments.[77] In 2024, the Oregon Department of Forestry worked in cooperation with the U.S. Forest Service to establish two new Urban and Community Forestry (UCF) subaward programs. These funding opportunities are designed to support programs and projects that promote the protection and enhancement of urban and community forest ecosystems in disadvantaged communities throughout the state. Of the total $26.6 million available, $10 million is explicitly devoted to the nine federally recognized Tribes of Oregon.

ODOE administers renewable energy programs that provide for equitable clean energy deployment. The Community Renewable Energy Grant Program was designed by the legislature to provide at least 50-percent of the benefits to environmental justice communities. The Oregon Rental Home Heat Pump Program, Community Heat Pump Deployment Program, and the Oregon Solar + Storage Rebate Program,

were also designed with equity in mind, improving access and lowering the costs of GHG-reducing technologies for low-income and disadvantaged communities.

VII. UPDATE ON STATE CLIMATE ADAPTATION AND RESILIENCE EFFORTS

Oregon is pursuing strategies to address the impacts of climate change on the state's diverse communities, sectors, and ecosystems. In 2021, the Department of Land Conservation and Development (DLCD) led an update to the Oregon Climate Adaptation Framework, which recommends strategies to plan for and respond to climate impacts in a coordinated and equitable manner.[78] The Framework is intended to guide state agency decisions and investments to address climate impacts in Oregon. In 2023, the Legislature adopted a Climate Resilience Package (comprised of HB 3409 and HB 3630) that included several programs focused on building community resilience in an equitable way.[79] For example, the package included funding for energy efficiency and resiliency programs by providing grants to build capacity for installation of heat pumps and other equipment. The following program examples demonstrate how climate resiliency is being integrated into state agency climate work.

The Resilience Hubs and Networks grant program (created by HB 3409) is administered by the Department of Human Services (DHS) in consultation with ODOE and OHA, and provides $10 million in grants and technical support and assistance for planning and organizing resilience hubs and services.[80] Grant funds are used to build out community-sited facilities that provide protection from extreme weather, maintain power and interior climate control during power outages, have auxiliary communications capabilities, and are resilient following natural disasters. A major focus of this program is to provide resiliency and resource benefits to communities disproportionately impacted by climate change. As of August 2024, this popular program had received more than 700 applications, with awards still pending at that time.[81]

The County Energy Resilience Program (created by HB 3630) is administered by ODOE to provide funding to support local energy resilience planning. Local energy resilience plans and associated implementation actions are intended to strengthen communities' abilities to maintain or quickly recover the energy systems needed to support critical public services during disruptions to the state's larger energy systems.[82] The program provides up to $50,000 per county to develop an energy resilience plan that maps current energy infrastructure, natural hazard risks, and social vulnerability. Funds also support plans that identify needs and actions to increase resilience, particularly for environmental justice communities.

HB 3409 established the Community Green Infrastructure (CGI) Grant Program, providing $6.5 million for local climate change mitigation, adaptation, and resilience projects. The program is administered by the DLCD and funds infrastructure projects that mimic natural systems, such as urban green space and parks, trees, rain gardens, and bioswales, and offers a wide array of social, environmental, and economic benefits.

VIII. STATE AGENCY CLIMATE PRIORITIES

In August 2024, the OCAC requested input from Oregon state agencies regarding their near-term climate program priorities, funding needs, and recommendations. The responses received indicate that agencies are making progress securing funding for and implementing their climate-related programs. Agencies identified a range of climate-focused priorities over the next two years, including to:

- Continue efforts to leverage federal funding for state programs

- Update and modernize programs and regulations
- Integrate climate considerations into plans and projects
- Align agency climate policies with investment decisions.

State agencies expressed the need for additional funding to support permanent and stable staffing structures necessary to effectively implement new climate programs and continued delivery of existing programs, particularly those where funding may soon run out. The lack of consistent and reliable funding for incentive programs is a challenge. These programs are in high demand and often run out of funding quickly. Many of these programs must be renewed each session since they are not permanently established through legislation. This uncertainty makes it difficult for agencies to retain staff to run the programs, which can in turn create challenges for customer service and program quality.

State agencies also highlighted the need for sufficient, stable, and flexible funding for Tribes, local governments, and other entities engaged in climate action. Local governments need additional capacity and resources to implement new programs and grant-funded projects, such as Natural & Working Lands restoration projects. Another example was the need for additional funding to support local transportation system plan updates to comply with DLCD's Climate Friendly and Equitable Communities rules.

Agencies called for changes to existing agency or regulatory fee structures to support programs and improve funding reliability in meeting climate outcomes. Some agencies expressed support for specific long-term solutions to address funding gaps, such as OReGO, a per-mile road usage charging program that relies on pay-per-mile vehicle fees in lieu of the gas tax to fund upgrades to roadway infrastructure. The Public Utility Commission has identified the need for legislative action to increase the statutory maximum fee assessment for investor-owned electric utilities that would allow for the effective implementation of HB 2021.

State agencies also expressed the need for more intentional cross-agency collaboration on climate action that is centralized, well-coordinated, and resourced, such as for the Natural & Working Lands program, and DLCD's adaptation and resiliency programs. Agencies noted a critical need to work together to implement new investments, and that additional interagency coordination and uniform guidance could help the state effectively leverage funding, collaborate on projects, prioritize specific workstreams, and share lessons learned.

IX. RECOMMENDATIONS

Oregonians should be proud of the efforts the Legislature, Governor, and agencies have advanced since the OCAC published the *Roadmap to 2030* and *2023 Biennial Report to the Legislature*. The Legislature passed a sweeping Climate Policy Package (House Bill 3409) which advanced several recommendations from the Commission's *Roadmap to 2030* and *Natural and Working Lands Proposal*. Oregon agencies have also been successful competing for and/or receiving federal funding to help accelerate implementation of programs designed to reduce emissions and increase sequestration.

However, as demonstrated in this report, Oregon's sector-based emissions have plateaued, and its consumption-based emissions are increasing. Several key programs designed to turn the tide on emissions have not had time to effect change, have had setbacks, or need complementary action and funding to meet their potential. New programs and investments are needed, especially in association with transportation, the built environment, and materials management, to increase the pace of Oregon's climate action.

The amount of carbon dioxide in the Earth's atmosphere hit a new all-time high in 2024.[83] Oregon and the world are already experiencing increasing impacts of climate change and science tells us that to avoid the worst impacts we must move as fast as possible to mitigate and adapt.

Oregonians are troubled by the impact climate change is having and will continue to have on their lives. DLCD's Climate Change Social Vulnerability Assessment (2024) documents a wide range of climate change concerns from Oregonians in all parts of the state, including degradation of natural areas, poor air quality, social tension and stress, harm to physical and mental health, and an increased cost of living.[84] At the same time, Oregonians have much to gain from accelerated climate action. Improvements in energy efficiency allow households to save on their energy bills and businesses to produce goods and services at lower cost. Oregonians will be healthier and the state's communities more resilient, with well-designed climate mitigation and adaptation actions.

The following principles and actions are recommended based on their GHG emissions reduction potential, importance to a rapid and equitable transition to a clean energy and sustainable future, and the opportunities we anticipate for advancing climate action in 2025 and 2026.

Goal Updates

1. Adopt updated state greenhouse gas goals consistent with the best available science.[xxiii]

1A. Establish that it is the policy of Oregon to pursue climate action at a level and pace that is consistent with pathways to limit global warming to 1.5℃.[xxiv]

As described in the *Roadmap to 2030*, several states have incorporated the intent to limit global warming to 1.5℃ in their climate policy frameworks.[xxv] Establishing a policy to avoid warming by more than 1.5℃ would strengthen Oregon's existing climate policy framework, set an intention for the pace and scale of action needed, and provide a foundation for updating Oregon's GHG goals in the future in keeping with new scientific findings and the mitigation goals of other jurisdictions.

1B. Update Oregon's statutory sector-based greenhouse gas goals to reduce emissions by:

- **at least 45 percent below 1990 levels by 2030;**
- **at least 70 percent below 1990 levels by 2040; and**
- **at least 95 percent below 1990 levels by 2050.[xxvi]**

Oregon's current statutory GHG reduction goals have not been updated since they were established by the Oregon Legislature in 2007. In 2023, the OCAC evaluated the best available science from the Intergovernmental Panel on Climate Change, the results of the TIGHGER Project, and current national and state GHG emission reduction goals. The *Roadmap to 2030* provided a comparison of state climate goals to illustrate that Oregon's current statutory goals do not reflect the best available science, national goals, or the goals of other neighboring states. In the *Roadmap to 2030*, the Commission recommends, and continues to endorse, legislative action to update Oregon's statutory GHG goals consistent with the best available science.

1C. Establish state consumption-based greenhouse gas goals to reduce emissions by:

- **at least 45 percent below 1990 levels by 2030;**

[xxiii] *Roadmap* Recommendation 2; Natural and Working Lands Proposal (N&WL Proposal); Opportunities to Reduce Greenhouse Gas Emissions Caused by Oregon's Consumption, Emissions Recommendation 1.
[xxiv] *Roadmap* Recommendation 2.
[xxv] For example, in its 2020 climate bill, the Washington legislature found that avoiding warming of 1.5℃ or more would require GHGs to decline precipitously, and as soon as possible; and directed action "at a level consistent with pathways to limit global warming to one and one-half degrees."
[xxvi] *Roadmap* Recommendation 2.

- **at least 70 percent below 1990 levels by 2040; and**
- **at least 95 percent below 1990 levels by 2050.**

Direct the Department of Environmental Quality to update and report the consumption-based inventory to the OCAC in even years for inclusion in its biennial report to the legislature.

DEQ's 2024 Opportunities to Reduce Greenhouse Gas Emissions Caused by Oregon's Consumption report included three overarching recommendations, the first of which was to establish separate consumption-based emissions reduction goals. Analysis by DEQ's contractor identified four approaches that could be used to establish consumption-based GHG emission reduction goals:

1. Applying existing sector-based emissions targets to consumption-based emissions.
2. Targeting consumption levels that align with minimum standards for well-being.
3. Setting a per capita target based on the jurisdiction's share of the necessary future global carbon budget.
4. Setting targets based on the jurisdiction's past and current contribution to the climate crisis.

The Commission recommends applying the same targets proposed for Oregon's sector-based emissions to Oregon's consumption-based emissions. This recommendation is aligned with options 1 and 3 above.

1D. Set additional statutory goals to achieve net zero sector- and consumption-based emissions as soon as practicable and no later than 2050; and achieve and maintain net negative emissions thereafter. Direct DEQ and the OCAC to track and evaluate progress towards these goals consistent with net zero accounting best practices.[xxvii]

As described in the *Roadmap to 2030*, "net emissions" refers to the difference between total GHG emissions during a period of time (typically one year) and the total amount of GHGs removed from the atmosphere over the same period. The International Panel on Climate Change encourages jurisdictions to aim toward net zero emissions by 2050 and net negative emissions thereafter. The IPCC notes that "the more quickly emissions are reduced, the easier it is to achieve net zero emissions, and the less net negative emissions need to be relied on to keep temperatures within the 1.5°C limit."

1E. Adopt OCAC's recommended Natural and Working Lands Goal separate from and in addition to Oregon's sector-based emission reduction goals during the 2026 Legislative Session.[xxviii]

Oregon's natural and working lands— including forests, grasslands, rangelands, farmlands, tidal and subtidal wetlands, and the parks and open spaces in urban environments — provide a range of environmental, social, health, and economic benefits statewide, including opportunities to increase carbon sequestration to help address climate change. The OCAC's *Natural and Working Lands Proposal* includes draft goals to increase net carbon sequestration by an additional 5 MMTCO2e per year by 2030, and by at least 9.5 MMTCO2e per year by 2050. The Legislature directed the OCAC to establish nonbinding net biological sequestration and storage goals for Oregon's natural and working lands by January 1, 2026. The OCAC urges the Legislature to formally adopt and codify the Commission's sequestration goals during the 2026 Session.

Existing Programs

2. Support robust and continuous implementation of Oregon's existing climate programs and regulations.[xxix]

The Commission's 2023 TIGHGER modeling forecasted that with the continued implementation of the 15 programs and regulations adopted, Oregon is on track to meet its 2035 emission reduction goal. The two

[xxvii] Roadmap Recommendation 2C.
[xxviii] Roadmap Recommendation 2D.
[xxix] Roadmap Recommendation 1.

programs which will produce the largest contribution to meeting our GHG emission reduction goals, HB 2021 and the Climate Protection Program, are just getting off the ground with significant implementation and compliance work still ahead. The Commission recommends the Legislature pursue the additional actions outlined below.

2A. Increase agency funding to support successful implementation of all climate policies and programs, particularly House Bill 2021 and the Climate Protection Program.

The Commission's *Roadmap to 2030* recognized the importance of Oregon's existing climate programs and regulations to ensure long-term success. To ensure that they are successful, it is imperative that they be implemented as planned with sufficient staffing and resources, especially House Bill 2021 and the Climate Protection Program, which will significantly reduce GHG emissions from electricity and fossil fuels consumed in Oregon.

2B. Advance actions to support strong implementation of the Proposed 2024 Climate Protection Program rules.

DEQ is currently working to reestablish the state's Climate Protection Program to cap and reduce GHG emissions from fossil fuels and certain industrial processes in Oregon. DEQ issued proposed rules in July 2024 and aims to put final rules before the Environmental Quality Commission for approval by the end of this year. Given that the 2021 CPP rules were an essential cornerstone of Oregon's GHG mitigation actions, the Commission urges the legislature and DEQ to take all necessary actions to implement 2024 CPP rules that are at least as ambitious in scope as the 2021 Climate Protection Program.

2C. Adopt complementary policies, programs, or guidance to support successful implementation of HB 2021, such as maximizing the use of the existing grid infrastructure; accelerating new transmission; addressing conflicts between land use and renewable energy siting; and advancing regional energy markets.

As described in the *Roadmap to 2030*, the existing programs and regulations may require or benefit from complementary actions to facilitate, accelerate, or maximize their implementation. Achieving the emission reduction goals in HB 2021 will depend on increased deployment of clean electricity generation, storage, and transmission infrastructure and regional energy market reforms. Supporting the implementation of HB 2021 is critical to achieving Oregon's climate mitigation goals.

2D. Sustain funding for the following high demand incentive and investment programs:

- **Oregon Department of Energy's (ODOE) Community Renewable Energy Grant Program; Solar + Storage Program; and Heat Pump Programs**
- **Oregon Department of Human Service's (ODHS) Community Resilience Hubs and Network Grant Program**
- **Department of Environmental Quality (DEQ)'s Electric Vehicle Rebate/Charge Ahead Programs, and Medium and Heavy-Duty Vehicle Rebates and Infrastructure Grants**
- **Oregon Health Authority's (OHA) Healthy Homes Program**
- **DLCD's grants to local governments for Climate Friendly and Equitable Communities planning**
- **Natural and Working Lands Fund**
- **Oregon Agricultural Heritage Program**

Sustained and reliable funding for grants and incentive programs will help drive effective and consistent levels of state climate action and emissions reduction benefits. These programs are in high demand and often run out of funding quickly. Many of these programs must be renewed each session since they are not permanently established through legislation. This uncertainty is challenging for agencies when administering these programs.

New Programs

3. Advance a set of additional climate actions to help Oregon meet an accelerated greenhouse gas reduction goal of 45 percent below 1990 levels by 2030.[xxx]

During the 2025 Session, it's anticipated that the legislature will focus on a transportation package, addressing housing needs, and advancing opportunities for economic growth. In addition, agencies have produced several reports to the legislature required by HB 3409 that include climate recommendations. As described in the cross-cutting recommendations below, climate actions that reduce greenhouse gas emissions, advance equity and enhance resiliency to climate impacts should be built into the design of all new relevant policy packages and in particular, to address emissions associated with transportation, the built environment, and materials management.

Transportation. Emissions associated with transportation are the largest single contributor to Oregon's sector-based emissions and one of the top two contributors to Oregon's consumption-based emissions. Climate forward policies and investments are needed to reduce GHG emissions from transportation. These investments will help to reduce emissions, reduce long-term maintenance costs, while making communities safer. The Commission urges the Legislature and/or the Department of Transportation to:

3A. Include climate forward investments in the 2025 Transportation Package with increased funding for:

- **Safe Routes to School Program**
- **State Transportation Improvement Fund**
- **Innovative Mobility Program**
- **Pedestrian and Bicycle programs**
- **School bus electrification programs**
- **Transit programs**
- **Amtrak rail service**

In addition to making travel safer and healthier in Oregon's communities, prioritizing these transportation investments will fill critical funding needs. For example, with today's funding it will take over 150 years to complete the biking and walking system along state-managed roadways.[85] These investments have multiple benefits, including protecting public health and safety by reducing vehicle miles traveled, expanding affordable access to clean transportation options, and helping Oregon communities stay connected.

3B. Follow a fix-it-first policy to ensure that the state prioritizes funding for existing road maintenance and operations over construction of new infrastructure while supporting investments in alternative modes of travel that reduce greenhouse gas emissions from the transportation sector.

While conventional wisdom may suggest that we simply need to build more roads to address congestion and get goods and people where they need to go faster, increasing roadway capacity only provides a temporary solution. In addition to more roads not being a long-term solution to congestion it also increases maintenance and operational costs.

3C. Develop sustainable transportation revenue tools to advance climate and equity goals, including reductions in vehicle miles travelled, transportation electrification, and multimodal transportation options.

[xxx] Roadmap Recommendation 3.

Transportation agencies across Oregon are affected by funding challenges from a combination of declining gas tax revenue, legal restrictions on available funding, and increasing maintenance costs, in part, due to climate change. The constitutional restriction on the use of the State Highway Fund has made it challenging to invest in climate-forward transportation options. In crafting the 2017 Transportation Package, the Legislature took steps to address this challenge by creating three new funding mechanisms: a privilege tax on car sales to generate funding for ZEV rebates, a bike excise tax to generate revenue for biking and pedestrian projects, and a one-tenth of 1 percent statewide employee payroll tax to fund transit. However, these new funding mechanisms are modest relative to the need for alternative transportation investment. As the Legislature works to address the funding challenges in the 2025 Transportation Package, expanding existing funding mechanisms and creating new mechanisms to advance climate and equity goals is needed, in addition to maintenance and safety improvements.

3D. Strengthen Oregon's Buy Clean Law for steel, concrete, and asphalt used in the maintenance and construction of transportation infrastructure to require the use of low carbon materials whenever possible though the establishment of global warming potential limits or thresholds.

Oregon was one of the first states in the nation to establish a Buy Clean Law and to be a signatory member of the Federal-State Buy Clean Partnership. In 2022, the Legislature passed HB 4139 requiring the state's Department of Transportation to reduce greenhouse gas emissions from construction and maintenance materials used for public infrastructure projects. Oregon could build on this law by going beyond declarations to establish global warming potential limits or thresholds for the purchase of materials the department and contractors use in construction and maintenance activities for the state transportation system. This would reduce embodied carbon in the materials needed for transportation infrastructure.

3E. Improve cross agency coordination and increase investments in the State's electric vehicle fleet and charging infrastructure.

Given the large number of agencies that own and operate vehicles in Oregon, the state would benefit from increased capacity to coordinate its planning and investment in electric vehicles and the charging infrastructure they rely on. Similar to other states, the legislature should fund the Department of Administrative Services or another agency to create a centralized coordinating function that increases efficiencies in planning and implementation.

Residential and Commercial Buildings. The State of Oregon should pursue a holistic policy approach to reducing greenhouse gas emissions associated with both the construction and operations of buildings. Residential and commercial buildings make up a significant portion of the state's total sector-based and consumption-based emissions. Residential and commercial buildings are responsible for 33.9 percent of Oregon's sector-based emissions. Building and construction materials contribute over 14.4 percent to Oregon's consumption-based emissions.[86] As the state advances additional solutions for Oregon's housing crisis, a holistic policy approach that addresses both the sector and consumption-based emissions associated with residential and commercial buildings should be taken. For example, accelerating markets for zero-carbon building technologies and practices has been shown to reduce emissions associated with construction and operations while creating new economic opportunities improving comfort, productivity and resiliency for building occupants. DEQ evaluated several new policies that would reduce emissions from the built environment. The Commission recommends that the legislature:

3F. Require environmental product declaration reporting (EPDs) for building materials sold in Oregon.

Building and construction materials account for approximately half of the emissions associated with buildings in the state's consumption-based emissions inventory. Reducing emissions from embodied

carbon is a critical short-term opportunity, as these emissions are already expended before a building is occupied. Analysis by DEQ's contractor found that reducing emissions from construction materials was the strategy that offered the greatest GHG reduction potential by 2050.

Lack of transparency about the carbon intensity of building materials is one of the key barriers to reducing carbon embodied in buildings. Efforts to address these emissions are continuing to rise, including: EPA's program to reduce embodied carbon of construction materials through the Inflation Reduction Act, the General Service Administration's low-embodied carbon program, Federal Highway Administration's Sustainable Pavements Program, development of 1,500 concrete EPDs through DEQ's incentives program, the Pacific Northwest EPD Partnership, and others.[xxxi] Despite this momentum, there is still more to be done. Oregon should require the disclosure of environmental impacts for building materials sold in state. By reducing the burden on individual agencies, programs, and industry professionals to seek the transparency data necessary to reduce their embodied carbon emissions, a disclosure requirement program would provide the foundational data necessary for additional actions to reduce embodied carbon to be more successful.

3G. Fund DEQ to study how to accelerate programming to support whole building reuse and smaller new home construction.

Enhancing the utilization of existing buildings and building smaller new homes would make significant contributions to reducing emissions associated with Oregon's built environment. Considering the urgent need for housing in Oregon, policies to support building reuse and construction of smaller homes are especially timely. With high vacancy rates in existing commercial buildings in downtown areas across the state, reusing existing buildings would reduce the need for new construction and emissions associated with the production of new building materials. Converting large, single-family homes into multi-family unit homes would produce similar benefits. In addition to reducing emissions from the use of new building materials, reusing existing building stocks would also contribute to walkable communities in Oregon's economic centers. Building smaller homes would reduce energy use and consumption-based emissions associated with the building itself and the products purchased to furnish them. Creating additional housing units in already developed areas also reduces sprawl, thereby further reducing emissions in the transportation sector and embodied emissions in new infrastructure. The state of Oregon recently received $25 million in grant funds to provide incentives for whole building reuse and space efficient housing. This is an excellent opportunity to evaluate barriers (e.g., financial, code, zoning) and opportunities to overcome barriers to whole building reuse and/or missing middle housing and space efficient housing. In addition, the study could evaluate how much of the Governor Kotek's targeted 36,000 new units/year could potentially be met using existing buildings.

3H. Review and advance climate-forward recommendations to reduce emissions from the materials used in building construction contained in the Department of Consumer and Business Service's (DCBS) December 2024 Legislative Report required by HB 3409.[xxxii]

In HB 3409, the legislature directed DCBS to consult with DEQ and produce a report of the department's findings and recommendations on options for, and the feasibility of, reducing greenhouse gas emissions that result from materials used in building construction including studying the use of lower carbon materials in the statewide building code or applicable specialty code; or other means for reducing

[xxxi] The Pacific Northwest EPD Partnership, funded by EPA, is a collaborative effort between Oregon DEQ, the Washington Department of Commerce, and the International Code Council, with the goal to incentivize regional product manufacturers to develop EPDs.

[xxxii] Due to the timing of production the OCAC's Biennial Report to the Legislature and the Department of Consumer and Business Services report, the OCAC was not able to review the DCBS report to provide more specific recommendations regarding their recommendations on reducing embodied carbon in construction materials.

greenhouse gas emissions attributable to building materials. Oregon should advance recommendations from this report that have climate benefits.

3I. Adopt additional policies and state actions that build upon and expand existing programs that reduce greenhouse gas emissions in the residential and commercial building sector through electrification and energy efficiency.

While HB 3409 included several policies to advance building performance standards and incentives for energy efficiency, additional programs are needed to advance the pace and scale of this work in alignment with the TIGHGER actions and *Roadmap to 2030*. This includes actions such as incentivizing and requiring highly efficient building and energy efficient technologies and practices in new construction, expanding energy efficiency standards for appliances, and improving the ability of customers to make energy efficiency improvements that reduces the complexity of incentive programs (so that customers can stack them easily, maximizing their uptake). Additional energy efficiency and electrification policies will more affordably, efficiently, and equitably achieve much of the GHG targets in the buildings sector, protect Oregon ratepayers and communities, and help maximize the health and equity benefits of rapidly reducing emissions in the buildings sector.

Food Waste. Food systems are the second largest contributor to Oregon's consumption-based emissions.[6] An estimated 38 percent of all food produced in or imported into the U.S. is never eaten.[87] The climate impacts of producing all of that uneaten food are significant and households are responsible for 60 percent of that waste. Manufacturers, food retailers, and food service providers are also significant generators of food waste, and their decisions also contribute to food waste by households. Food is being wasted while many people lack access to sufficient, nutritious food every day. Oregon has committed along with other members of the Pacific Coast Collaborative, including Washington, Oregon, California, British Columbia, Seattle, Portland, San Francisco, Oakland and Vancouver, British Columbia, to a goal of halving food waste by 2030.

The OCAC recommends the following policy and programs for reducing food waste and the emissions associated with food waste:

3J. Adopt a date labeling law and educate consumers about the change in date labels and what they mean.

The packaged foods grocery stores sell today can have one or more of 50 different date labels with varying meanings. Standardizing labeling is a simple way to help reduce household and retail level food waste. In 2024, the California Assembly passed AB 660, which requires the use of standardized definitions for "Best If Used By" and "Use By" dates on food labels and prohibits the use of consumer-facing "Sell By" to reduce consumer confusion and the environmental and socio-economic impacts of food waste. A similar program should be adopted in Oregon.

3K. Require entities that produce a large amount of food waste to track and report their amount of food waste and current reduction implementation efforts, including efforts to help customers reduce food waste, and planning efforts to further reduce food waste.

Tracking and reporting is another effective way to help reduce food waste. When companies evaluate and disclose impacts, they are more likely to reduce them. Compliance thresholds should be established to identify covered entities. Thresholds should consideration the type of facility, number of employees, annual revenue, and the amount of food waste being generated.

3L. Develop financial incentives (such as grants, rebates, and tax credits) to advance food waste prevention at institutions and retail businesses that produce or sell food.

Financial incentives in the form of grants or tax credits should be coupled with tracking and reporting requirements above to support efforts to advance food waste prevention at covered institutions and retail businesses that produce or sell food.

Cross-Cutting Recommendations

4. Position the state to take full advantage of federal investments in climate action.[xxxiii]

The Governor and Oregon agencies have taken steps recommended in the *Roadmap to 2030* to ensure coordination across state and local agencies to apply for and leverage federal investments, including from the Infrastructure Investment and Jobs Act, and the Inflation Reduction Act. For example, ODOE established the Community Navigator Program to enhance coordination, bridge state and federal funding opportunities, and provide for technical assistance for local entities. However, more can be done to enhance agency coordination to maximize and leverage federal funding and build additional agency capacity to ensure that available funding opportunities are not missed.

5. Design policies and programs with effective Tribal and community engagement and ensure equitable implementation of climate action in Oregon.[xxxiv]

Climate policies and programs need to ensure equitable community benefits, resourcing, and implementation. Although progress has been made to advance equity and environmental justice through state climate actions designed to address past inequities and protect low-income Oregonians, continued efforts by state agencies and the Legislature will be needed moving forward. Effective Tribal and community engagement in policy and program development must be a cornerstone of this work. The Commission urges decision-makers to continue to prioritize attention to equity and tribal and community engagement in the design of climate actions.

6. Design policies, programs, and practices to advance climate resiliency in Oregon's natural and working lands, communities, and economy.[xxxv]

Climate resilience is "the ability to anticipate, prepare for, and respond to hazardous events, trends, or disturbances associated with climate change." [88] As documented earlier in this report, Oregonians are already experiencing impacts. While we work to reduce GHG emissions, we must also advance actions to build Oregon's resilience to the unavoidable impacts of climate change with special attention to low-income and disadvantaged households who have fewer resources to plan for, and recover from, climate impacts. Government, businesses, communities, and individuals all have a role to play. The State of Oregon Climate Adaptation Framework has good information to help inform the design of resilience strategies that will provide multiple benefits to Oregonians into the future.[89]

7. Investigate options and create a sustained source of state funding for climate action, including establishment of a Green Bank to use the state's bonding capacity and incentivize private investments in a clean energy transition and natural climate solutions.[xxxvi]

While currently significant federal funding is available to states, Oregon will need sustained state funding to meet its climate action goals. With dedicated funding for climate action, the state will be better positioned to leverage federal funding, as well as private funding and investments. It will empower the state to advance long-term emission reduction actions; conserve, restore and manage natural and working lands; and help communities adapt to climate change.

[xxxiii] Roadmap Recommendation 6; Natural and Working Lands Strategy 1.
[xxxiv] *Roadmap* Recommendation 1C and 3C; Natural and Working Lands Proposal Adopted Principles
[xxxv] Roadmap Recommendation 5F.
[xxxvi] *Roadmap* Recommendation 6b; Natural and Working Lands Strategy 2.

Green Banks are one mechanism for leveraging federal and private financing for climate action. The Coalition for Green Capital defines Green Banks as "mission-driven institutions that use innovative financing to accelerate the transition to clean energy and fight climate change."[90] The OCAC recommends the legislature fund one or more studies to evaluate the feasibility of potential funding mechanisms the state could establish to support climate action.

8. **Fund the Oregon Department of Energy in partnership with Oregon Health Authority, to improve data and evaluation for the public health co-benefits of the state's climate investments.**[xxxvii]

The Commission recommends improvements to how the state calculates public health co-benefits when prioritizing climate investments. The 2023 TIGHGER analysis was effective in capturing health and equity co-benefits by using the COBRA model; however, this method only provides a broad picture of avoided health care costs to all people in Oregon. As such, it underrepresents costs that Oregon taxpayers bear that could be reduced if investments are prioritized that have higher benefits to specific populations in terms of reduced Oregon Health Plan (OHP) costs and improved health of OHP members. OHP members are by definition low-income, among which communities of color are overrepresented, and both of which have inequitable rates of illness. The results of this refined modeling will help inform investment decisions that benefit these priority communities and directly reduce health care costs paid by the state and advance the goal of eliminating health inequities in Oregon.

CONCLUSION

Oregon is already experiencing the negative effects of climate change. These effects are undermining human health and safety, hindering economic growth, and damaging the state's infrastructure and natural resources. Oregon recently took unprecedented action that puts the state on track to meet the 2035 GHG emission reduction goal from Executive Order 20-04. However, an extraordinary amount of work remains to be done to robustly implement Oregon's programs and regulations.

The OCAC's *Roadmap to 2030* provides a total of six overarching strategies and 26 sub-recommendations for state climate action moving forward. This 2024 Biennial Report uplifts several of these key *Roadmap* recommendations that still require action by the Legislature. For example, the OCAC recommends the state update and align its GHG emission reduction goals, which are dependent on additional actions from the Legislature. Priority recommendations relating to implementing natural climate solutions and actions to reduce consumption-based emissions are also important to advance the state's GHG reduction goals comprehensively. The OCAC encourages the Legislature to support these near-term climate actions that will help us reach a more sustainable future.

[xxxvii] Roadmap Recommendation 4.

APPENDIX A: ROADMAP TO 2023 RECOMMENDATIONS STATUS (AUGUST 2024)

Roadmap to 2030 Recommendations Status - August 2024

Overarching strategies for maintaining and increasing Oregon's climate action ambition:

1. Support robust and continuous implementation of existing climate programs and regulations.
2. Adopt updated state greenhouse gas goals consistent with the best available science
3. Advance a set of additional climate actions – the TIGHGER Actions – that can help Oregon meet an accelerated greenhouse gas emission reduction goal of 45 percent below 1990 levels by 2030
4. Support further study and analysis to inform decision makers and continue to guide effective climate action over time.
5. Strengthen governance and accountability for Oregon climate action.
6. Position Oregon to take full advantage of federal investments in climate action.

Status Definitions

Completed
The specific action, directive or funding has been implemented.

Underway
Progress has been made, however more work needs to be done to fully implement the action(s) and with some details to be addressed; in some cases additional information is needed to fully assess implementation status across agency policies/ programs.

Action Needed
No actions have been taken or underway to implement this recommendation.

The State of Oregon has made significant progress implementing actions from the Roadmap to 2030, however there is much more work still to do for attaining our greenhouse gas reduction goals.

Roadmap to 2030 Recommendations	Status	Detail
2D - Direct OCAC to recommend N&WL sequestration goals by January 2026.	Completed	This action has been directed and work is underway; Legislative action will be necessary in future sessions
2E - Direct periodic evaluation of goals based on best avaible science	Completed	This action has been directed by the Legislature
4A - Provide funding to OCAC for biennial forecast of emissions reduction	Completed	This action is funded
4B - Provide resources for updated Roadmap every four years	Completed	This action has been funded
4C - Direct and fund ODOE to develop a statewide energy strategy	Completed	This action is funded
4D - Direct and fund development of N&WL inventory, baseline and metrics to inform carbon sequestration	Completed	This action is funded
4E - Direct DEQ report on opportunities to reduce consumption based emissions	Completed	DEQ prepared a consumption-based emission inventory and report, submitted to the Oregon Legislature in September 2024
5B - Expand OCAC non-voting members to include additional state agencies	Completed	This action was implemented in 2024 with the additions of eight (8) state agencies
5C - Expand OCAC voting membership to include youth and EJ positions	Completed	This action was implemented in 2024
5D - Require agencies regularly report to OCAC on climate work and progress	Completed	State agencies are providing regular progress reports to the OCAC

Roadmap to 2030 Recommendations	Status	Detail
1A - Implement, staff and fund existing programs as planned	Underway	Work is underway but continued work is needed to address existing challenges, barriers, funding and capacity needs
1B - Provide support for complementary programs, regulations and investments	Underway	Work is underway but continued work is needed to address existing challenges, barriers, funding and capacity needs
1C - Ensure equitable implementation	Underway	Work is underway but continued work is needed to address existing challenges, barriers, funding and capacity needs
3A - Direct and fund Agency Action Plans no later than September 2024	Underway	This action will be implemented in part through Oregon's Comprehensive Climate Action Plan (2025)
3B - Prioritize implementation of TIGHGER actions	Underway	This action will be implemented in part through Oregon's Comprehensive Climate Action Plan (2025)
3C - Resource and conduct more extensive public engagement	Underway	This action will be implemented in part through Oregon's Comprehensive Climate Action Plan (2025)
5A - Provide staffing and resources for the OCAC	Underway	The Oregon Department of Energy filled additional positions in 2024 to support the OCAC
5F - Require agencies consider and integrate climate change mitigation and adaptation into decision making and build capacity	Underway	This action has been in progress since EO 20-04 (2020); several agencies have taken steps to integrate climate considerations into their funding, program and/or project decision-making; building capacity is ongoing.
5G - Require agencies consider and integrate equity into climate change mitigation and adaptation into decision making and build capacity	Underway	This action has been in progress since EO 20-04 (2020); several agencies have taken steps to integrate climate equity considerations into their funding, program and/or project decision-making; building capacity is ongoing.
6A - Ensure coordination across state agencies on the pursuit of IIJA and IRA funds	Underway	State agencies have made progress in pursuit and use of new federal climate investments, and agency coordination is ongoing; continued coordination and assessment of progress will be needed.
6B - Support complimentary programs, regulations and investments	Underway	This action will be implemented in part through Oregon's Comprehensive Climate Action Plan (2025); a state assessment of progress will be needed
6C - Provide opportunities for public input, engagement, and outreach on the pursuit and use of the funds, particularly for environmental justice communities	Underway	This action will be implemented in part through Oregon's Comprehensive Climate Action Plan (2025); a state assessment of progress will be needed
2A - Establish policy to pursue action consistent with pathways to limit GW to 1.5 C	Action needed	This policy action still requires Legislative or Executive direction
2B - Update statutory sector based emissions reduction goals	Action needed	This policy action still requires Legislative or Executive direction
2C - Set additional statutory goals to achieve net zero	Action needed	This policy action still requires Legislative or Executive direction
5E - Provide funding for OCAC to create and maintain a climate action and emissions tracking dashboard and clearinghouse	Action needed	This action would require a directive and funding for implementation

APPENDIX B: NATURAL AND WORKING LANDS PROPOSAL STATUS

Natural & Working Lands Proposal - Status

The OGWC identified four broad strategies with ten supporting elements to achieve the ambitious outcome-based goals: .

1. Position the state to leverage federal lands and investments in climate-smart natural and working lands practices.
2. Investigate options and create a sustained source of state funding to increase sequestration in natural and working lands
3. Fund and direct the agencies to take actions to advance natural and working lands strategies.
4. Invest in improvements to Oregon's natural and working lands inventory.

Status Definitions

Completed
The specific action, directive or funding has been implemented.

Underway
Progress has been made, however more work needs to be done to fully implement the action(s) and with some details to be addressed; in some cases additional information is needed to fully assess implementation status across agency policies/ programs.

Action Needed
No actions have been taken or underway to implement this recommendation.

The State of Oregon has made progress implementing actions from the Natural and Working Lands Proposal however there is much more work still to do for attaining our natural climate solutions goals.

N&WL Proposal recommendations	Status	Detail
3e- Fund a study on workforce needs and economic development potential	Completed	HB 3409 included funding for a workforce study to be developed and shared with OCAC by December 2025.
4 – Invest in improvements to N&WL inventory data and research	Completed	Funding has been allocated for a biological carbon sequestration inventory, and development of a baseline and goals and metrics by December 2025.
3cii - Adopt the Private Forest Acord.	Completed	The legislature enacted the Private Forest Accord in 2022.
1 – Position the state to leverage federal lands and investments	Underway	State agencies have made progress in leveraging new federal investments; additional staff support will help engage federal agencies and lands more; some investments have been made to set the state up for success however a more complete assessment is needed.
2 – Investigate and advance options for sustained state funding	Underway	One-time general funds were allocated to increase sequestration in natural and working lands, however an assessment of funding sources and gaps is needed to identify additional permanent state funds to address gaps.
3 – Fund and direct state agencies to take actions to advance key natural and working lands strategies –	Underway	Increased capacity of state agencies will help support initial investments in natural climate solutions, however more funding is needed to support work across all N&WL strategies.
3a- Enhance and maintain the statewide land use program with commitment to no net loss	Underway	Significant work is underway to maintain and enhance the statewide land use program in general, a no net loss policy would require legislative or administrative action.
3b- Establish climate smart practices through the Oregon Agricultural Heritage Program	Underway	One-time general funds were allocated to the program in 2022 and 2024 but permanent funding is needed to maintain the program.
3c- Support climate smart forest management	Underway	Initial work is underway on establishing this program.
3ci - Dedicate funding to local communities to implement urban and community forest practices.	Underway	ODF's Urban and Community Forestry Program received a significant increase in funding through the Inflation Reduction Act grant. The Program is also collaborating with DLCD on the Community Green Infrastructure Grant program.
3civ - Develop a strategic plan for expanding capacity for reforestation in Oregon	Underway	ODF has begun work to develop a reforestation strategy.
3cv - Expand forest resiliency treatments to make our forests and communities more resilient to wildfire, drought and pests and pathogens.	Underway	Significant steps have been taken by the legislature and the agencies to improve forest and community resilience across multiple years.
3d- Update estuary management plans and support for blue carbon	Underway	Local updates to estuary management plans are underway, however additional funding is needed.
2e- Provide incentives to landowners	Underway	Additional funding is needed to enhance existing incentive programs.
3ciii - Create a blue-ribbon panel to develop an all-lands strategic plan for incentivizing climate-smart	Action Needed	Legislative or Executive Branch action needed.
3cvi - Expand the Oregon Agricultural Heritage Program to include support for forest landowners.	Action Needed	Legislative action needed.

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