Washington Department of Fish and Wildlife

Sustainability Plan

July 2022

Washington Department of
FISH & WILDLIFE

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Table of Contents

Foreword

We are already feeling the impacts of climate change on Washington's fish, wildlife, and ecosystems. Declining summer stream flows and warming stream temperatures compromise habitat quality and recreational opportunities. Increasing flood frequency and wildfire severity directly impacts WDFW-managed lands and infrastructure.

WDFW recognizes that climate change poses challenges to fulfilling our mission to "preserve, protect, and perpetuate fish, wildlife, and ecosystems while providing sustainable fish and wildlife recreational and commercial opportunities."

At the same time, our operations produce greenhouse gas emissions that contribute to climate change. While our emissions may seem small compared to this global problem, we recognize the responsibility to make our operations as sustainable as possible, and our unique opportunity to lead by example to encourage our partners and the public to join us in reducing emissions.

The Sustainability Plan was born out of both legislative requirements and an internal, voluntary recognition that, as a natural resource agency, we ought to minimize our own environmental footprint. This plan charts a path toward meeting Washington's ambitious emissions reduction goals, and goes beyond the legislative requirements to improve the sustainability of many aspects of agency operations. The development and implementation of a Sustainability Plan is a commitment from WDFW's 25-Year Strategic Plan, which will help the agency model operational and environmental excellence.

WDFW has long been at the forefront of integrating climate change into species conservation. This Sustainability Plan is a significant step forward in incorporating the sustainability of our own operations into our climate change response.

Kelly Susewind

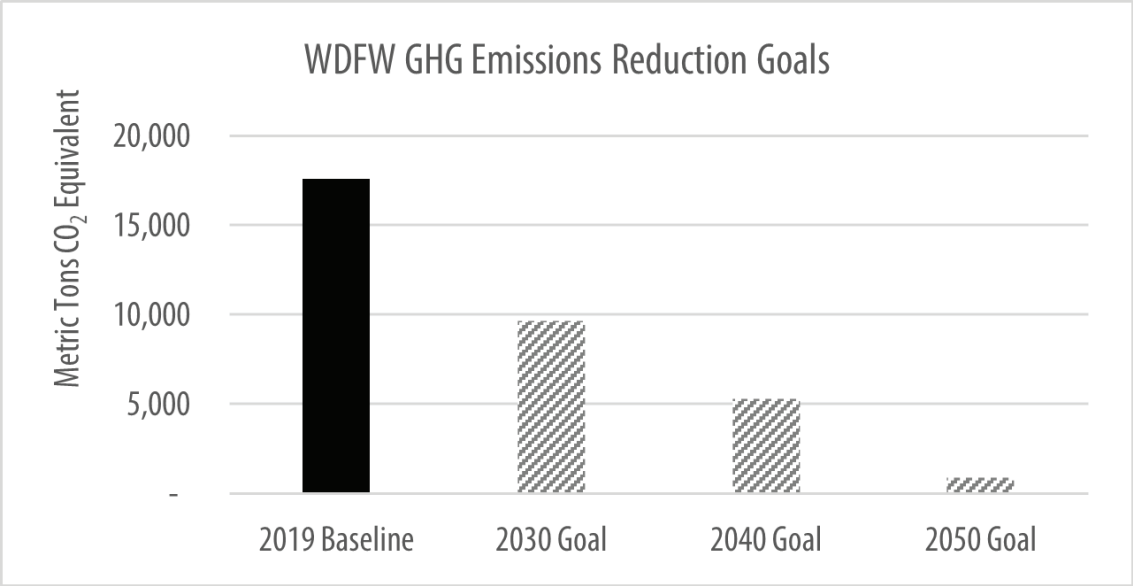
Director

Executive Summary

Washington state is already experiencing climate change impacts to fish, wildlife, and communities, and these impacts will become more severe as climate change accelerates through the 21st century. Washington Department of Fish and Wildlife's (WDFW) operations produce greenhouse gas (GHG) emissions that contribute to climate change. There is an urgent need to reduce emissions. As an agency whose mission depends on a healthy environment, we seek to lead by example in limiting our own environmental impact. The Sustainability Plan outlines WDFW's commitment to reduce GHG emissions, increase operational sustainability, and encourage our partners and the public to take action.

The Sustainability Plan serves as a roadmap to meet WDFW's ambitious commitment to:

Reduce greenhouse gas emissions below 2019 levels 45% by 2030, 70% by 2040, and 95% by 2050.



Revised Code of Washington (RCW) 70A.45.050 requires state agencies to reduce fleet and buildings emissions. This plan also sets goals to reduce emissions and other environmental impacts from additional aspects of our operations.

The GHG emissions reduction strategies laid out in this plan identify a pathway to exceed the 2030 goal, come close to reaching the 2040 goal, and fall short of reaching the 2050 goal because low-emissions technologies are not yet available for some aspects of WDFW's operations. Implementing the GHG reduction strategies is estimated to result in a total net savings through 2050 of $5 to $7.1 million because money saved on operating expenses such as fuel and energy outweighs capital and labor costs.

The following table summarizes the baselines, goals, and strategies laid out in this plan to reduce GHG emissions and increase operational sustainability:

SECTOR		REQUIRED BY RCW?	2019 BASELINE	GOAL	STRATEGIES/ACTIONS
REDUCING GHG EMISSIONS					
Fleet		Mandatory	7,566 MTCO2E	Reduce 45% by 2030, 70% by 2040, 95% by 2050	Transition to electric, transition to alternative fuels, increase fuel efficiency, reduce miles traveled, and improve fleet management. 19 implementation actions.
Buildings		Mandatory	7,066 MTCO2E	Reduce 45% by 2030, 70% by 2040, 95% by 2050	Reduce energy use, transition to renewable electricity, and improve facilities management. 12 implementation actions.
Commuting & Business Travel		Voluntary	2,929 MTCO2E	Reduce 45% by 2030, 70% by 2040, 95% by 2050	Reduce commute trips, incentivize sustainable commute modes, reduce business flights, and improve commute management. 7 implementation actions.
Additional GHG Sectors	Hatchery Fish Digestion	Voluntary	Rough estimate	No	Research emissions and reduction options. 3 implementation actions.
	Contracted Services	Voluntary	No	No	Reduce miles and transition to alternative fuels. 3 implementation actions.
	Other Transportation	Voluntary	No	No	Support sustainable modes and reduce miles. 6 implementation actions.
	Refrigerant Gases	Voluntary	No	No	Reduce refrigerant gas leaks. 3 implementation actions.
	Land Management	Voluntary	No	No	Research emissions and carbon sequestration. 3 implementation actions.
INCREASING OPERATIONAL SUSTAINABILITY					
Solid Waste		Voluntary	18% diversion rate	Diversion rate 40% by 2030, 60% by 2040, 80% by 2050	Reduce landfilled waste. 4 implementation actions.
Water		Voluntary	18 million gallons	Reduce 10% by 2030, 20% by 2040, 30% by 2050	Conserve water in buildings. 4 implementation actions.
Contracted Goods		Voluntary	Rough estimate	No	Reduce the impact of purchased goods. 4 implementation actions.
Toxic Chemicals		Voluntary	No	No	Ensure the responsible use of chemicals and reduce the release of legacy/emerging chemicals of concern. 12 implementation actions.
CROSS-CUTTING					
Communication and Training		N/A	N/A	N/A	Build internal capacity, external communications, and partnerships. 8 implementation actions.
Funding and Budget		N/A	N/A	N/A	Build funding resources and processes. 4 implementation actions.

Introduction

Human activities have caused the global average temperature to increase by 1°C (1.8°F) since the Industrial Revolution (Figure 1).[1] By burning fossil fuels, humans have released carbon dioxide (CO2) and other greenhouse gases (GHGs) into the atmosphere, leading to the highest atmospheric CO2 concentration observed in the past 800,000 years. The impacts of this warming are already being felt in our communities, ecosystems, and across Washington Department of Fish and Wildlife's (WDFW) operations. Declines in snowpack, warming stream temperatures, and low summer flows have reduced salmon habitat quality and led to fish die-offs and fishing closures. Larger, more frequent floods and wildfires have damaged critical habitats and pose significant threats to agency-owned infrastructure.

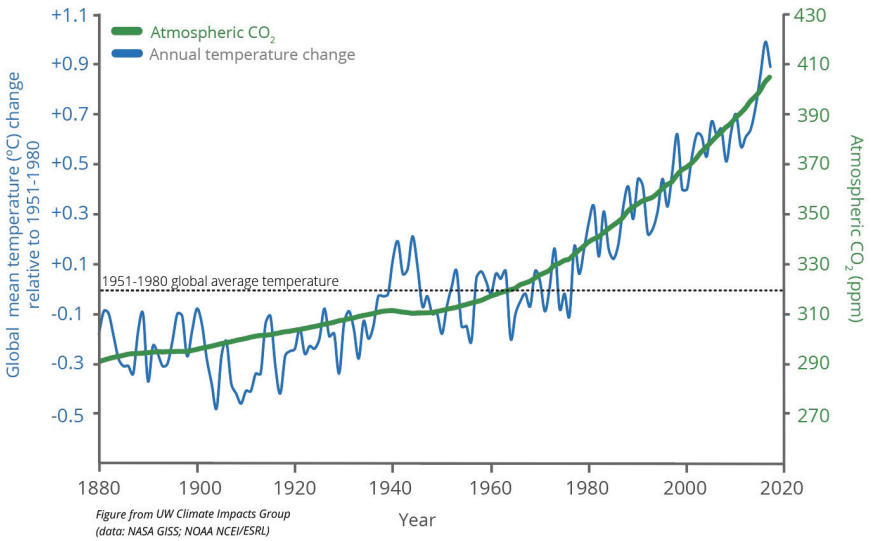


Figure 1. *Since the Industrial Revolution, atmospheric concentrations of CO2 and global temperatures have increased significantly because of human activities. The green line shows that atmospheric CO2 increased from about 290 ppm in 1880 to over 405 ppm today. The blue line shows that global temperatures increased approximately 1°C (1.8°F) over the same period. Figure and caption reproduced from Snover et al. (2019).*

Additional GHG emissions will cause continued increases in global average temperatures and worsening of climate change impacts. The magnitude of climate change impacts that WDFW will experience depends on 1) the level of continued GHG emissions and 2) how well WDFW prepares for the impacts that result from those emissions. A rapid decline in GHG emissions will limit the severity of climate change impacts on fish, wildlife, and habitats.

Washington state has committed to reducing GHG emissions 95% by 2050, in line with global commitments like the Paris Climate Agreement that aim to limit warming to 1.5°C (2.7°F) (see Box 1).[2] In addition, WDFW's Strategic Plan commits to reducing GHG emissions 90% by 2045 and developing and implementing a Sustainability Plan. This plan expands on those goals and serves as a roadmap to reduce the agency's GHG emissions and other environmental impacts. The time horizon of this plan is focused on 2030, with an eye towards 2050. The strategies laid out in this plan identify a pathway to exceed the 2030 goal, come close to reaching the 2040 goal, and fall short of reaching the 2050 goal because low-emissions technologies are not yet available for some aspects of WDFW's operations.

WDFW seeks to realize our vision of being a leader that sets the example for environmental sustainability among state agencies. By taking action and sharing lessons learned, WDFW can advance efforts to address climate change among our partners and the public. Unprecedented action and investments are urgently needed to reduce GHG emissions and prepare

[1] Snover et al. 2019. No Time to Waste. The Intergovernmental Panel on Climate Change's Special Report on Global Warming of 1.5C and Implications for Washington State. https://cig.uw.edu/wp-content/uploads/sites/2/2019/02/NoTimeToWaste_CIG_Feb2019.pdf

[2] Revised Code of Washington 70A.45.050. Greenhouse gas emission limits for state agencies—Timeline—Reports—Strategy—Reports to the legislature. https://app.leg.wa.gov/RCW/default.aspx?cite=70A.45.050

for the unavoidable impacts of climate change on our species, habitats, and communities. WDFW is committed to taking action that reflects the scale of the climate crisis.

Box 1. Global Context: Paris Climate Agreement and 1.5°C

Under the 1992 United Nations Framework Convention on Climate Change, nations around the world agreed to "stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic [human-caused] interference with the climate system." In 2015, 195 countries endorsed the Paris Agreement, committing to limit global temperature rise to "well below 2°C" (3.6°F) and "pursuing efforts to limit the temperature increase to 1.5°C" (2.7°F) above preindustrial levels.

Reproduced from Snover et al. (2019).

WDFW's Approach to Climate Change

WDFW takes a holistic approach to climate change and focuses on three key related areas: sustainability, carbon sequestration, and climate resilience.

This plan lays the foundation for WDFW's sustainability work, which focuses on reducing GHG emissions and other environmental impacts from the agency's operations.

The second area of WDFW's climate change work is carbon sequestration, which refers to carbon that is removed from the atmosphere and stored in plants and soils. Carbon sequestration and GHG reduction are two sides of the same coin, addressing the root cause of climate change by limiting the amount of carbon in the atmosphere. Carbon sequestration is a new and evolving field, and our work in this area is just beginning. In the coming years, WDFW will seek to quantify carbon sequestration in agency lands and understand how land management practices could be modified to increase carbon sequestration. The 2022 report "How Can WDFW Increase Carbon Sequestration to Mitigate Climate Change?" begins exploring these questions.[3] The Land Management section discusses the relationship between carbon sequestration and GHG emissions.

Glossary of Key Terms

Climate Change: A change of climate linked to human activity that alters the atmosphere and is in addition to natural climate variability

Sustainability: The practice of interacting with the earth responsibly, in a way that maintains or improves, not depletes, natural resources

Greenhouse Gas (GHG): Gas such as carbon dioxide, nitrous oxide, or methane; named for their warming "greenhouse effect" of trapping heat in the atmosphere

Metric Ton Carbon Dioxide Equivalent (MTCO2E): Unit of measurement for GHGs

Carbon Sequestration: Biological process by which carbon dioxide is moved from the atmosphere into plants and soils

Climate Resilience: The process of adjusting to current or projected climate change and its associated effects, including with human intervention to facilitate the adjustment

[3] Browning, E., Karasapan, A., Millard, J., Smith, H. 2022. How Can Washington Department of Fish and Wildlife Increase Carbon Sequestration to Mitigate Climate Change? A collaboration of the Washington Department of Fish and Wildlife and University of Washington Evans School.

The third area of WDFW's climate change work is focused on preparing for and building resilience to the current and projected impacts of climate change. The 2021 report "Preparing WDFW for a Changing Climate: Assessing Risks and Opportunities for Action" identified four aspects of the agency's mission broadly considered most vulnerable to climate-related impacts: (1) Risks to Species Conservation and Recovery; (2) Risks to Harvest and Recreation; (3) Risks to Providing Effective Technical Assistance, Permitting, Research and Planning; and (4) Risks to WDFW Lands and Infrastructure.[4] Mitigating these climate vulnerabilities will require developing new policies and guidance, investing in monitoring and research, increasing staff capacity-building and training efforts, and expanding outreach efforts and partnership opportunities. This foundational document is guiding WDFW's efforts to continue to fulfill the agency's mission in the face of a changing climate.

[4] Shirk, A., Morgan, H., Krosby, M., Raymond, C., Mauger, G.S., Helbrecht, L. 2021. Preparing Washington Department of Fish and Wildlife for a changing climate: assessing risks and opportunities for action. A collaboration of the Washington Department of Fish and Wildlife and University of Washington Climate Impacts Group. https://wdfw.wa.gov/sites/default/files/2021-07/wdfw_report_final_62821_1.pdf

Reducing Greenhouse Gas Emissions

Greenhouse Gas Emissions Inventory

To reduce GHG emissions, it is first necessary to understand WDFW's current emissions and how they will change over time if the agency does not take any action to reduce them. First, we provide an inventory of GHG emissions in calendar year 2019, establishing a baseline against which future emissions will be compared. The year 2019 was selected as a baseline to represent 'normal' agency operations, before COVID-19 impacted emissions due to increased telework and decreased fleet and commute trips between 2020 and present.

WDFW's GHG emissions come from burning fuel in fleet vehicles, vessels, and equipment; the generation of electricity and burning of natural gas for use in buildings; and burning fuel for employee commuting and business flights. **In 2019, WDFW produced 17,561 metric tons of carbon dioxide equivalent** (MTCO2E). The fleet was the largest sector at 43% of total emissions. Buildings were the second largest emissions sector at 40%. Commuting and business travel made up 17% of emissions (Figure 2).

Revised Code of Washington (RCW) 70A.45.050 sets emissions goals for Washington state agencies and requires annual emissions reporting to Department of Ecology (Ecology). The goals focus on emissions from fleet and buildings, which this plan refers to as "mandatory sectors". While WDFW is not required to track or reduce emissions from commuting and business travel, this plan addresses additional agency-specific emissions sectors that are not included in the statutory requirements. This plan refers to emissions from commuting and business travel as a "voluntary sector".

WDFW produces additional voluntary sector emissions that are not quantified in this GHG inventory. These include: hatchery fish digestion (nitrous oxide that comes from the natural digestion process of fish), contracted services (e.g., fuel used by contractors on construction projects), transportation of volunteers and the public at WDFW sites, refrigerant gases, and changes to carbon stored in the land. These sectors are described in the **Additional GHG Emissions Sectors section**. While data was not readily available to estimate emissions from these sectors, WDFW has developed strategies and actions to reduce emissions and attempt to establish baselines for these sectors.

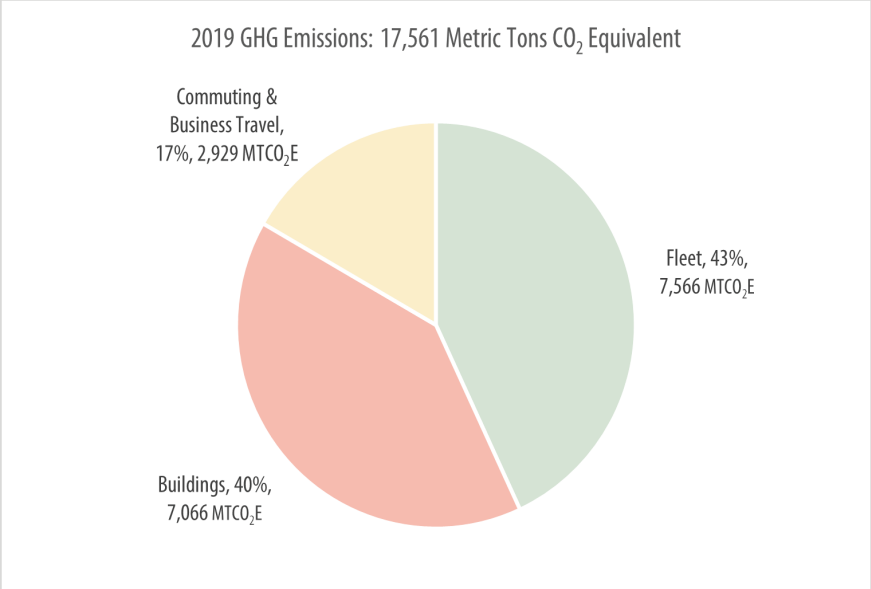


Figure 2. *In 2019, WDFW produced 17,561 metric tons of CO2 equivalent. The fleet was the largest emissions source, followed by buildings, then employee commuting and business travel.*

Box 2. How Are GHG Emissions Measured?

An organization's GHG emissions are not measured directly, for example at the tailpipe of a vehicle. Instead, organizations calculate emissions by collecting *activity data* such as gallons of gasoline and multiplying it by an *emissions factor* such as pounds of CO_2 per gallon of gasoline. Like standards for financial accounting, there are GHG accounting protocols that provide guidance on which activities to include and what emissions factors to use. [5,6]

For example, in WDFW's 2019 GHG inventory:

*157,029 gallons of gasoline burned in heavy-duty vehicles * 0.00892 metric tons CO_2 equivalent per gallon = 1,401 metric tons CO_2 equivalent*

GHG accounting protocols also define three scopes of emissions. Scope 1 emissions are those an organization is directly responsible for, such as burning fuel in a fleet vehicle. Scope 2 emissions are indirect emissions from the purchase of electricity. Scope 1 and 2 emissions must be included in an organization's GHG inventory. Scope 3 emissions are other indirect emissions that occur outside an organization's direct control, such as employee commuting, contractors, solid waste, and more. It is voluntary for an organization to include Scope 3 emissions in their GHG inventory.

For ease of understanding, this plan refers to Scope 1 and 2 emissions as "mandatory" and Scope 3 emissions as "voluntary". WDFW's GHG inventory includes Scope 1 emissions from the fleet and natural gas burned in buildings, Scope 2 emissions from electricity used in buildings, and Scope 3 emissions from commuting and business travel. This plan also addresses many other Scope 3 activities but does not quantify the emissions from those activities due to a lack of data.

[5] ICLEI-Local Governments for Sustainability USA. 2010. Local Government Operations Protocol. https://s3.amazonaws.com/icleiusaresources/lgo_protocol_v1_1_2010-05-03.pdf

[6] The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard. https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf

Greenhouse Gas Emissions Forecast

Next, we forecast how GHG emissions will change over time if WDFW does not take any action to reduce emissions. The forecast incorporates expected internal changes, such as a modest increase in staff.[7] The forecast also incorporates external impacts from state and federal laws, such as clean energy mandates and clean fuel standards, that will influence WDFW's emissions without the agency taking any action.[8]

The forecast found that **emissions will decrease below 2019 levels 45% by 2050 if WDFW takes no action** (Figure 3). This decrease is primarily due to Washington's Clean Energy Transformation Act, which requires utilities to provide carbon-neutral electricity by 2030. This law will dramatically reduce emissions from WDFW's buildings even if we continue to use the same amount of electricity. While the reduction from external laws is substantial, WDFW will still have to take additional action to reach our GHG reduction goals.

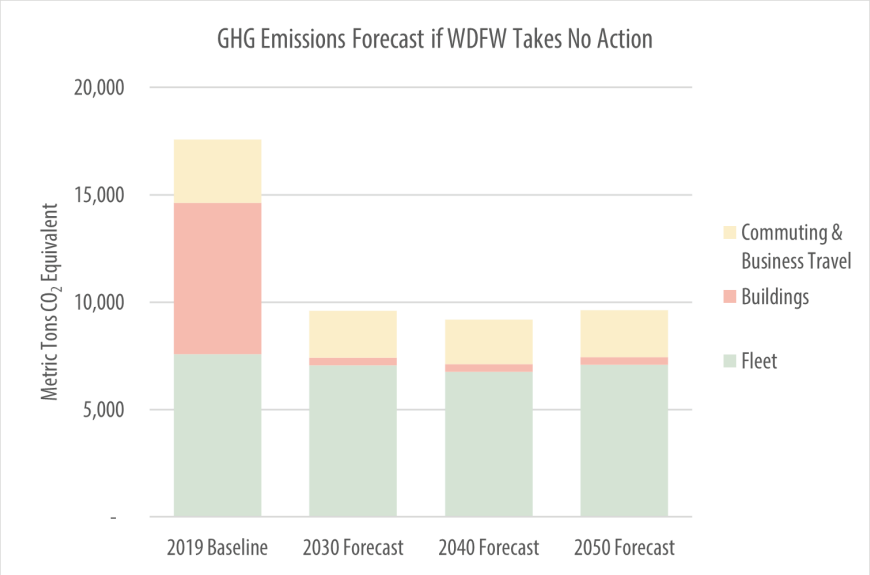


Figure 3. *This figure shows WDFW's baseline and forecasted emissions by sector. If WDFW takes no action, emissions will decrease 45% below 2019 levels by 2050. This decrease is due to laws such as Washington's Clean Energy Transformation Act, which will dramatically reduce emissions from WDFW's buildings.*

Greenhouse Gas Emissions Reduction Goals

WDFW sets the following GHG reduction goals to be achieved through the Sustainability Plan: **reduce GHG emissions below 2019 levels 45% by 2030, 70% by 2040, and 95% by 2050.**

RCW 70A.45.050 requires state agencies to reduce mandatory sector emissions below 2005 levels 45% by 2030, 70% by 2040, and 95% by 2050. WDFW adopts the RCW goals for mandatory sectors (fleet and buildings), and extends the RCW goals to voluntary sectors (commuting and business travel) as well. WDFW commits to reduce both mandatory and voluntary sector emissions below 2019 levels 45% by 2030, 70% by 2040, and 95% by 2050.[9] WDFW is extending the RCW goals to voluntary sectors in recognition that many aspects of our operations contribute to climate change, and climate change is negatively impacting fish, wildlife, and habitats.

[7] Assumes that WDFW staff grows by 5% per decade. Assumes that the fleet and commuting grow at the same rate, but that building square footage remains constant due to increased telework.

[8] Forecast incorporates Washington Clean Energy Transformation Act, Washington Clean Fuel Standard, and federal Corporate Average Fuel Economy Standards. Assumes that industries comply with these laws.

[9] WDFW's GHG reduction goals are based on a 2019 rather than 2005 baseline due to 1) poor data quality for 2005 mandatory sector emissions, 2) no data for 2005 voluntary sector emissions, and 3) a desire to use the same baseline year for mandatory and voluntary sectors. Using a 2019 baseline rather than a 2005 baseline for mandatory sectors has a negligible impact on the goals because WDFW's mandatory sector emissions were nearly identical in 2019 and 2005 (14,632 and 14,964 MTCO2E, respectively).

Comparing forecasted emissions if the agency takes no action to the goals, **WDFW emissions are expected to decrease 45.3% by 2030 due to external laws, just meeting the 2030 goal** to reduce emissions by 45%. WDFW emissions are expected to decrease 48% by 2040, falling short of the 2040 goal to reduce emissions by 70%. The same is true for the 2050 goal to reduce emissions by 95% (Figure 4). **WDFW will have to take action to reach the 2040 and 2050 goals**.

WDFW's goals are also grounded in agency policy. WDFW's 25-year Strategic Plan identifies developing and then implementing a Sustainability Plan as near-term and longer-term actions, respectively. The Strategic Plan sets a desired outcome of "agency operations setting the example for environmental sustainability", and a performance goal of reducing the agency's carbon footprint 90% by 2045.[10]

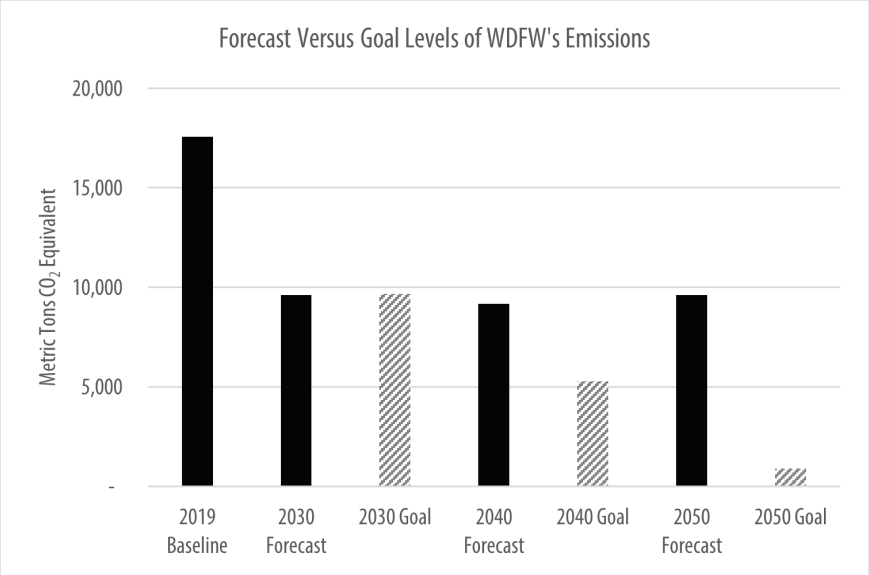


Figure 4. *This figure shows WDFW's 2019 baseline emissions (leftmost black bar), forecasted emissions for three future time horizons (black bars), and emissions goals (dashed grey bars). If WDFW takes no action, the agency will just meet the 2030 goal due to reductions from clean energy laws, and will not reach the 2040 and 2050 goals.*

Pathway to Greenhouse Gas Emissions Reduction Goals

The heart of the Sustainability Plan is 29 strategies to reduce GHG emissions and other environmental impacts, which are supported by 90 specific implementation actions. These strategies and actions were developed through extensive staff input and consultant expertise. WDFW's Sustainability Team, made up of 16 employees from across the agency, provided foundational ideas and feedback. This was supplemented by five sector-specific brainstorming groups, along with an all-staff survey in which 37% (694) of employees provided input, with a majority of respondents supporting every strategy. Staff involvement was key to balance the urgency and scale of reducing emissions on one hand with the feasibility constraints of the agency's operationally demanding, rural, and geographically dispersed work on the other hand. Strategies and actions were prioritized based on impact, cost, and feasibility and assigned timeframes based on their priority. The consultant team then analyzed the strategies' GHG reductions and costs through 2050. Many strategies have co-benefits, such as cost savings and making the workplace more inclusive for employees.

For the three core sectors included in the GHG inventory and reduction goals, this plan identifies the following strategies:

[10] WDFW. 2020. 25-Year Strategic Plan. https://wdfw.wa.gov/sites/default/files/publications/02149/wdfw02149.pdf

Table 1. Summary of GHG Emissions Reduction Strategies.

FLEET: 43% OF 2019 GHG EMISSIONS
Transition to electric vehicles, vessels, and equipment. Where electric is not possible, transition to alternative fuels and increase fuel efficiency. Reduce miles traveled and improve fleet management.
BUILDINGS: 40% OF 2019 GHG EMISSIONS
Reduce energy use through energy efficiency projects and converting gas heating to electric, transition to renewable electricity, and improve facilities management.
COMMUTING AND BUSINESS TRAVEL: 17% OF 2019 GHG EMISSIONS
Reduce employees' commute days through telework and compressed schedules, incentivize sustainable commute modes, reduce business flights, and improve commute management.

The GHG reduction strategies laid out in this plan identify a pathway to exceed the 2030 goal, come close to reaching the 2040 goal, and fall short of reaching the 2050 goal. If the agency implements the strategies in the plan, WDFW emissions are expected to decrease below 2019 levels: 57% by 2030, exceeding the 2030 goal to reduce emissions by 45%; 62% by 2040, coming close to reaching the 2040 goal to reduce emissions by 70%; and 63% by 2050, falling short of the 2050 goal to reduce emissions by 95% (Figure 5). Implementing the strategies identified in this plan to exceed the 2030 goal will require rapid operational, organizational, and cultural transformations across WDFW. Reaching the 2040 and 2050 goals will require industry advances in technology that enable us to address challenging emissions sources like large trucks. This finding underscores how challenging it is to reduce emissions on the scale needed to avoid catastrophic climate change, and how critical it is to implement all the emissions reduction strategies at our disposal.

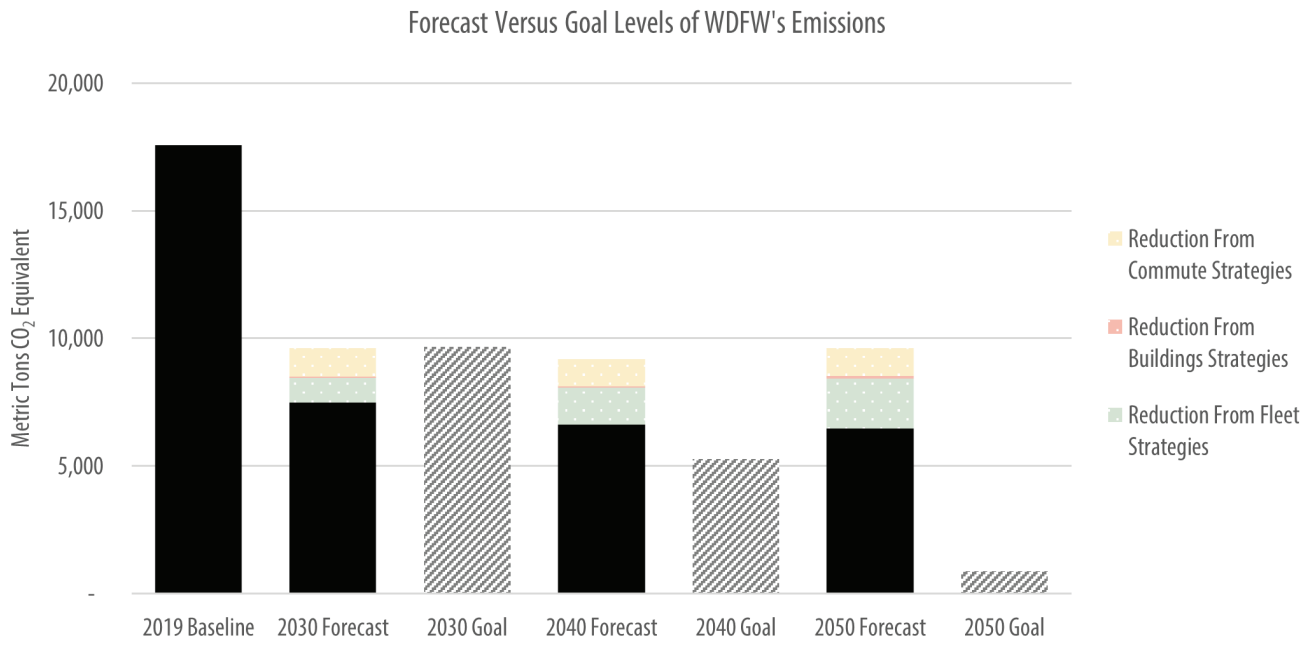


Figure 5. *The GHG reduction strategies laid out in this plan identify a pathway to exceed the 2030 goal, come close to reaching the 2040 goal, and fall short of reaching the 2050 goal. Baseline and forecasted emissions are shown in black. Goals are shown in dashed grey. The green, pink, and yellow dotted color bands represent emissions that are avoided by implementing the strategies in this plan. The reduction from buildings strategies is so small that it is barely visible.*

Key takeaways from the GHG reduction analysis are:

- WDFW will exceed our 2030 goal if we implement the strategies identified in this plan. Advances in technology will be needed to reach the 2040 and 2050 goals.
- Fleet and commute strategies are forecast to result in the largest GHG reductions.
- Buildings strategies are forecast to result in a small GHG reduction because the Clean Energy Transformation Act will reduce buildings emissions to near zero by 2030. However, buildings strategies are still important to reduce the impact of energy generation on fish and wildlife and reduce energy costs (see Buildings section).

The analysis also estimated costs to implement the GHG reduction strategies. **The strategies identified in this plan would result in a total net savings through 2050 of $5 to $7.1 million.** This is because money saved on operating expenses from reduction in fuel and energy use outweighs capital and labor costs. Individual strategies varied in whether they resulted in a total net savings or cost. Table 2 summarizes net costs/savings and cumulative GHG reductions through 2050 of the key strategies in the plan. Costs and GHG reductions are described in detail in the Greenhouse Gas Emissions Reduction Strategies and Actions section.

Table 2. Estimated Implementation Costs for Top GHG Reduction Strategies.

SECTOR	STRATEGY	NET COST/SAVINGS THROUGH 2050	CUMULATIVE GHG REDUCTION THROUGH 2050 ($MTCO_2E$)
Fleet	Transition to electric; transition to alternative fuels	Savings: $5.9 million	34,413
Buildings	Reduce energy use; transition to renewable electricity	Savings: $3.1 to $5.2 million	2,164 to 2,521
Commuting & Business Travel	Reduce commute days; incentivize sustainable commute modes	Cost: $4 million	30,477
TOTAL		**SAVINGS: $5 to $7.1 million**	**67,054 to 67,411**

Greenhouse Gas Emissions Reduction Strategies and Actions

The following sections detail WDFW's GHG reduction strategies and actions by sector. Strategies are high-level approaches that specify how changes within a sector will reduce GHG emissions. Actions, nested within each strategy, are specific implementation measures. In the following tables, strategies are shown as headers and actions are listed below each strategy. Many across span multiple programs and regions. Timeframes refer to the period in which we will initiate implementation, recognizing that some actions will take many years to complete. Timeframes are defined as 2022-2025 for short, 2025-2027 for medium, and 2027-2030 for long. Prioritization and implementation are discussed in the Implementation and Monitoring section.

Strategies and Actions Table Key

Lead Program

BSP: Business Services Program
- **FSP: Financial Services Program**
- **HR: Human Resources**
- **IT: Information Technology**

CAMP: Capital Asset Management Program

ENF: Enforcement

RD: Regional Directors

Timeframe
- **Short: 2022-2025**
- **Medium: 2025-2027**
- **Long: 2027-2030**

Fleet: Transition to Electricity & Alternative Fuels

WDFW's fleet is the agency's largest source of emissions (43% of 2019 emissions). WDFW's fleet includes approximately 750 agency-owned vehicles, 800 leased vehicles, 800 vessels, 350 pieces of transportation equipment (e.g., ATVs and snowmobiles), many pieces of small equipment (e.g., chainsaws), and one small airplane. Burning gasoline in vehicles makes up a majority of emissions in this sector, followed by burning diesel in vehicles. Burning fuel in vessels, equipment, and the airplane make up the smallest portion of emissions in this sector (Figure 6). In 2019, WDFW's fleet used nearly 850,000 gallons of fuel (equivalent to 1,600 typical passenger cars on the road for a year). WDFW's fleet also contributes to air and

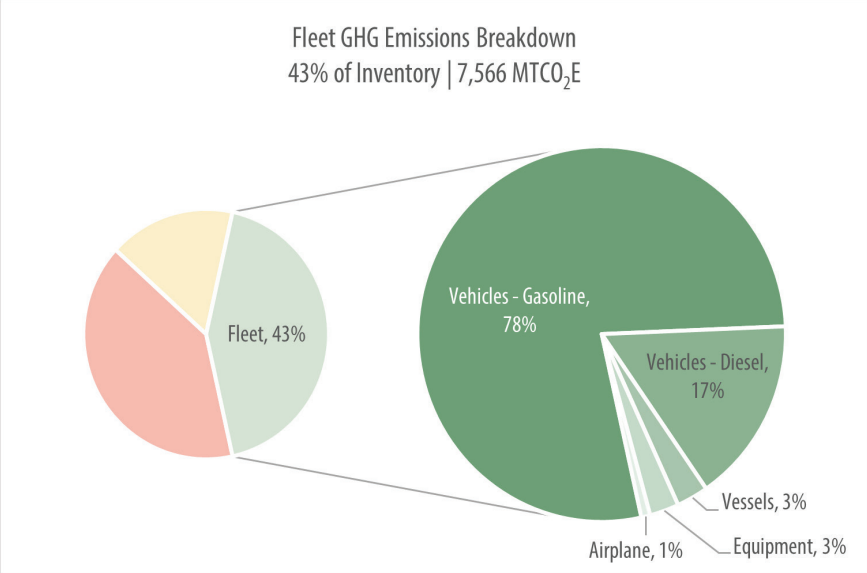


Figure 6. *The fleet makes up 43% of WDFW's emissions. Within the fleet sector, a majority of emissions come from vehicles burning gasoline and diesel.*

chemical pollution that can harm human health and the health of aquatic and marine species.

The fleet is an essential component of carrying out the agency's mission, including managing wildlife areas and water access areas, operating fish hatcheries, enforcing regulations, conducting surveys and monitoring, and implementing restoration and construction projects. 76% of WDFW's fleet vehicles are trucks, with almost half of those being medium- and heavy-duty trucks. WDFW's trucks are often large and specialized; often driving long distances, off-road, and in remote areas; and often towing vessels or equipment. Until recently, there were no electric vehicles on the market that met these operational demands. However, electric vehicle technology is advancing rapidly, and electric half-ton pickup trucks became available on the state master contract in 2021, though availability is limited at this time.

This sector is mandatory, meaning RCW 70A.45.050 requires WDFW to reduce fleet emissions. In addition, Executive Order (EO) 21-04 sets fleet electrification targets for state executive and small-cabinet agencies.[11] While EO 21-04 does not apply to WDFW's agency-owned vehicles, it does apply to WDFW's 800 vehicles leased from Department of Enterprise Services (DES). The policy mandate is clear to electrify, where possible, and otherwise reduce emissions from the fleet. However, WDFW currently does not have any electric vehicle charging infrastructure, and most vehicle use takes place in rural parts of the state with little to no public charging infrastructure. These operational demands will make it difficult to transition certain portions of the fleet to electric.

Pathway to Fleet Goals

Fleet strategies in this plan reduce emissions by transitioning to electric vehicles, vessels, and equipment. Where electric technology does not exist (such as for large trucks or heavy machinery), WDFW can utilize alternative fuels like renewable diesel, increase fuel efficiency (MPG), and reduce miles traveled. These strategies were analyzed to estimate GHG reductions and implementation costs.

The analysis does not identify a pathway to meet the 2030, 2040, or 2050 goals – it identifies a gap that we will need to close through future planning (Figure 7). This finding highlights the challenge of transitioning WDFW's fleet, which has such heavy-duty operational demands, to electric alternatives. The analysis found

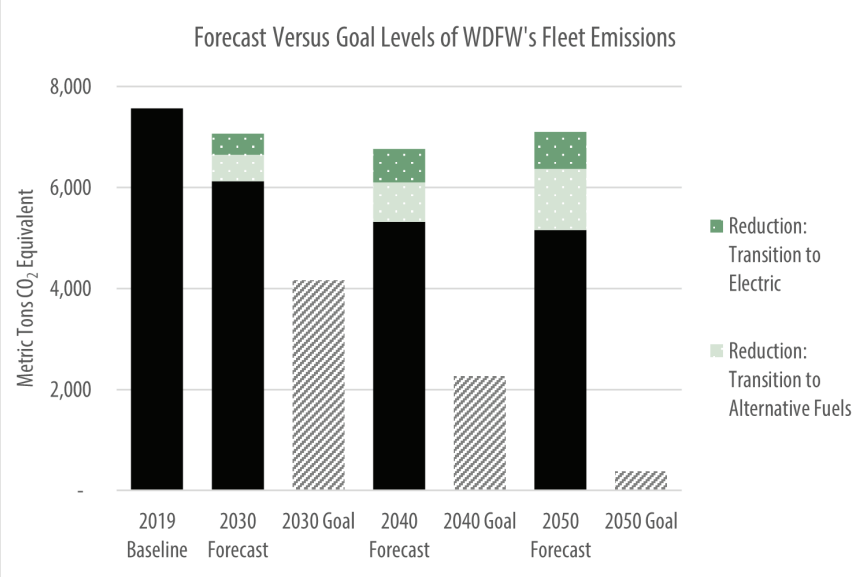


Figure 7. *The fleet strategies laid out in Table 3 do not identify a pathway to meet the 2030, 2040, or 2050 goals. Advances in technology will be needed to transition WDFW's truck-heavy fleet to low-emissions vehicles. Baseline and forecasted emissions are shown in black. Goals are shown in dashed grey. The green dotted color bands represent emissions that are avoided by implementing the fleet strategies.*

[11] State of Washington Executive Order 21-04. 2021. Zero Emission Vehicles. https://www.governor.wa.gov/sites/default/files/exe_order/21-04%20-%20Zero%20Emission%20Vehicles.pdf

that pairing a transition to electric[12] (Table 3 Actions F1-F8) with a transition to alternative fuels[13] (Table 3 Actions F9-F11) where electric is not possible would reduce fleet emissions below 2019 levels 13% by 2030 and 26% by 2050. Increasing fuel efficiency (Table 3 Actions F12-F13) and reducing miles traveled (Table 3 Actions F14-F17) had a negligible GHG reduction. The analysis found that transitioning to electric would have a total net cost through 2050 of $2.1 million.[14] Transitioning to alternative fuels would have a total net savings through 2050 of $8 million.[15] Finally, an adaptive management approach to this transition is recommended to test new technologies as they emerge and determine which parts of the fleet are suitable for electric or alternative fuels.

Table 3. Fleet Strategies and Actions Table.

FLEET STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
TRANSITION TO ELECTRIC			
F1	Develop an electric fleet transition plan that addresses which vehicles can be converted when given operational demands, charging infrastructure needs, costs, maintenance, and policy questions like pricing and public access.	BSP-Conservation; CAMP	Short
F2*[16]	Install electric vehicle chargers at agency-owned offices, hatcheries, wildlife areas, and water access areas. Seek funding.	CAMP; RD; Fish; Wildlife	Short
F3*	Update lease terms to require installation of electric vehicle chargers at leased offices. Seek funding.	CAMP; RD	Short
F4	Institute a policy to select electric or plug-in hybrid vehicles as vehicles are replaced or added unless there is a significant operational demand issue.	BSP-Conservation; CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Short
F5	Collaborate with DES to train staff on electric vehicle charging, driving, and troubleshooting in the field. Communicate resources to address common concerns.	BSP-Conservation; CAMP	Short
F6	As small equipment is replaced or added, order electric chainsaws, weed whips, mowers, forklifts, etc. whenever possible. Purchase extra batteries and chargers.	Wildlife; Fish	Medium
F7	Track technology advances for electric UTVs, snowmobiles, motorcycles, etc.; acquire and test as they come on market.	Wildlife; ENF	Medium
F8	Track technology advances for electric and hybrid vessel motors; acquire and test motors as they come on market.	Fish; Wildlife; ENF	Long
TRANSITION TO ALTERNATIVE FUELS WHERE ELECTRIC IS NOT AN OPTION			
F9	Research the availability, usability, and emissions of alternative fuels like renewable diesel, biodiesel, ethanol, hydrogen, and sustainable aviation fuel.	BSP-Conservation; CAMP	Short
F10	Implement transition to alternative fuels through purchasing for bulk fuel sites and staff guidance on buying alternative fuels at commercial sites.	CAMP; Wildlife; Fish	Medium
F11	Train staff on using alternative fuels. Communicate resources to address common concerns.	BSP-Conservation; CAMP	Medium

[12] Assumes that for light-duty and passenger vehicles, 40% of new purchases in 2025 are electric, increasing to 100% in 2035. Assumes that for medium- and heavy-duty vehicles, 40% of new purchases in 2030 are electric, increasing to 100% in 2040. Assumes that for equipment, 25% of inventory is electric by 2030, increasing to 75% by 2050.

[13] Assumes that 100% of non-electric vehicles and 75% of vessels transition to alternative fuels by 2050.

[14] Costs (premium for electric vehicles over internal combustion vehicles $8.6 million + capital cost to install chargers $216k + increased electricity cost $661k + staff time $296k) minus savings (fuel savings $7.6 million) = net cost of $2.1 million.

[15] Costs (vehicle retrofits $369k + staff time $203k) minus savings (fuel savings $8.6 million) = net savings of $8 million.

[16] Fleet Actions F2* and F3* are repeated in the Commuting & Business Travel and Other Transportation sectors.

FLEET STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
INCREASE FUEL EFFICIENCY (MPG) WHERE ELECTRIC IS NOT AN OPTION			
F12	Institute a policy to select the smallest vehicle size that meets operational demands as vehicles are replaced or added.	BSP-Conservation; CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Short
F13	Improve vessel fuel efficiency through hull design, engine upgrades, maintenance, removing weight, and reducing speeds and idling.	Fish; Wildlife; ENF	Long
REDUCE MILES TRAVELED			
F14	Encourage virtual meetings and trainings through infrastructure, policies, and culture.	BSP-IT	Short
F15	Identify tasks that could be done via walking, biking, UTV, or drone rather than vehicle/vessel. Acquire the necessary equipment and develop policies and communications to encourage work outside vehicles.	Wildlife; Fish; ENF	Medium
F16	Assess the potential of shifting more vehicles into a shared/pool approach rather than being assigned to individuals to encourage carpooling between work sites.	CAMP	Medium
F17	Work with DES to modify vehicle utilization requirements that create incentives to drive more.	CAMP	Long
IMPROVE FLEET MANAGEMENT			
F18	Utilize new central fleet coordinator role to assist in implementing fleet actions.	CAMP	Short
F19	Improve data on fleet inventory, fuel use, utilization, and MPG to enable better understanding of trends and opportunities to reduce emissions.	CAMP; BSP-Conservation; BSP-FSP	Short

Buildings: Reduce Energy Use & Transition to Renewable

Buildings are WDFW's second-largest source of emissions (40% of 2019 emissions). WDFW has approximately 800 agency-owned buildings comprising nearly 1.5 million square feet, and 50 leased buildings comprising nearly 300,000 square feet. These buildings include about 40 offices; 80 fish hatcheries and 33 wildlife areas made up of complexes of many buildings like labs, storage facilities, barns, and residences; and numerous other buildings such as construction shops and field stations. The generation of electricity used in WDFW's buildings makes up the vast majority of emissions in this sector, and burning natural gas for heating makes up the small remaining portion (Figure 8). In 2019, WDFW's buildings used nearly 25 million kilowatt hours of electricity (equivalent to 2,300 typical homes for a year) and 65,000 therms of natural gas (equivalent to 100 typical homes for a year). Fish hatchery complexes are the largest energy users.

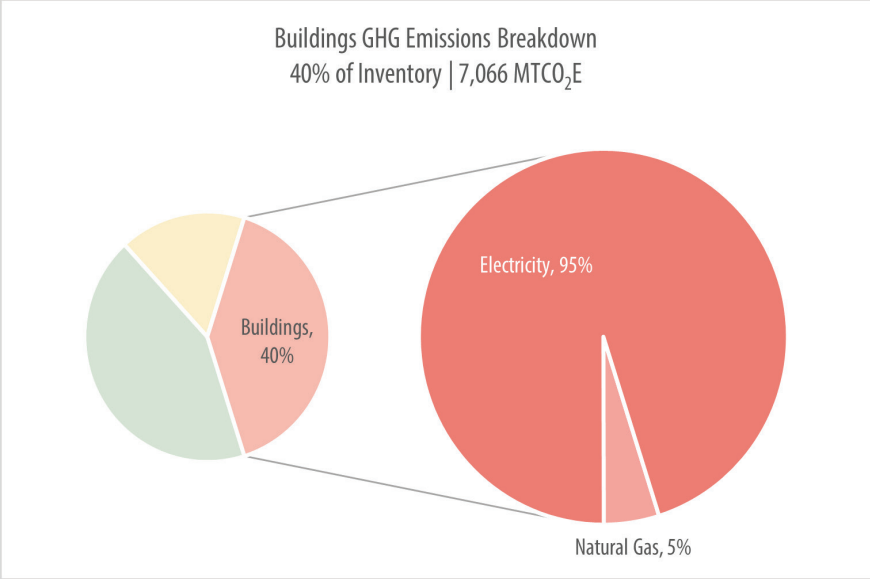


Figure 8. *Buildings make up 40% of WDFW's emissions. Within the buildings sector, 95% of emissions come from the generation of electricity, and 5% come from natural gas heating.*

This sector is mandatory, meaning RCW 70A.45.050 requires WDFW to reduce buildings emissions. An additional key law affecting the buildings sector is Washington's Clean Energy Transformation Act (CETA).[17] Enacted in 2019, CETA requires utilities to provide carbon-neutral electricity by 2030 (meaning they may offset the use of natural gas with carbon offsets) and 100% renewable electricity by 2045 (meaning they may not use carbon offsets).[18] This means that WDFW's electricity emissions will go to zero in 2030, assuming utilities comply with CETA. This suggests that, from a GHG accounting perspective, WDFW should focus resources on other emissions sectors that will not be reduced by external laws. However, there are other compelling reasons for WDFW to invest in renewable electricity and energy efficiency even if it will not result in large GHG reductions:

- By installing solar panels on WDFW facilities, we avoid contributing to demand for industrial-scale solar projects that can harm key habitats like shrubsteppe, and model what habitat-friendly renewable energy looks like (see Box 3).
- Installing solar panels above hatchery ponds provides shade and could keep pond temperatures cooler, reducing energy used to maintain appropriate pond temperatures and reducing thermal stress on hatchery fish.
- Reducing energy use saves money, reduces the environmental impacts (e.g., habitat loss, impacts

[17] Senate Bill 5126. 2020. Supporting Washington's clean energy economy and transitioning to a clean, affordable, and reliable energy future. https://app.leg.wa.gov/billsummary?BillNumber=5116&Initiative=false&Year=2019

[18] Washington State Department of Commerce. Clean Energy Transformation Act Overview. https://www.commerce.wa.gov/growing-the-economy/energy/ceta-overview/

from dams) associated with generating energy, and mitigates increased demand on the electrical grid as Washington transitions from fossil fuels to electricity.

- Reducing energy use by upgrading building lighting, heating, and cooling has significant co-benefits for employee well-being and diversity, equity, and inclusion by making workspaces more comfortable for staff such as neurodiverse or female employees.[19]

For these reasons, this plan recommends investing in renewable electricity and energy efficiency, though as a secondary priority to reducing fleet emissions.

Pathway to Buildings Goals

Buildings strategies in this plan reduce emissions first by reducing energy use through energy efficiency projects and replacing gas heating with electric, and second by transitioning to renewable electricity. These strategies were analyzed to estimate GHG reductions and implementation costs.

The analysis identifies a pathway to meet the 2030, 2040, and 2050 goals. The analysis found that CETA will reduce buildings emissions below 2019 levels 95% by 2030 and remain constant at a 95% reduction through 2050.[20] This massive reduction alone surpasses the RCW goals for this sector. Action taken by WDFW would have a small additional impact on emissions (Figure 9). The analysis found that reducing energy use[21] (Table 4 Actions B1-B5) would reduce buildings emissions by an additional 0.7% by 2030 and 1.3% by 2050. Installing renewable electricity[22] (Table 4 Actions B6-B8)

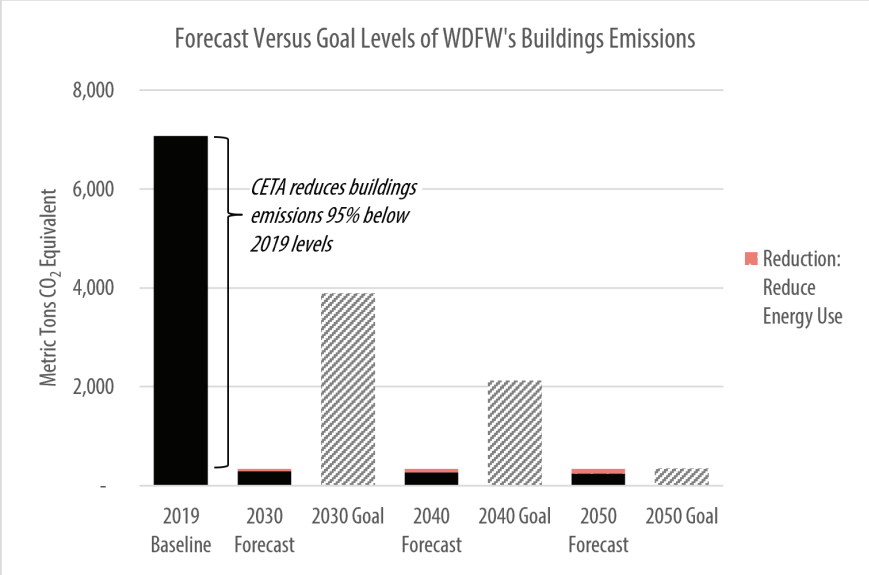


Figure 9. *CETA will dramatically reduce WDFW's buildings emissions even if WDFW takes no action, reaching the 2030, 2040, and 2050 goals. The buildings strategies in Table 4 would have a small additional impact. Baseline and forecasted emissions are shown in black. Goals are shown in dashed grey. The barely visible pink dotted color band represents emissions that are avoided by implementing the buildings strategies.*

[19] Communication from WDFW Diversity Advisory Committee.

[20] Assumes that utilities comply with CETA requirements to provide carbon-neutral electricity by 2030. The analysis also explored a scenario in which utilities do not provide carbon-neutral electricity until 2040. In this scenario, GHG reductions from buildings strategies were still smaller than GHG reductions from fleet and commute strategies.

[21] Assumes that deep energy efficiency retrofits are implemented at 20% of agency-owned buildings over 3,000 square feet. Assumes that gas heating systems are replaced with electric in all agency-owned buildings over 3,000 square feet. Assumes that all leases on leased buildings over 3,000 square feet are updated to require energy efficiency standards and replacement of gas heating.

[22] Assumes that 20 10kW and 20 25kW solar energy systems are installed. Assumes that micro-hydropower systems are installed at half of hatcheries.

had a negligible GHG reduction because CETA already mandates that Washington's electricity be renewable. The analysis found that reducing energy use would have a total net cost through 2050 of $360,000 to $2.5 million depending on the level of retrofits.[23] Installing renewable electricity would have a total net savings through 2050 of $5.6 million.[24] Finally, key implementation considerations are that fish hatcheries are a priority focus as the largest energy users, and differing approaches will be needed for agency-owned versus leased buildings.

Table 4. Buildings Strategies and Actions Table

BUILDINGS STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
REDUCE ENERGY USE			
B1	Utilize Energy Saving Performance Contracting to identify, prioritize, and implement energy efficiency improvements, such as pumps, insulation, lighting, windows, and weatherproofing.	CAMP; RD	Short
B2	Institute a policy to require electric rather than fossil fuel (e.g., gas) heating and hot water systems in renovations and new construction. Develop and implement a plan to replace existing fossil fuel heating and hot water systems.	CAMP	Medium
B3	Develop design specifications that integrate energy efficiency, renewable electricity, low-impact materials, etc. into design of capital projects.	CAMP	Medium
B4	As post-COVID-19 work patterns emerge, assess occupancy by in-person workers and potential to downsize office space.	CAMP	Medium
B5	Work with DES to develop and implement green lease language that requires energy efficiency standards and replacement of gas heating.	CAMP	Long
TRANSITION TO RENEWABLE ELECTRICITY			
B6	Assess feasibility and siting for solar energy systems on offices, wildlife area buildings, and hatchery buildings and ponds. Implement installations.	CAMP; RD; Wildlife; Fish	Short
B7	Assess feasibility and siting for micro-hydropower systems in hatchery pipes. Implement installations.	CAMP; Fish	Short
B8	Investigate options to purchase renewable electricity through utility company opt-up programs, power purchasing agreements, and renewable energy certificates.	BSP-Conservation	Long
IMPROVE FACILITIES MANAGEMENT			
B9	Increase staff capacity to assist in implementing buildings actions and improve energy management.	CAMP	Short
B10	Improve data on energy use, facilities inventory, and utilities inventory through systems like Energy Star Portfolio Manager and meters/sub-meters to enable better understanding of trends and opportunities to reduce energy use. Implement recommendations in Washington State University Energy Program report.	BSP-FSP; CAMP; BSP-Conservation	Short
B11	Pursue funding for energy efficiency and renewable electricity projects including grants and utility incentives.	BSP-FSP; CAMP; BSP-Conservation	Short
B12	Assess and communicate the return on investment, payback period, and long-term cost savings of energy efficiency and renewable electricity projects.	BSP-FSP; CAMP; BSP-Conservation	Medium

[23] Costs (capital costs for energy efficiency retrofits and heating electrification $175k to $3.5 million + staff time $795k to $1.2 million) minus savings (energy savings $612k to $2.2 million) = net cost of $358k to $2.5 million.

[24] Costs (capital costs to install solar and micro-hydro systems $943k + staff time $238k) minus savings (energy savings $6.8 million) = net savings of $5.6 million.

Box 3. Case Study: Reducing Habitat Impacts from Solar Energy

Challenge: Many industrial-scale solar energy projects are being proposed on shrubsteppe, one of Washington's most diverse and at-risk ecosystems. Habitat impacts from solar development on shrubsteppe include fragmentation, impacts to nesting, feeding, and breeding areas for greater sage grouse and other imperiled bird species, and disruption to deer, elk, and pronghorn migration routes. There is a need to site solar facilities in "no regrets" locations that avoid or minimize impacts on habitat.

What WDFW is Doing: WDFW supports state renewable energy mandates and looks forward to working with developers to site solar facilities in places that avoid significant impacts to wildlife habitat. While WDFW does not have regulatory authority on solar development, we provide comments and technical assistance on the siting and design of proposed projects to avoid, minimize, and mitigate impacts on fish and wildlife habitats. We participate in "least conflict solar siting" efforts and are working to identify "dual use" locations for solar energy such as voluntary "agrivoltaics" projects on working farmland, and solar on built environments such as industrial rooftops and parking lots. Where there are unavoidable impacts to shrubsteppe or other valuable habitats, WDFW works to secure robust mitigation commitments.

Commuting and Business Travel: Reduce Trips & Incentivize Sustainable Modes

Commuting and business travel made up 17% of WDFW's 2019 emissions. Employees' commuting patterns and options vary widely, from rural to urban environments, from short to long distances, and even some employees who commute in their work vehicle (which is captured in the **Fleet section**). Burning fuel for drive-alone commuting makes up the vast majority of emissions in this sector, followed by burning fuel in shared vehicles (carpool and vanpool). Other commute modes such as biking and walking are zero-emissions. Burning fuel in employee business flights to offices around the state and conferences also makes up a small portion of emissions in this sector (Figure 10). WDFW employees commuted an estimated 11.1 million miles in 2019 (equivalent to 1,000 typical passenger cars on the road for a year). Commuting by vehicle also contributes to air and chemical pollution that can harm human health and the health of aquatic and marine species.

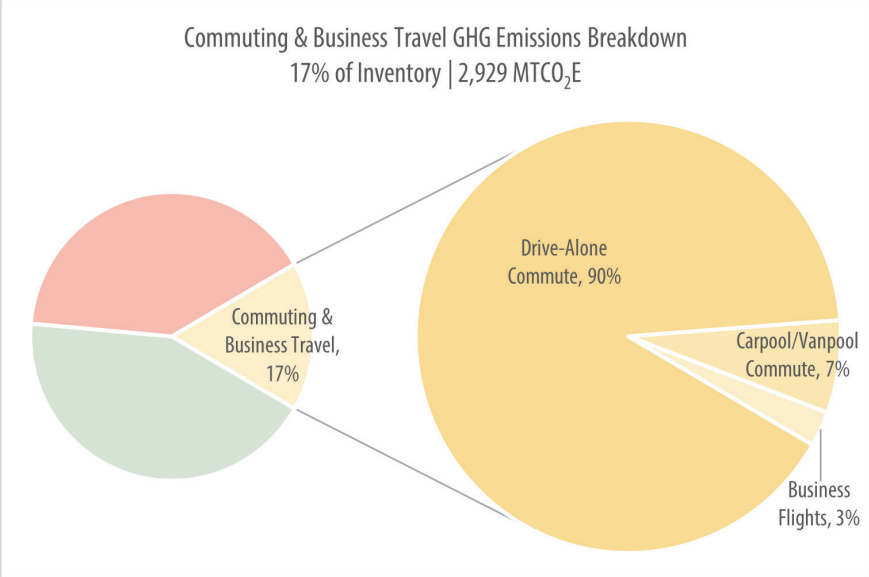


Figure 10. *Commuting and business travel make up 17% of WDFW's emissions. Within this sector, a majority of emissions come from drive-alone commuting.*

COVID-19 had an enormous impact on employee commuting patterns due to the rapid expansion of telework. Figure 11 compares WDFW's Thurston Regional Planning Council employee commute survey results in 2021 and 2013 (the most recent year the agency participated in the survey before COVID-19).[25] Teleworking increased

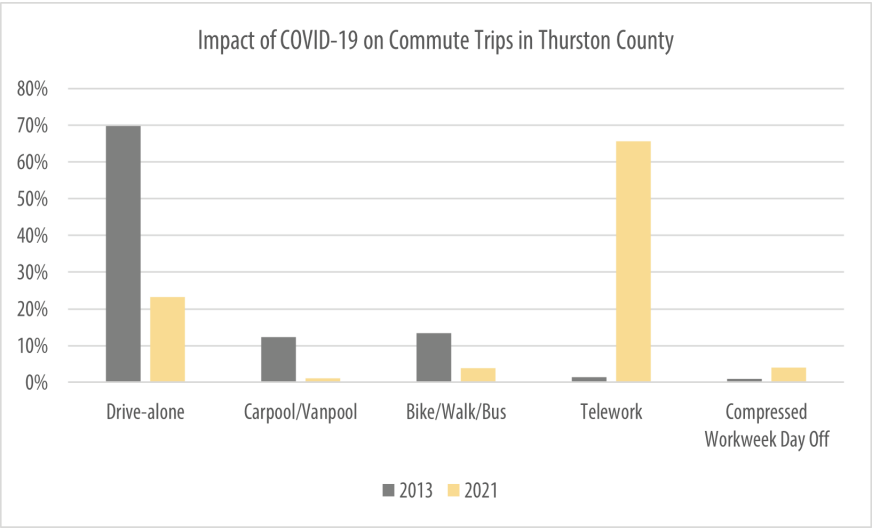


Figure 11. *Commuting patterns changed dramatically due to COVID-19. The percent of drive-alone commute days decreased from 70% in 2013 to 23% in 2021. The percent of telework days increased from 1% in 2013 to 66% in 2021.*

[25] Washington State Department of Transportation. 2021. Commute Trip Reduction Survey Summary. https://www.trpc.org/DocumentCenter/View/9302/E10041-report

from 1% to 66% of employee workdays. At the same time, drive-alone commutes decreased from 70% to 23% of employee workdays. Commuting via sustainable modes (carpool, vanpool, bike, walk, and bus) decreased, and compressed workweek days off increased. The emissions impact of these changes will be quantified in WDFW's first Sustainability Plan Progress Report (see **Implementation and Monitoring section**).

While the commuting and business travel sector is voluntary (not included in RCW 70A.45.050 goals), WDFW is committed to reducing contributions from this sector because it is a significant source of agency emissions. Providing employees with options for how they commute also has significant co-benefits. Workplace flexibility increases employee morale and well-being by allowing employees to choose schedules and commutes that work for their life circumstances. For example, employees may prefer compressed schedules to free up time for caregiving responsibilities, or telework because they hold marginalized identities or differences that can make working in an office challenging.[26] Flexible schedules and commute benefits help attract and retain employees. Active modes of transportation like biking and walking support employee health and wellness.

Pathway to Commuting and Business Travel Goals

While employee commute choices are not under WDFW's control, the agency can influence these choices to reduce emissions. Commuting and business travel strategies reduce emissions by reducing commute days through telework and compressed workweek schedules (such as four 10-hour days or "crazy 9s") and encouraging sustainable commute modes like biking, walking, transit, carpool, and vanpool. These strategies were analyzed to estimate GHG reductions and implementation costs.

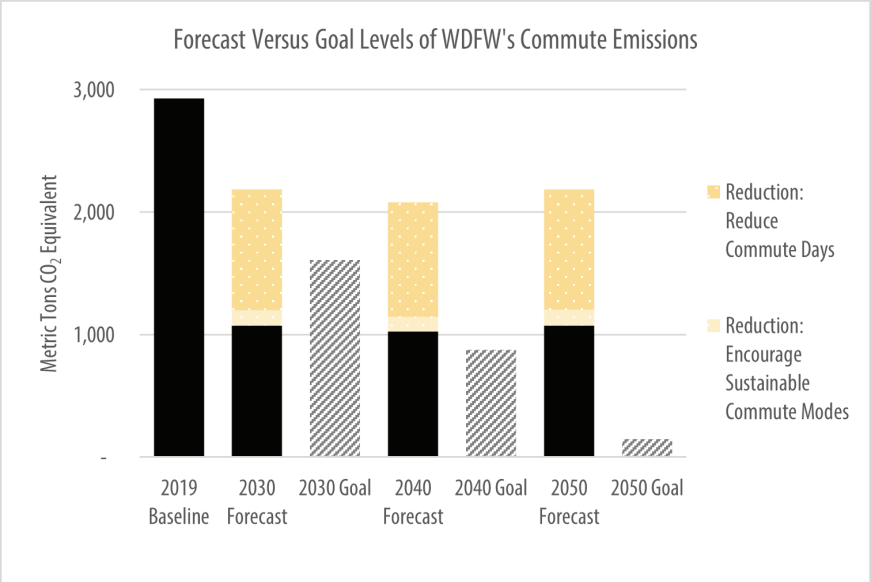


Figure 12. *The commute strategies laid out in Table 5 identify a pathway to meet the 2030 goal and fall short of reaching the 2040 and 2050 goals. Baseline and forecasted emissions are shown in black. Goals are shown in dashed grey. The yellow dotted color bands represent emissions that are avoided by implementing the commute strategies.*

The analysis identifies a pathway to meet the 2030 goal and a gap that we will need to close through future planning to meet the 2040 and 2050 goals (Figure 12). The analysis found that reducing commute days[27]

[26] Communication from WDFW Diversity Advisory Committee.

[27] Assumes that 65% of workdays are telework from 2021 onward. Assumes that compressed workweek days off go from 4% of workdays in 2021 to 8% of workdays in 2030 and onward. Both based on Thurston Regional Planning Council employee commute survey results.

(Table 5 Actions C1-C2) and encouraging sustainable commute modes[28] (Table 5 Actions C3-C5) would reduce commuting and business travel emissions below 2019 levels 38% by 2030 and remain constant at this rate through 2050. Reducing business flights (Table 5 Action C6) had a negligible GHG reduction because flights make up only 3% of commuting and business travel emissions. The analysis found that a Commute Trip Reduction program that reduces commute days and incentivizes sustainable commute modes would have a net cost through 2050 of $4 million.[29] This figure does not incorporate potential savings through increased employee retention and health, or decreased office space.

Table 5. Commuting and Business Travel Strategies and Actions Table.

COMMUTING & BUSINESS TRAVEL STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
REDUCE COMMUTE DAYS			
C1	Maintain high levels of telework implemented during COVID-19 by maximizing eligibility, providing home office equipment, informing employees of telework options, and providing training and resources to help teleworking employees and teams be successful.	BSP-HR; BSP-IT	Short
C2	Promote compressed workweek schedules by maximizing eligibility, informing employees of compressed schedule options, providing training and resources to help employees and teams on compressed schedules be successful, formalizing workplace norms to minimize disruption such as staggered coverage, and updating any policies that conflict with this direction.	BSP-HR	Short
INCENTIVIZE SUSTAINABLE COMMUTE MODES			
C3	Provide financial incentives for commuting via sustainable modes (bike, walk, transit, vanpool, carpool).	BSP-HR	Short
C4	Provide employees with information and resources on how to use sustainable commute modes through an intranet page, trainings, etc.	BSP-HR	Short
F2/F3*	Install electric vehicle chargers to enable low-emissions commuting (see Fleet Actions F2 and F3).	CAMP; RD; Wildlife; Fish	Short
REDUCE BUSINESS FLIGHTS			
C5	Revise Travel Authorization Form process to encourage alternatives to flights, such as virtual meetings.	BSP-FSP	Long
IMPROVE COMMUTE MANAGEMENT			
C6	Create a Commute Trip Reduction Program to implement commute actions. Expand Employee Transportation Coordinator duties and transition to a new 0.5 FTE position in HR.	BSP-HR; BSP-Conservation	Short
C7	Participate consistently in Thurston Regional Planning Council biennial employee commute survey. Develop a supplemental commute survey for staff outside Thurston County.	BSP-HR	Medium

[28] Assumes that 7% of employees participate and transition from driving alone to sustainable modes, based on Thurston Regional Planning Council employee commute survey results. [29] Costs (financial incentives $3.3 million + staff time $778k) minus savings (none) = net cost of $4 million.

[29] Costs (financial incentives $3.3 million + staff time $778k) minus savings (none) = net cost of $4 million.

Additional GHG Emissions Sectors

In addition to fleet, buildings, and commuting and business travel, WDFW conducts other activities that produce emissions. The following sectors were not included in the GHG inventory because of limited data availability. All of the following sectors are voluntary (not included in RCW 70A.45.050 goals), and in many cases, WDFW has limited ability to reduce emissions. Although no emissions baselines or goals are set for the following sectors, WDFW has developed strategies and actions to reduce emissions and attempt to establish baselines for these sectors.

Hatchery Fish Digestion: Research Technical Solutions

Fish excrete ammonia through their gills as a waste product during their digestive process. Some of the ammonia in the water is then broken down by bacteria and released as nitrous oxide gas.[30] At present, estimates of nitrous oxide emissions from fish hatcheries and other aquaculture systems are highly imprecise. There are only a handful of peer-reviewed journal articles on the topic and they estimate emissions using global averages.[31] Research suggests that emissions vary widely depending on the pH, dissolved oxygen content, and temperature of the water. WDFW's hatchery fish digestion emissions were estimated to be approximately 1,900 MTCO2E in 2019, but because the uncertainty is so high, this sector is not included in the GHG inventory.

Little is known about options to reduce fish digestion emissions. A clear first step is to conduct further research. WDFW staff or academic partners can seek to better understand the magnitude of this emissions source and potential actions to reduce emissions.

Research suggests potential methods to reduce emissions including optimizing pH, temperature, and water exchange and improving system design. One such system is aquaponic aquaculture, which incorporates plants into the fish tank that take in nitrogen before it can evaporate as nitrous oxide gas. A second such system is biofloc technology aquaculture, which uses specific kinds of bacteria that take in nitrogen. However, these recommendations are aimed at commercial aquaculture systems, so it is unclear if they would be appropriate for WDFW's context.

Despite the significant uncertainty and limitations, WDFW is committed to seeking to reduce hatchery fish digestion emissions. Producing hatchery fish is a core part of the agency's mission. WDFW hopes to contribute to research and solutions for this poorly understood topic. We are inspired in this area by Oregon Department of Fish and Wildlife, which is taking a similar approach.

[30] MacLeod, M., Hasan, M., Robb, D., Mamun-Ur-Rashid, M. 2020. Quantifying greenhouse gas emissions from global aquaculture. Scientific Reports (10:11679).

[31] Hu, Z., Lee, J., Chandran, K., Kim, S., Khanal, S. 2012. Nitrous Oxide (N2O) Emission from Aquaculture: A Review. Environmental Science & Technology (46).

Table 6. Hatchery Fish Digestion Strategies and Actions Table.

HATCHERY FISH DIGESTION STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
RESEARCH AND IMPLEMENT APPROACHES TO REDUCE EMISSIONS FROM HATCHERY FISH			
H1	Track advances in the literature and support research to establish better data on hatchery fish digestion emissions. Assess if it is viable to establish emissions baseline and goal.	Fish; BSP-Conservation	Medium
H2	Track advances in the literature and support research to identify approaches to reduce hatchery fish digestion emissions.	Fish; BSP-Conservation	Medium
H3	Implement approaches to reduce hatchery fish digestion emissions.	Fish	Long

Contracted Services: Reduce Miles & Transition to Alternative Fuels

WDFW utilizes contractors for many activities, from construction and restoration projects to surveys and monitoring. Contractors use fuel while traveling to project sites and running equipment. Because this fuel is typically used in private vehicles and equipment rather than WDFW's fleet, data was not available on contractors' fuel use. For example, WDFW contracts out helicopter flights for wildlife surveys, which is likely a significant emissions source that is not captured in the GHG inventory. WDFW has limited ability to influence contractors' fuel use, but strategies to reduce emissions in this area focus on using contract mechanisms to encourage the use of alternative fuels and efficient equipment.

Table 7. Contracted Services Strategies and Actions Table.

CONTRACTED SERVICES STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
REDUCE MILES AND TRANSITION TO ALTERNATIVE FUELS			
CS1	Assess if it is viable to establish emissions baseline and goal for contracted services.	BSP-Conservation	Short
CS2	Identify tasks that could be done via walking, biking, UTV, or drone rather than vehicle/vessel. Change contracts to specify these practices.	Wildlife; Fish	Long
CS3	Explore using contract mechanisms like environmental preferences or design specifications to encourage contractors' use of alternative fuels, more efficient equipment, etc.	BSP-FSP; CAMP; Habitat	Long

Other Transportation: Reduce Trips & Incentivize Sustainable Modes

Beyond the fleet, commuting, and contractors, there are other groups who use fuel for transportation affiliated with WDFW. The public travels to and from WDFW wildlife areas, water access areas, and other sites to recreate, hunt, and fish. Volunteers travel to and from project sites. Data was not available on the mileage or fuel use associated with these trips. WDFW has limited ability to influence what modes of transportation are used or how many miles are traveled for these activities. Strategies to reduce emissions in this area focus on supporting sustainable transportation modes and identifying opportunities to reduce miles traveled.

Table 8. Other Transportation Strategies and Actions Table.

OTHER TRANSPORTATION STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
SUPPORT SUSTAINABLE MODES AND REDUCE MILES FOR PUBLIC RECREATION			
OT1	Assess if it is viable to establish emissions baseline and goal for public recreation transportation.	BSP-Conservation	Short
F2/F3*	Install electric vehicle chargers to enable low-emissions recreation (see Fleet Actions F2 and F3).	CAMP; RD; Wildlife; Fish	Short
OT2	Assess opportunities to promote visitation via bike, transit, etc. at more urban or high-use sites.	Wildlife	Long
OT3	Assess regulations like daily catch limits to identify agency decisions that may be creating unnecessary vehicle trips.	Fish; Wildlife	Long
SUPPORT SUSTAINABLE MODES AND REDUCE MILES FOR VOLUNTEERS			
OT4	Assess if it is viable to establish emissions baseline and goal for volunteer transportation.	BSP-Conservation	Short
F2/F3*	Install electric vehicle chargers to enable low-emissions volunteering (see Fleet Actions F2 and F3).	CAMP; RD; Wildlife; Fish	Short
OT5	Assess opportunities to facilitate carpooling among volunteers.	BSP-FSP	Long
IMPROVE DATA ON EMPLOYEE PERSONAL VEHICLE USE			
OT6	Assess if it is viable to establish emissions baseline and goal for employee personal vehicle usage for work.	BSP-Conservation	Short

Refrigerant Gases: Reduce Leaks

Refrigerant gases used in air conditioners, refrigerators, and freezers are emitted when they leak or when equipment is not disposed of properly. Refrigerant gases are GHGs of high concern because their warming effect is hundreds or even thousands of times more potent than carbon dioxide. WDFW has air conditioners in buildings and vehicles, plus a substantial number of refrigerators and freezers in labs, fish hatcheries, and other facilities used for fish and wildlife specimens. Data was not available on the agency's number of air conditioners, refrigerators, and freezers, and it is difficult to estimate leakage rates. WDFW could reduce emissions from refrigerant gases by replacing aging systems and equipment, performing regular maintenance, and ensuring proper disposal.

Table 9. Refrigerant Gases Strategies and Actions Table.

REFRIGERANT GASES STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
REDUCE REFRIGERANT LEAKS			
RG1	Assess if it is viable to establish emissions baseline and goal for refrigerant gases and identify aging equipment that should be prioritized for replacement.	BSP-Conservation; CAMP; Fish	Short
RG2	Replace aging equipment with lower global warming potential models; perform regular maintenance.	CAMP; Fish	Long
RG3	Ensure that surplus equipment is disposed of properly.	CAMP; Fish	Long

Land Management: Research Alternative Practices

GHG accounting standards focus on human activities that burn fossil fuels, emitting geological carbon, nitrous oxide, and methane. However, WDFW's land management activities can also release biological carbon that is stored in plants and soils. For example, prescribed burns emit carbon in the short term (but reduce the probability of future wildfires that could emit comparatively more carbon). Cattle grazing on WDFW lands emit methane (but certain high-intensity short-duration grazing regimes may stimulate the growth of grass that sequesters carbon). In brief, changes in biological carbon are very complicated.

That is why GHG accounting standards advise against counting biological carbon emissions (or sequestration) alongside geological carbon emissions from fossil fuels. With that being said, biological emissions do contribute to climate change, and WDFW has an interest in understanding the emissions impact of land management activities. WDFW also has an interest in understanding carbon sequestration across the agency's million acres of land, and our role in natural climate solutions (see WDFW's Approach to Climate Change section).

Table 10. Land Management Strategies and Actions Table.

LAND MANAGEMENT STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
RESEARCH BIOGENIC EMISSIONS FROM LAND MANAGEMENT			
LM1	Research emissions from land management practices such as prescribed burns and grazing. Assess if it is viable to establish emissions baseline and goal for these activities. Evaluate if there are alternative land management practices with lower emissions. Implement practices.	BSP-Conservation	Long
RESEARCH CARBON SEQUESTRATION IN WDFW LANDS			
LM2	Build on UW "How Can WDFW Increase Carbon Sequestration to Mitigate Climate Change?" report's research on carbon sequestration in WDFW lands. Implement recommendation to develop an inventory of carbon sequestration and storage.	BSP-Conservation	Short
LM3	Build on UW "How Can WDFW Increase Carbon Sequestration to Mitigate Climate Change?" report's research on carbon sequestration from land management practices. Implement recommendations on alternative land management practices to increase carbon sequestration in grasslands, shrubsteppe, forests, wetlands, and croplands.	BSP-Conservation	Medium

Increasing Operational Sustainability

Sustainability Inventory and Goals

Moving beyond GHG emissions, this plan also addresses other aspects of WDFW's operations that have an environmental impact: solid waste, water used in buildings, contracted goods, and toxic chemicals. While data was only available to establish baselines and goals for some of these sectors, WDFW has developed strategies and actions for each sector to reduce impacts and attempt to establish baselines for sectors that do not yet have one.

WDFW sets the following sustainability baselines and goals for the Sustainability Plan:

Table 11. Sustainability Sector Goals and Baselines.

SUSTAINABILITY SECTOR	2019 BASELINE	2030 GOAL	2040 GOAL	2050 GOAL
Solid Waste – Increase waste diversion (recycling) rate to:	18%	40%	60%	80%
Buildings Water Use – Reduce by:	18 million gallons	-10%	-20%	-30%
Contracted Goods	Case study of 6 goods: 1,279 $MTCO_2E$	N/A	N/A	N/A
Toxic Chemicals	Data not available	N/A	N/A	N/A

At present, Washington does not have overarching statutory guidance for goals in these sectors. The solid waste goals are derived from the 2021 federal "Executive Order on Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability"[32] and the King County-Cities Climate Collaboration.[33] The buildings water use goals are derived from the sustainability plans of a number of Washington local governments, such as the Cities of Bellevue[34] and Kirkland[35]. Goals were not set for contracted goods and toxic chemicals because of a lack of baseline data.

[32] Federal Executive Order. 2021. Executive Order on Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability. https://www.whitehouse.gov/briefing-room/presidential-actions/2021/12/08/executive-order-on-catalyzing-clean-energy-industries-and-jobs-through-federal-sustainability/

[33] King County. King County-Cities Climate Collaboration. https://kingcounty.gov/services/environment/climate/actions-strategies/partnerships-collaborations/k4c.aspx

[34] City of Bellevue. 2020. Sustainable Bellevue Environmental Stewardship Plan. https://bellevuewa.gov/sites/default/files/media/pdf_document/2020/Bellevue%20Enviornmental%20Stewardship%20Plan_Adopted.pdf

[35] City of Kirkland. 2020. Sustainability Master Plan. https://www.kirklandwa.gov/files/sharedassets/public/public-works/recycling/sustainability/sustainability-master-plan-adopted-dec-2020.pdf

Sustainability Strategies and Actions

Moving beyond GHG emissions, the following sections focus on other aspects of WDFW's operations that have an environmental impact. All of the following sectors are voluntary (not included in RCW 70A.45.050 goals). Data was only available to establish baselines and goals for some of the sectors, but WDFW has developed strategies and actions to increase sustainability in each of the following sectors and attempt to establish baselines for sectors that do not yet have one.

Solid Waste: Reduce Waste & Increase Recycling

WDFW generates solid waste (garbage and recycling) from buildings such as fish hatcheries, offices, and wildlife areas and from construction and restoration projects. In 2019, WDFW generated 13,836 cubic yards of solid waste (equivalent to the waste of 750 typical homes for a year). 82% of WDFW's waste was garbage and only 18% was diverted from the landfill into recycling – a "diversion rate" of 18% (Figure 13). It is important to note that the data on WDFW's solid waste is poor, so these figures should be regarded as an estimate that could be improved in the future.

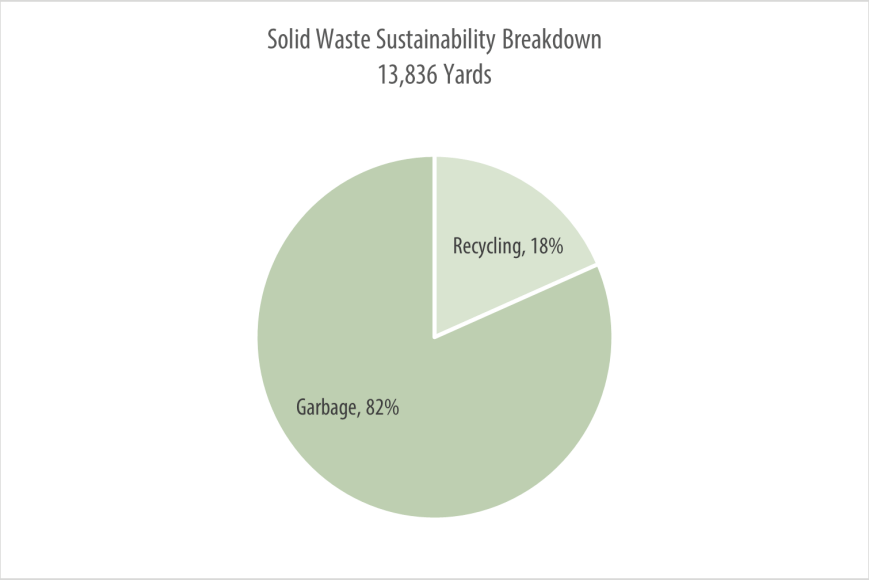


Figure 13. *In 2019, WDFW produced 13,836 cubic yards of solid waste. 82% of that waste was garbage, and 18% of that waste was recycling.*

Most of WDFW's buildings and project sites are in rural areas that do not have commercial compost service and may not even have commercial recycling service. This creates a challenge for increasing the share of waste that is recycled. Strategies to reduce waste and increase the share of waste that is diverted include ensuring we are utilizing recycling and compost services where they are available, providing resources to staff on which materials can be recycled or composted, and conducting waste characterization studies to better understand the makeup of WDFW's solid waste and identify opportunities to reduce and divert. While there was not sufficient information available to estimate waste reduction from these strategies, an analysis found that waste characterization studies (Table 12 Action SW1) would have a net cost through 2050 of $130,000.[36]

[36] Assumes that waste characterization studies are conducted at 11 highest-waste facilities. Costs (consultants $88k + staff time $40k) minus savings (none) = net cost of $128k.

Table 12. Solid Waste Strategies and Actions Table.

SOLID WASTE STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
REDUCE LANDFILLED WASTE			
SW1	Improve data on solid waste volume and makeup through systems like Energy Star Portfolio Manager and waste characterization studies to enable better understanding of trends and opportunities to reduce waste.	BSP-FSP; BSP-Conservation	Medium
SW2	Ensure all work sites have recycling and compost bins where the service is available.	CAMP; RD; Fish; Wildlife	Long
SW3	Implement signage, flyers, intuitive bin colors, etc. to ensure staff have the necessary information to sort waste properly.	CAMP; RD; Fish; Wildlife	Long
SW4	Assess current waste policies and procedures and update to encourage waste reduction and diversion.	BSP-Conservation; CAMP	Long

Water: Conserve Water in Buildings

WDFW purchases water from utility companies for use in buildings such as offices, labs, shops, and residences – what this plan will refer to as "buildings water". WDFW also diverts and then returns a significant quantity of water directly from streams to operate fish hatcheries. Because hatchery water use from streams does not reduce water quantity and it is difficult to track, this plan focuses on buildings water. In 2019, it is estimated that WDFW used 18 million gallons of water in buildings (equivalent to the water use of 350 typical homes for a year). It is important to note that the data on WDFW's buildings water is poor, so this figure should be regarded as an estimate that could be improved in the future.

Strategies to reduce water use in buildings include installing water conservation fixtures in kitchens and restrooms, providing resources to staff on behaviors that conserve water, and collecting better data on water use to identify further opportunities for improvement. These strategies were analyzed to estimate water use reductions and implementation costs. **The analysis identifies a pathway to meet the 2030 and 2040 goals and a gap that we will need to be close through future planning to meet the 2050 goal.** The analysis found that installing water conservation fixtures (Table 13 Action W2) would reduce water use 20% by 2030 and remain constant at a 20% reduction through 2050.[37] The analysis found that installing water conservation fixtures would have a total net cost through 2050 of $150,000.[38]

Table 13. Water Strategies and Actions Table.

WATER STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
CONSERVE WATER IN BUILDINGS			
W1	Improve data on building water use through systems like Energy Star Portfolio Manager to enable better understanding of trends and opportunities to conserve water.	BSP-FSP; BSP-Conservation	Medium
W2	Install partial recirculating aquaculture systems (PRAS) in hatcheries to reduce the quantity of water diverted from streams and maintain lower water temperatures.	Fish	Medium
W3	Install water conservation fixtures such as low-flow sinks and toilets, high-efficiency appliances, cisterns, etc.	CAMP; RD	Long
W4	Implement signage, flyers, etc. to encourage staff to conserve water.	CAMP; RD; Fish; Wildlife	Long

[37] Assumes that water conservation fixtures are installed at all agency-owned buildings over 5,000 square feet, with 10 faucets and 5 toilets retrofitted at each facility.

[38] Costs (capital costs to install fixtures $173k + staff time $21k) minus savings (water savings $42k) = net cost of $152k.

Contracted Goods: Research Alternative Materials

WDFW purchases a wide range of goods, from construction materials to office equipment to cleaning supplies. WDFW's contractors also utilize construction materials. The agency recognizes that the production of these goods generates emissions and uses resources, and the disposal of these goods causes pollution and other environmental problems. To this end, WDFW is interested in understanding the "lifecycle" carbon footprint of contracted goods.[39] It would be extremely difficult to inventory all the goods WDFW purchases, so as a starting place, we use a case study approach. Six goods were chosen that the agency uses a lot of and that have a high lifecycle carbon footprint. Figure 14 shows lifecycle carbon emissions of six case study goods. This approach is informative for comparing the goods to each other, but it cannot be used to extrapolate the overall emissions from all WDFW's contracted goods. The case study approach found that while construction materials have a higher lifecycle carbon footprint, WDFW produced more emissions related to computers and office equipment because the agency uses a larger volume of those goods.

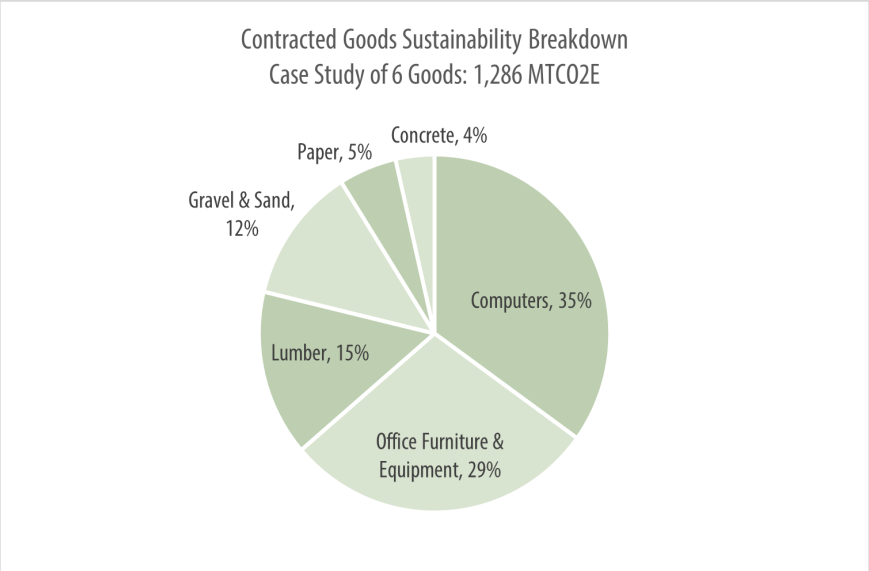


Figure 14. *Six case study goods were estimated to have a lifecycle carbon footprint of 1,286 $MTCO_2E$ in 2019. Computers and office furniture and equipment comprise the majority of emissions because WDFW purchases a lot of those goods.*

Strategies to reduce emissions from contracted goods focus on researching alternatives to goods with a high environmental impact, and developing purchasing and contract mechanisms to prioritize lower-impact goods.

Table 14. Contracted Goods Strategies and Actions Table.

CONTRACTED GOODS STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
REDUCE THE ENVIRONMENTAL IMPACT OF CONTRACTED GOODS			
CG1	Research alternatives to goods with a high environmental impact, such as office equipment and construction materials.	BSP-Conservation; BSP-FSP	Long
CG2	Develop purchasing policies and guidance to prioritize lower-impact goods. Provide staff communications and training.	BSP-FSP	Long
CG3	Explore using contract mechanisms like environmental preferences or design specifications to encourage contractors' use of lower-impact goods.	BSP-FSP; CAMP; Habitat	Long
CG4	Collaborate with DES to expand the goods covered by the environmental preference procurement mechanism (RCW 39.26).	BSP- FSP	Long

[39] "Lifecycle" carbon footprint is a concept that refers to the total direct and indirect emissions associated with creating, using, and disposing of a product.

Toxic Chemicals: Ensure Responsible Use & Reduce Incidental Release

WDFW's operations relate to toxic chemicals in three ways. First, WDFW intentionally uses toxic chemicals to accomplish fish and wildlife goals, such as pesticides that control invasive species to improve habitat quality or medicines to produce healthy hatchery fish. These chemicals are regulated, and WDFW ensures chemicals are used responsibly by licensed staff. WDFW uses integrated pest management (IPM) principles to incorporate non-chemical land management tools, like mechanical, cultural, and biological control of weeds, where possible. When WDFW does use pesticides, we follow the label along with other permitting and best management practices to ensure we achieve control and minimize off-target effects (see Box 4).

Second, some materials used in normal agency operations incidentally contain toxic chemicals that may generate concerns for human and environmental health. For example, polychlorinated biphenyls (PCBs) are a class of toxic chemicals that were banned in 1978 but are still found widely in the built environment (such as paints used in hatcheries) and in fish feed (see Box 5). These legacy chemicals are so persistent, widespread in the environment, and toxic that they warrant particular attention.

Lastly, the agency uses some products that contain toxic chemicals for which concern is growing. Many chemicals of emerging concern have yet to be regulated and lack guidance on their risks (see Box 6). These include perfluorinated chemicals, flame retardants, pharmaceuticals (including medicines used for fish and wildlife), and cleaning and personal care products. WDFW's Toxics Biological Observation System monitors the presence and harmful impact of many of these chemicals on fish species in Puget Sound.

Goals for Managing Toxic Chemicals

WDFW's objective in managing chemicals is to identify actions the agency can take to improve environmental health and safety by focusing on what is in our control, where harm is occurring (especially to endangered species), and where regulatory mechanisms are not already minimizing harm. We break our management of chemicals into two areas with different goals:

Goal 1: Ensure the Responsible Use of Chemicals Used to Improve Habitat

Because of the regulations, permits, and best management practices already associated with chemicals, our goal is not necessarily to reduce the use of chemicals, but to use them in a safe and responsible manner to achieve management objectives such as habitat restoration. WDFW uses chemicals to provide a net benefit for the environments we manage. This plan recommends the continuation and refinement of procedures to ensure responsible use of chemicals by examining current use patterns, using non-chemical land management tools where possible, monitoring results, and tracking new research and technology that can inform decisions, create safer chemicals, or allow more precise applications.

A precautionary approach suggests considering unintended consequences of otherwise responsible use of regulated chemicals. WDFW staff who work closely with fish and wildlife are in a unique position to observe potential problems not anticipated by regulators. For example, synergistic effects of multiple pesticides applied near salmon-bearing waterways may impact juvenile salmon in ways not anticipated in EPA's pesticide approval.[40] Moreover, although the concentration of a pesticide may be safe for fish, it could harm their insect prey, reducing a food source for salmon.[41]

[40] Laetz, C., et al. 2009. The Synergistic Toxicity of Pesticide Mixtures: Implications for Risk Assessment and the Conservation of Endangered Pacific Salmon. Environmental Health Perspectives (117(3)).

[41] Macneale, K., et al. 2014. A Modeled Comparison of Direct and Food Web-Mediated Impacts of Common Pesticides on Pacific Salmon. PLoS ONE (9(3): e92436).

Goal 2: Reduce the Incidental Release of Legacy or Emerging Chemicals of Concern

WDFW can mitigate the harm of chemicals leaching from agency facilities and materials into the environment, research and communicate the impacts of legacy and emerging chemicals of concern on species and habitat, and support policy action to reduce the impact of these chemicals statewide.

Strategies and actions to improve management of toxic chemicals, as well as three case studies on WDFW's work with toxic chemicals, are presented below.

Table 15. Toxic Chemicals Strategies and Actions Table.

TOXIC CHEMICALS STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
ENSURE THE RESPONSIBLE USE OF CHEMICALS USED TO IMPROVE HABITAT			
TC1	Inventory and dispose of stockpiles of obsolete chemicals such as pesticides.	Wildlife; Fish	Short
TC2	Identify and implement process improvements to pesticide management.	Wildlife	Medium
TC3	Assess hatchery chemicals list for persistent, bioaccumulative, and toxic (PBT) chemicals; identify and implement alternatives.	Fish	Medium
TC4	Ensure staff stay up to date on pesticide applicator licenses. Provide training and resources to ensure risks are assessed and mitigated.	Wildlife	Medium
TC5	Partner with regulatory agencies to address currently used chemicals that impact fish and wildlife, such as insecticides harming pollinators.	Wildlife; Fish	Long
REDUCE THE INCIDENTAL RELEASE OF LEGACY OR EMERGING CHEMICALS OF CONCERN			
TC6	Reduce the release of PCBs by completing remediation on hatchery raceways and continuing to seek fish feed that is lower in PCBs.	Fish	Short
TC7	Review Ecology's Chemical Action Plans and identify actions within WDFW's purview to implement.	Wildlife; Fish	Long
TC8	Partner with regulatory agencies to address emerging chemicals concern that impact fish and wildlife, such as perfluoroalkyl and polyfluoroalkyl substances (PFAS) and 6PPD in vehicle tires.	Fish; Wildlife	Long
TC9	Ensure proper fleet vehicle maintenance to prevent oil leaks and ensure efficient fuel consumption.	CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Medium
TC10	Transition from impervious to pervious surfaces at facilities to reduce stormwater pollution.	CAMP	Long

Box 4. Case Study: Ensuring the Responsible Use of Rotenone to Control Undesirable Fish

Challenge: Undesirable and illegally stocked fish species compete with or prey upon native or desirable fish species. This threatens trout fisheries. There are no feasible non-chemical alternatives to remove the undesirable fish.

What WDFW is Doing: We use a chemical called rotenone to eliminate undesirable fish. Rotenone is a natural compound that is not lethal to fish eggs or warm-blooded organisms. It is short-lived and dissipates within a few weeks of application. WDFW uses rotenone under an Environmental Impact Statement that assessed its impact on human and environmental health and set procedures to reduce staff and public exposure. WDFW staff are co-authors of the Standard Operating Procedures for the use of rotenone, which is part of the product label, and help provide training on the safe use of this chemical to fisheries agencies around the world. WDFW has used the chemical since 1940 and it is commonly used around the country. This is an example of how WDFW ensures the responsible use of chemicals internally and externally to advance fish and wildlife goals.

Box 5. Case Study: Reducing the Incidental Release of Legacy PCBs in Fish Hatcheries

Challenge: PCBs are a highly toxic product that were banned in 1978 but are still found widely in materials and the environment. At WDFW fish hatcheries, PCBs have been found in the paint and caulk in hatchery raceways as well as in fish feed. These PCBs can cycle through the hatchery and back out into the ecosystem through effluent water.

What WDFW is Doing: We are remediating the paint in hatchery raceways by sealing the paint or replacing raceways. Five of the seven remediations needed have been completed. We have fish feed tested for PCBs and seek feed that is lower in PCBs, but unfortunately PCBs are so widespread in the environment that all fish feed currently available in the volume WDFW uses contains PCBs. One specific example of WDFW's response to these issues is Spokane Hatchery, where we have a PCB Best Management Practices Plan in place with Ecology and will soon complete a redesign and renovation that will remove structures containing PCBs and improve treatment of effluent. This is an example of how WDFW reduces the release of legacy chemicals.

Box 6. Case Study: Ensuring the Responsible Use of Insecticides to Mitigate Harm to Pollinators

Challenge: An insecticide class called neonicotinoids, or "neonics", has been linked to losses of pollinators like bees and butterflies. Seeds treated with neonics have been linked to harm in birds.

What WDFW is Doing: WDFW participated in the Pollinator Health Task Force led by the Department of Agriculture to create recommendations to reduce harm to pollinators from insecticides, among other issues. Work on this issue is evolving and the legislature and partners are considering what actions to take. While WDFW does not use very much insecticide, we are incorporating language into wildlife area management plans to avoid the use of neonics on WDFW lands by staff or lessees. This is an example of how WDFW ensures the responsible use of chemicals through both internal management and external policy to advance fish and wildlife goals.

Cross-Cutting Strategies and Actions

Moving beyond GHG and sustainability sectors, the following sections recommend broad strategies that provide a cross-agency approach for implementing the Sustainability Plan.

Communication and Training: Build Capacity & Share Lessons Learned

Communication and training will be key to both implementing the Sustainability Plan and sharing what we learn and accomplish with partners and the public. Internally, communication and training will be critical for staff to build the knowledge, skills, and momentum needed to implement the plan. It is important to acknowledge that many of the actions recommended in this plan are novel and will require nimble shifts in organizational culture, rethinking how work happens, and processing the feelings that arise from these changes. The building blocks of climate resilience framework emphasizes four key elements to achieve this organizational change: authority, capacity, knowledge, and motivation. With proper authority, staff are empowered to act and possess the agency to do so. With sufficient capacity, staff have the resources and skills to effectively assess and implement sustainability improvements. With the right knowledge, staff have access to the information they need to make informed decisions about climate change. And with motivation, staff and leadership are interested and driven to act to reduce our environmental impact.

Externally, WDFW hopes to serve as a model and inspire the public and partners to take action on climate change. Therefore, communicating the importance of climate change and what actionable steps individuals and organizations can take to reduce their impact is a key priority. Educating recreationalists, hunters, and anglers on climate change can increase their awareness of these pressing issues and potentially influence their behavior at WDFW sites and at home. WDFW has a unique opportunity as an environmental agency to reach thousands of constituents with credible messages about climate change. Sharing lessons learned with partners who may not have the same resources to devote to this work can contribute to broader emissions reductions. Engaging in climate policy at the state level and beyond can support the broader emissions reductions and advances in technology that WDFW will depend on to be successful in reaching our sustainability goals.

Funding and Budget: Build Resources & Processes for Implementation

Financial resources are another key to implementing the Sustainability Plan, whether through up-front investments that result in long-term savings, or through ongoing operating costs. Previous sections have sector-specific funding actions where a specific need has been identified, such as Fleet Action F2 and Buildings Actions B11 and B12. This section recommends additional overarching strategies to build the necessary funding and budget resources, mechanisms, and processes for implementation.

Table 16. Communication and Training Strategies and Actions Table.

COMMUNICATION & TRAINING STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
BUILD INTERNAL CAPACITY TO ADDRESS CLIMATE CHANGE			
CT1	Update Sustainability Team charter, assess role of team in implementation, and open up membership.	BSP-Conservation	Short
CT2	Develop and provide staff training on climate change to build capacity, knowledge, and motivation.	BSP-Conservation; BSP-Public Affairs	Short
CT3	Communicate to staff implementation updates, sustainability resources, and answers to common questions and concerns through intranet, emails, and presentations.	BSP-Conservation	Short
EDUCATE CONSTITUENTS AND THE PUBLIC ABOUT CLIMATE CHANGE			
CT4	Develop public communications materials about climate change, sustainability actions the agency is taking, and what actions partners and the public can take.	BSP-Public Affairs	Short
CT5	Develop and provide staff and volunteer training on climate change communications.	BSP-Conservation; BSP-Public Affairs	Medium
CT6	Use implemented actions as demonstration projects to highlight through signage and public communications materials to encourage others to carry out similar actions.	BSP-Conservation; BSP-Public Affairs	Long
BUILD PARTNERSHIPS AND SUPPORT STATE AND REGIONAL CLIMATE EFFORTS			
CT7	Participate in and advance interagency and interstate climate initiatives, conferences, and community of practice.	BSP-Conservation	Short
CT8	Foster partnerships to share information and advance climate action collaboratively.	BSP-Conservation	Medium

Table 17. Funding & Budget Strategies and Actions Table.

FUNDING & BUDGET STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
BUILD FUNDING RESOURCES AND PROCESSES FOR IMPLEMENTATION			
FB1	Integrate Sustainability Plan implementation into the biennial budget process to identify which actions to implement and secure the necessary resources.	BSP-Conservation; BSP-FSP	Short
FB2	Track and pursue grants to fund Sustainability Plan implementation.	BSP-Conservation	Short
FB3	Develop mechanisms to highlight long-term cost savings and returns on investment when making budget requests for Sustainability Plan implementation.	BSP-Conservation; BSP-FSP	Medium
FB4	Explore budget mechanisms such as revolving loan funds to advance Sustainability Plan implementation.	BSP-Conservation; BSP-FSP	Long

Implementation and Monitoring

Implementation

The Sustainability Plan offers a menu of actions that WDFW can implement to reach our GHG reduction and sustainability goals. The biennial budget process will be the vehicle to select actions for implementation and coordinate across programs and regions. In even-numbered years, the Environmental Sustainability Coordinator and Sustainability Team will identify actions recommended for implementation in the next biennium and develop a corresponding decision package and/or capital project request(s). Actions will be recommended based on prioritization criteria such as effectiveness, cost, feasibility, operational impacts, staff capacity, availability of external funds, and co-benefits. Through the budget process, the Director's Policy Team will consider recommendations from the Executive Management Team and Commission and approve or modify the budget request. Selecting implementation actions on a biennial basis will allow WDFW to adapt to changes in technologies and adjust course based on implementation barriers or successes.

The agency will need to develop accountability mechanisms for programs to take ownership of implementation actions for which they are the lead program. The agency will also need to develop a mechanism to allocate staff time for implementation actions, because many actions will depend on the involvement of existing staff rather than new financial resources. One potential approach is for each program to designate a sustainability lead who will assign and track implementation, identify when additional resources including staff time are needed, and communicate with the Environmental Sustainability Coordinator and program leadership. The sustainability leads could be integrated with the function of the Sustainability Team.

Monitoring

Sustainability Plan implementation will be monitored through a biennial Sustainability Plan Progress Report that will coincide with the budget process described above. Every even-numbered year, the Environmental Sustainability Coordinator will collect GHG emissions and sustainability data for the past year. This data will feed into the Sustainability Plan Progress report, which will assess how emissions are changing over time, if we are on track for our goals, and if implementation actions are leading to the intended GHG reductions. The report will inform which actions are recommended in that year's budget request. It will be presented to the Executive Management Team, Commission, staff, and the public. WDFW will also continue reporting mandatory sector emissions annually and our GHG reduction strategy biennially to Ecology, as required by RCW 70A.45.050. The Sustainability Plan Progress Report is a voluntary, supplemental monitoring tool that will build on our mandatory reporting.

In addition to the biennial Sustainability Plan Progress Report, we will explore other approaches for monitoring and communicating progress with leadership, staff, and the public, such as web page updates. Sustainability efforts will evolve over time as operations and technologies change, so monitoring approaches should be flexible and focused on collecting meaningful information that will aid WDFW in reaching its goals.

The Sustainability Plan should be updated between 2027 and 2030 to assess progress and identify additional strategies and actions to close the gap to meet the 2040 and 2050 goals.

Appendix 1: Strategies and Actions List by Sector

FLEET STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
TRANSITION TO ELECTRIC			
F1	Develop an electric fleet transition plan that addresses which vehicles can be converted when given operational demands, charging infrastructure needs, costs, maintenance, and policy questions like pricing and public access.	BSP-Conservation; CAMP	Short
F2*	Install electric vehicle chargers at agency-owned offices, hatcheries, wildlife areas, and water access areas. Seek funding.	CAMP; RD; Fish; Wildlife	Short
F3*	Update lease terms to require installation of electric vehicle chargers at leased offices. Seek funding.	CAMP; RD	Short
F4	Institute a policy to select electric or plug-in hybrid vehicles as vehicles are replaced or added unless there is a significant operational demand issue.	BSP-Conservation; CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Short
F5	Collaborate with DES to train staff on electric vehicle charging, driving, and troubleshooting in the field. Communicate resources to address common concerns.	BSP-Conservation; CAMP	Short
F6	As small equipment is replaced or added, order electric chainsaws, weed whips, mowers, forklifts, etc. whenever possible. Purchase extra batteries and chargers.	Wildlife; Fish	Medium
F7	Track technology advances for electric UTVs, snowmobiles, motorcycles, etc.; acquire and test as they come on market.	Wildlife; ENF	Medium
F8	Track technology advances for electric and hybrid vessel motors; acquire and test motors as they come on market.	Fish; Wildlife; ENF	Long
TRANSITION TO ALTERNATIVE FUELS WHERE ELECTRIC IS NOT AN OPTION			
F9	Research the availability, usability, and emissions of alternative fuels like renewable diesel, biodiesel, ethanol, hydrogen, and sustainable aviation fuel.	BSP-Conservation; CAMP	Short
F10	Implement transition to alternative fuels through purchasing for bulk fuel sites and staff guidance on buying alternative fuels at commercial sites.	CAMP; Wildlife; Fish	Medium
F11	Train staff on using alternative fuels. Communicate resources to address common concerns.	BSP-Conservation; CAMP	Medium
INCREASE FUEL EFFICIENCY (MPG) WHERE ELECTRIC IS NOT AN OPTION			
F12	Institute a policy to select the smallest vehicle size that meets operational demands as vehicles are replaced or added.	BSP-Conservation; CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Short
F13	Improve vessel fuel efficiency through hull design, engine upgrades, maintenance, removing weight, and reducing speeds and idling.	Fish; Wildlife; ENF	Long
REDUCE MILES TRAVELED			
F14	Encourage virtual meetings and trainings through infrastructure, policies, and culture.	BSP-IT	Short
F15	Identify tasks that could be done via walking, biking, UTV, or drone rather than vehicle/vessel. Acquire the necessary equipment and develop policies and communications to encourage work outside vehicles.	Wildlife; Fish; ENF	Medium
F16	Assess the potential of shifting more vehicles into a shared/pool approach rather than being assigned to individuals to encourage carpooling between work sites.	CAMP	Medium
F17	Work with DES to modify vehicle utilization requirements that create incentives to drive more.	CAMP	Long
IMPROVE FLEET MANAGEMENT			
F18	Utilize new central fleet coordinator role to assist in implementing fleet actions.	CAMP	Short
F19	Improve data on fleet inventory, fuel use, utilization, and MPG to enable better understanding of trends and opportunities to reduce emissions.	CAMP; BSP-Conservation; BSP-FSP	Short

BUILDINGS STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
REDUCE ENERGY USE			
B1	Utilize Energy Saving Performance Contracting to identify, prioritize, and implement energy efficiency improvements, such as pumps, insulation, lighting, windows, and weatherproofing.	CAMP; RD	Short
B2	Institute a policy to require electric rather than fossil fuel (e.g., gas) heating and hot water systems in renovations and new construction. Develop and implement a plan to replace existing fossil fuel heating and hot water systems.	CAMP	Medium
B3	Develop design specifications that integrate energy efficiency, renewable electricity, low-impact materials, etc. into design of capital projects.	CAMP	Medium
B4	As post-COVID-19 work patterns emerge, assess occupancy by in-person workers and potential to downsize office space.	CAMP	Medium
B5	Work with DES to develop and implement green lease language that requires energy efficiency standards and replacement of gas heating.	CAMP	Long
TRANSITION TO RENEWABLE ELECTRICITY			
B6	Assess feasibility and siting for solar energy systems on offices, wildlife area buildings, and hatchery buildings and ponds. Implement installations.	CAMP; RD; Wildlife; Fish	Short
B7	Assess feasibility and siting for micro-hydropower systems in hatchery pipes. Implement installations.	CAMP; Fish	Short
B8	Investigate options to purchase renewable electricity through utility company opt-up programs, power purchasing agreements, and renewable energy certificates.	BSP-Conservation	Long
IMPROVE FACILITIES MANAGEMENT			
B9	Increase staff capacity to assist in implementing buildings actions and improve energy management.	CAMP	Short
B10	Improve data on energy use, facilities inventory, and utilities inventory through systems like Energy Star Portfolio Manager and meters/sub-meters to enable better understanding of trends and opportunities to reduce energy use. Implement recommendations in Washington State University Energy Program report.	BSP-FSP; CAMP; BSP-Conservation	Short
B11	Pursue funding for energy efficiency and renewable electricity projects including grants and utility incentives.	BSP-FSP; CAMP; BSP-Conservation	Short
B12	Assess and communicate the return on investment, payback period, and long-term cost savings of energy efficiency and renewable electricity projects.	BSP-FSP; CAMP; BSP-Conservation	Medium

COMMUTING & BUSINESS TRAVEL STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
REDUCE COMMUTE DAYS			
C1	Maintain high levels of telework implemented during COVID-19 by maximizing eligibility, providing home office equipment, informing employees of telework options, and providing training and resources to help teleworking employees and teams be successful.	BSP-HR; BSP-IT	Short
C2	Promote compressed workweek schedules by maximizing eligibility, informing employees of compressed schedule options, providing training and resources to help employees and teams on compressed schedules be successful, formalizing workplace norms to minimize disruption such as staggered coverage, and updating any policies that conflict with this direction.	BSP-HR	Short
INCENTIVIZE SUSTAINABLE COMMUTE MODES			
C3	Provide financial incentives for commuting via sustainable modes (bike, walk, transit, vanpool, carpool).	BSP-HR	Short
C4	Provide employees with information and resources on how to use sustainable commute modes through an intranet page, trainings, etc.	BSP-HR	Short
F2/ F3*	Install electric vehicle chargers to enable low-emissions commuting (see Fleet Actions F2 and F3).	CAMP; RD; Wildlife; Fish	Short
REDUCE BUSINESS FLIGHTS			
C5	Revise Travel Authorization Form process to encourage alternatives to flights, such as virtual meetings.	BSP-FSP	Long
IMPROVE COMMUTE MANAGEMENT			
C6	Create a Commute Trip Reduction Program to implement commute actions. Expand Employee Transportation Coordinator duties and transition to a new 0.5 FTE position in HR.	BSP-HR; BSP-Conservation	Short
C7	Participate consistently in Thurston Regional Planning Council biennial employee commute survey. Develop a supplemental commute survey for staff outside Thurston County.	BSP-HR	Medium

HATCHERY FISH DIGESTION STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
RESEARCH AND IMPLEMENT APPROACHES TO REDUCE EMISSIONS FROM HATCHERY FISH			
H1	Track advances in the literature and support research to establish better data on hatchery fish digestion emissions. Assess if it is viable to establish emissions baseline and goal.	Fish; BSP-Conservation	Medium
H2	Track advances in the literature and support research to identify approaches to reduce hatchery fish digestion emissions.	Fish; BSP-Conservation	Medium
H3	Implement approaches to reduce hatchery fish digestion emissions.	Fish	Long

CONTRACTED SERVICES STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
REDUCE MILES AND TRANSITION TO ALTERNATIVE FUELS			
CS1	Assess if it is viable to establish emissions baseline and goal for contracted services.	BSP-Conservation	Short
CS2	Identify tasks that could be done via walking, biking, UTV, or drone rather than vehicle/vessel. Change contracts to specify these practices.	Wildlife; Fish	Long
CS3	Explore using contract mechanisms like environmental preferences or design specifications to encourage contractors' use of alternative fuels, more efficient equipment, etc.	BSP-FSP; CAMP; Habitat	Long

OTHER TRANSPORTATION STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
SUPPORT SUSTAINABLE MODES AND REDUCE MILES FOR PUBLIC RECREATION			
OT1	Assess if it is viable to establish emissions baseline and goal for public recreation transportation.	BSP-Conservation	Short
F2/F3*	Install electric vehicle chargers to enable low-emissions recreation (see Fleet Actions F2 and F3).	CAMP; RD; Wildlife; Fish	Short
OT2	Assess opportunities to promote visitation via bike, transit, etc. at more urban or high-use sites.	Wildlife	Long
OT3	Assess regulations like daily catch limits to identify agency decisions that may be creating unnecessary vehicle trips.	Fish; Wildlife	Long
SUPPORT SUSTAINABLE MODES AND REDUCE MILES FOR VOLUNTEERS			
OT4	Assess if it is viable to establish emissions baseline and goal for volunteer transportation.	BSP-Conservation	Short
F2/F3*	Install electric vehicle chargers to enable low-emissions volunteering (see Fleet Actions F2 and F3).	CAMP; RD; Wildlife; Fish	Short
OT5	Assess opportunities to facilitate carpooling among volunteers.	BSP-FSP	Long
IMPROVE DATA ON EMPLOYEE PERSONAL VEHICLE USE			
OT6	Assess if it is viable to establish emissions baseline and goal for employee personal vehicle usage for work.	BSP-Conservation	Short

REFRIGERANT GASES STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
REDUCE REFRIGERANT LEAKS			
RG1	Assess if it is viable to establish emissions baseline and goal for refrigerant gases and identify aging equipment that should be prioritized for replacement.	BSP-Conservation; CAMP; Fish	Short
RG2	Replace aging equipment with lower global warming potential models; perform regular maintenance.	CAMP; Fish	Long
RG3	Ensure that surplus equipment is disposed of properly.	CAMP; Fish	Long

LAND MANAGEMENT STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
RESEARCH BIOGENIC EMISSIONS FROM LAND MANAGEMENT			
LM1	Research emissions from land management practices such as prescribed burns and grazing. Assess if it is viable to establish emissions baseline and goal for these activities. Evaluate if there are alternative land management practices with lower emissions. Implement practices.	BSP-Conservation	Long
RESEARCH CARBON SEQUESTRATION IN WDFW LANDS			
LM2	Build on UW "How Can WDFW Increase Carbon Sequestration to Mitigate Climate Change?" report's research on carbon sequestration in WDFW lands. Implement recommendation to develop an inventory of carbon sequestration and storage.	BSP-Conservation	Short
LM3	Build on UW "How Can WDFW Increase Carbon Sequestration to Mitigate Climate Change?" report's research on carbon sequestration from land management practices. Implement recommendations on alternative land management practices to increase carbon sequestration in grasslands, shrubsteppe, forests, wetlands, and croplands.	BSP-Conservation	Medium

SOLID WASTE STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
REDUCE LANDFILLED WASTE			
SW1	Improve data on solid waste volume and makeup through systems like Energy Star Portfolio Manager and waste characterization studies to enable better understanding of trends and opportunities to reduce waste.	BSP-FSP; BSP-Conservation	Medium
SW2	Ensure all work sites have recycling and compost bins where the service is available.	CAMP; RD; Fish; Wildlife	Long
SW3	Implement signage, flyers, intuitive bin colors, etc. to ensure staff have the necessary information to sort waste properly.	CAMP; RD; Fish; Wildlife	Long
SW4	Assess current waste policies and procedures and update to encourage waste reduction and diversion.	BSP-Conservation; CAMP	Long

WATER STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
CONSERVE WATER IN BUILDINGS			
W1	Improve data on building water use through systems like Energy Star Portfolio Manager to enable better understanding of trends and opportunities to conserve water.	BSP-FSP; BSP-Conservation	Medium
W2	Install partial recirculating aquaculture systems (PRAS) in hatcheries to reduce the quantity of water diverted from streams and maintain lower water temperatures.	Fish	Medium
W3	Install water conservation fixtures such as low-flow sinks and toilets, high-efficiency appliances, cisterns, etc.	CAMP; RD	Long
W4	Implement signage, flyers, etc. to encourage staff to conserve water.	CAMP; RD; Fish; Wildlife	Long

CONTRACTED GOODS STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
REDUCE THE ENVIRONMENTAL IMPACT OF CONTRACTED GOODS			
CG1	Research alternatives to goods with a high environmental impact, such as office equipment and construction materials.	BSP-Conservation; BSP-FSP	Long
CG2	Develop purchasing policies and guidance to prioritize lower-impact goods. Provide staff communications and training.	BSP-FSP	Long
CG3	Explore using contract mechanisms like environmental preferences or design specifications to encourage contractors' use of lower-impact goods.	BSP-FSP; CAMP; Habitat	Long
CG4	Collaborate with DES to expand the goods covered by the environmental preference procurement mechanism (RCW 39.26).	BSP- FSP	Long

TOXIC CHEMICALS STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
ENSURE THE RESPONSIBLE USE OF CHEMICALS USED TO IMPROVE HABITAT			
TC1	Inventory and dispose of stockpiles of obsolete chemicals such as pesticides.	Wildlife; Fish	Short
TC2	Identify and implement process improvements to pesticide management.	Wildlife	Medium
TC3	Assess hatchery chemicals list for persistent, bioaccumulative, and toxic (PBT) chemicals; identify and implement alternatives.	Fish	Medium
TC4	Ensure staff stay up to date on pesticide applicator licenses. Provide training and resources to ensure risks are assessed and mitigated.	Wildlife	Medium
TC5	Partner with regulatory agencies to address currently used chemicals that impact fish and wildlife, such as insecticides harming pollinators.	Wildlife; Fish	Long
REDUCE THE INCIDENTAL RELEASE OF LEGACY OR EMERGING CHEMICALS OF CONCERN			
TC6	Reduce the release of PCBs by completing remediation on hatchery raceways and continuing to seek fish feed that is lower in PCBs.	Fish	Short
TC7	Review Ecology's Chemical Action Plans and identify actions within WDFW's purview to implement.	Wildlife; Fish	Long
TC8	Partner with regulatory agencies to address emerging chemicals concern that impact fish and wildlife, such as perfluoroalkyl and polyfluoroalkyl substances (PFAS) and 6PPD in vehicle tires.	Fish; Wildlife	Long
TC9	Ensure proper fleet vehicle maintenance to prevent oil leaks and ensure efficient fuel consumption.	CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Medium
TC10	Transition from impervious to pervious surfaces at facilities to reduce stormwater pollution.	CAMP	Long

COMMUNICATION & TRAINING STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
BUILD INTERNAL CAPACITY TO ADDRESS CLIMATE CHANGE			
CT1	Update Sustainability Team charter, assess role of team in implementation, and open up membership.	BSP-Conservation	Short
CT2	Develop and provide staff training on climate change to build capacity, knowledge, and motivation.	BSP-Conservation; BSP-Public Affairs	Short
CT3	Communicate to staff implementation updates, sustainability resources, and answers to common questions and concerns through intranet, emails, and presentations.	BSP-Conservation	Short
EDUCATE CONSTITUENTS AND THE PUBLIC ABOUT CLIMATE CHANGE			
CT4	Develop public communications materials about climate change, sustainability actions the agency is taking, and what actions partners and the public can take.	BSP-Public Affairs	Short
CT5	Develop and provide staff and volunteer training on climate change communications.	BSP-Conservation; BSP-Public Affairs	Medium
CT6	Use implemented actions as demonstration projects to highlight through signage and public communications materials to encourage others to carry out similar actions.	BSP-Conservation; BSP-Public Affairs	Long
BUILD PARTNERSHIPS AND SUPPORT STATE AND REGIONAL CLIMATE EFFORTS			
CT7	Participate in and advance interagency and interstate climate initiatives, conferences, and community of practice.	BSP-Conservation	Short
CT8	Foster partnerships to share information and advance climate action collaboratively.	BSP-Conservation	Medium

FUNDING & BUDGET STRATEGIES AND ACTIONS		LEAD PROGRAM	TIMEFRAME
BUILD FUNDING RESOURCES AND PROCESSES FOR IMPLEMENTATION			
FB1	Integrate Sustainability Plan implementation into the biennial budget process to identify which actions to implement and secure the necessary resources.	BSP-Conservation; BSP-FSP	Short
FB2	Track and pursue grants to fund Sustainability Plan implementation.	BSP-Conservation	Short
FB3	Develop mechanisms to highlight long-term cost savings and returns on investment when making budget requests for Sustainability Plan implementation.	BSP-Conservation; BSP-FSP	Medium
FB4	Explore budget mechanisms such as revolving loan funds to advance Sustainability Plan implementation.	BSP-Conservation; BSP-FSP	Long

Appendix 2: Strategies and Actions List by Lead Program

CAPITAL ASSET MANAGEMENT PROGRAM ACTIONS		LEAD PROGRAM	TIMEFRAME
SHORT-TERM (2022-2025)			
F1	Develop an electric fleet transition plan that addresses which vehicles can be converted when given operational demands, charging infrastructure needs, costs, maintenance, and policy questions like pricing and public access.	BSP-Conservation; CAMP	Short
F2*	Install electric vehicle chargers at agency-owned offices, hatcheries, wildlife areas, and water access areas. Seek funding.	CAMP; RD; Fish; Wildlife	Short
F3*	Update lease terms to require installation of electric vehicle chargers at leased offices. Seek funding.	CAMP; RD	Short
F4	Institute a policy to select electric or plug-in hybrid vehicles as vehicles are replaced or added unless there is a significant operational demand issue.	BSP-Conservation; CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Short
F5	Collaborate with DES to train staff on electric vehicle charging, driving, and troubleshooting in the field. Communicate resources to address common concerns.	BSP-Conservation; CAMP	Short
F9	Research the availability, usability, and emissions of alternative fuels like renewable diesel, biodiesel, ethanol, hydrogen, and sustainable aviation fuel.	BSP-Conservation; CAMP	Short
F12	Institute a policy to select the smallest vehicle size that meets operational demands as vehicles are replaced or added.	BSP-Conservation; CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Short
F18	Utilize new central fleet coordinator role to assist in implementing fleet actions.	CAMP	Short
F19	Improve data on fleet inventory, fuel use, utilization, and MPG to enable better understanding of trends and opportunities to reduce emissions.	CAMP; BSP-Conservation; BSP-FSP	Short
B1	Utilize Energy Saving Performance Contracting to identify, prioritize, and implement energy efficiency improvements, such as pumps, insulation, lighting, windows, and weatherproofing.	CAMP; RD	Short
B6	Assess feasibility and siting for solar energy systems on offices, wildlife area buildings, and hatchery buildings and ponds. Implement installations.	CAMP; RD; Wildlife; Fish	Short
B7	Assess feasibility and siting for micro-hydropower systems in hatchery pipes. Implement installations.	CAMP; Fish	Short
B9	Increase staff capacity to assist in implementing buildings actions and improve energy management.	CAMP	Short
B10	Improve data on energy use, facilities inventory, and utilities inventory through systems like Energy Star Portfolio Manager and meters/sub-meters to enable better understanding of trends and opportunities to reduce energy use. Implement recommendations in Washington State University Energy Program report.	BSP-FSP; CAMP; BSP-Conservation	Short
B11	Pursue funding for energy efficiency and renewable electricity projects including grants and utility incentives.	BSP-Conservation; CAMP; BSP-FSP	Short
RG1	Assess if it is viable to establish emissions baseline and goal for refrigerant gases and identify aging equipment that should be prioritized for replacement.	BSP-Conservation; CAMP; Fish	Short
MEDIUM-TERM (2025-2027)			
F10	Implement transition to alternative fuels through purchasing for bulk fuel sites and staff guidance on buying alternative fuels at commercial sites.	CAMP; Wildlife; Fish	Medium
F11	Train staff on using alternative fuels. Communicate resources to address common concerns.	BSP-Conservation; CAMP	Medium
F16	Assess the potential of shifting more vehicles into a shared/pool approach rather than being assigned to individuals to encourage carpooling between work sites.	CAMP	Medium

CAPITAL ASSET MANAGEMENT PROGRAM ACTIONS		LEAD PROGRAM	TIMEFRAME
B2	Institute a policy to require electric rather than fossil fuel (e.g., gas) heating and hot water systems in renovations and new construction. Develop and implement a plan to replace existing fossil fuel heating and hot water systems.	CAMP	Medium
B3	Develop design specifications that integrate energy efficiency, renewable electricity, low-impact materials, etc. into design of capital projects.	CAMP	Medium
B4	As post-COVID-19 work patterns emerge, assess occupancy by in-person workers and potential to downsize office space.	CAMP	Medium
B12	Assess and communicate the return on investment, payback period, and long-term cost savings of energy efficiency and renewable electricity projects.	BSP-Conservation; CAMP; BSP-FSP	Medium
TC9	Ensure proper fleet vehicle maintenance to prevent oil leaks and ensure efficient fuel consumption.	CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Medium
LONG-TERM (2027-2030)			
F17	Work with DES to modify vehicle utilization requirements that create incentives to drive more.	CAMP	Long
B5	Work with DES to develop and implement green lease language that requires energy efficiency standards and replacement of gas heating.	CAMP	Long
CS3	Explore using contract mechanisms like environmental preferences or design specifications to encourage contractors' use of alternative fuels, more efficient equipment, etc.	BSP-FSP; CAMP; Habitat	Long
RG2	Replace aging equipment with lower global warming potential models; perform regular maintenance.	CAMP; Fish	Long
RG3	Ensure that surplus equipment is disposed of properly.	CAMP; Fish	Long
SW2	Ensure all work sites have recycling and compost bins where the service is available.	CAMP; RD; Fish; Wildlife	Long
SW3	Implement signage, flyers, intuitive bin colors, etc. to ensure staff have the necessary information to sort waste properly.	CAMP; RD; Fish; Wildlife	Long
SW4	Assess current waste policies and procedures and update to encourage waste reduction and diversion.	BSP-Conservation; CAMP	Long
W3	Install water conservation fixtures such as low-flow sinks and toilets, high-efficiency appliances, cisterns, etc.	CAMP; RD	Long
W4	Implement signage, flyers, etc. to encourage staff to conserve water.	CAMP; RD; Fish; Wildlife	Long
CG3	Explore using contract mechanisms like environmental preferences or design specifications to encourage contractors' use of lower-impact goods.	BSP-FSP; CAMP; Habitat	Long
TC10	Transition from impervious to pervious surfaces at facilities to reduce stormwater pollution.	CAMP	Long

BUSINESS SERVICES PROGRAM - CONSERVATION ACTIONS		LEAD PROGRAM	TIMEFRAME
SHORT-TERM (2022-2025)			
F1	Develop an electric fleet transition plan that addresses which vehicles can be converted when given operational demands, charging infrastructure needs, costs, maintenance, and policy questions like pricing and public access.	BSP-Conservation; CAMP	Short
F4	Institute a policy to select electric or plug-in hybrid vehicles as vehicles are replaced or added unless there is a significant operational demand issue.	BSP-Conservation; CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Short
F5	Collaborate with DES to train staff on electric vehicle charging, driving, and troubleshooting in the field. Communicate resources to address common concerns.	BSP-Conservation; CAMP	Short
F9	Research the availability, usability, and emissions of alternative fuels like renewable diesel, biodiesel, ethanol, hydrogen, and sustainable aviation fuel.	BSP-Conservation; CAMP	Short
F12	Institute a policy to select the smallest vehicle size that meets operational demands as vehicles are replaced or added.	BSP-Conservation; CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Short
F19	Improve data on fleet inventory, fuel use, utilization, and MPG to enable better understanding of trends and opportunities to reduce emissions.	CAMP; BSP-Conservation; BSP-FSP	Short
B10	Improve data on energy use, facilities inventory, and utilities inventory through systems like Energy Star Portfolio Manager and meters/sub-meters to enable better understanding of trends and opportunities to reduce energy use. Implement recommendations in Washington State University Energy Program report.	BSP-FSP; CAMP; BSP-Conservation	Short
B11	Pursue funding for energy efficiency and renewable electricity projects including grants and utility incentives.	BSP-Conservation; CAMP; BSP-FSP	Short
C6	Create a Commute Trip Reduction Program to implement commute actions. Expand Employee Transportation Coordinator duties and transition to a new 0.5 FTE position in HR.	BSP-HR; BSP-Conservation	Short
CS1	Assess if it is viable to establish emissions baseline and goal for contracted services.	BSP-Conservation	Short
OT1	Assess if it is viable to establish emissions baseline and goal for public recreation transportation.	BSP-Conservation	Short
OT4	Assess if it is viable to establish emissions baseline and goal for volunteer transportation.	BSP-Conservation	Short
OT6	Assess if it is viable to establish emissions baseline and goal for employee personal vehicle usage for work.	BSP-Conservation	Short
RG1	Assess if it is viable to establish emissions baseline and goal for refrigerant gases and identify aging equipment that should be prioritized for replacement.	BSP-Conservation; CAMP; Fish	Short
LM2	Build on UW "How Can WDFW Increase Carbon Sequestration to Mitigate Climate Change?" report's research on carbon sequestration in WDFW lands. Implement recommendation to develop an inventory of carbon sequestration and storage.	BSP-Conservation	Short
CT1	Update Sustainability Team charter, assess role of team in implementation, and open up membership.	BSP-Conservation	Short
CT2	Develop and provide staff training on climate change to build capacity, knowledge, and motivation.	BSP-Conservation; BSP-Public Affairs	Short
CT3	Communicate to staff implementation updates, sustainability resources, and answers to common questions and concerns through intranet, emails, and presentations.	BSP-Conservation	Short
CT7	Participate in and advance interagency and interstate climate initiatives, conferences, and community of practice.	BSP-Conservation	Short
FB1	Integrate Sustainability Plan implementation into the biennial budget process to identify which actions to implement and secure the necessary resources.	BSP-Conservation; BSP-FSP	Short
FB2	Track and pursue grants to fund Sustainability Plan implementation.	BSP-Conservation	Short

BUSINESS SERVICES PROGRAM - CONSERVATION ACTIONS		LEAD PROGRAM	TIMEFRAME
MEDIUM-TERM (2025-2027)			
F11	Train staff on using alternative fuels. Communicate resources to address common concerns.	BSP-Conservation; CAMP	Medium
B12	Assess and communicate the return on investment, payback period, and long-term cost savings of energy efficiency and renewable electricity projects.	BSP-Conservation; CAMP; BSP-FSP	Medium
H1	Track advances in the literature and support research to establish better data on hatchery fish digestion emissions. Assess if it is viable to establish emissions baseline and goal.	Fish; BSP-Conservation	Medium
H2	Track advances in the literature and support research to identify approaches to reduce hatchery fish digestion emissions.	Fish; BSP-Conservation	Medium
LM3	Build on UW "How Can WDFW Increase Carbon Sequestration to Mitigate Climate Change?" report's research on carbon sequestration from land management practices. Implement recommendations on alternative land management practices to increase carbon sequestration in grasslands, shrubsteppe, forests, wetlands, and croplands.	BSP-Conservation	Medium
SW1	Improve data on solid waste volume and makeup through systems like Energy Star Portfolio Manager and waste characterization studies to enable better understanding of trends and opportunities to reduce waste.	BSP-FSP; BSP-Conservation	Medium
W1	Improve data on building water use through systems like Energy Star Portfolio Manager to enable better understanding of trends and opportunities to conserve water.	BSP-FSP; BSP-Conservation	Medium
CT5	Develop and provide staff and volunteer training on climate change communications.	BSP-Conservation; BSP-Public Affairs	Medium
CT8	Foster partnerships to share information and advance climate action collaboratively.	BSP-Conservation	Medium
FB3	Develop mechanisms to highlight long-term cost savings and returns on investment when making budget requests for Sustainability Plan implementation.	BSP-Conservation; BSP-FSP	Medium
LONG-TERM (2027-2030)			
B8	Investigate options to purchase renewable electricity through utility company opt-up programs, power purchasing agreements, and renewable energy certificates.	BSP-Conservation	Long
LM1	Research emissions from land management practices such as prescribed burns and grazing. Assess if it is viable to establish emissions baseline and goal for these activities. Evaluate if there are alternative land management practices with lower emissions. Implement practices.	BSP-Conservation	Long
SW4	Assess current waste policies and procedures and update to encourage waste reduction and diversion.	BSP-Conservation; CAMP	Long
CG1	Research alternatives to goods with a high environmental impact, such as office equipment and construction materials.	BSP-Conservation; BSP-FSP	Long
CT6	Use implemented actions as demonstration projects to highlight through signage and public communications materials to encourage others to carry out similar actions.	BSP-Conservation; BSP-Public Affairs	Long
FB4	Explore budget mechanisms such as revolving loan funds to advance Sustainability Plan implementation.	BSP-Conservation; BSP-FSP	Long

FISH PROGRAM ACTIONS		LEAD PROGRAM	TIMEFRAME
SHORT-TERM (2022-2025)			
F2*	Install electric vehicle chargers at agency-owned offices, hatcheries, wildlife areas, and water access areas. Seek funding.	CAMP; RD; Fish; Wildlife	Short
F4	Institute a policy to select electric or plug-in hybrid vehicles as vehicles are replaced or added unless there is a significant operational demand issue.	BSP-Conservation; CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Short
F12	Institute a policy to select the smallest vehicle size that meets operational demands as vehicles are replaced or added.	BSP-Conservation; CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Short
B6	Assess feasibility and siting for solar energy systems on offices, wildlife area buildings, and hatchery buildings and ponds. Implement installations.	CAMP; RD; Wildlife; Fish	Short
B7	Assess feasibility and siting for micro-hydropower systems in hatchery pipes. Implement installations.	CAMP; Fish	Short
RG1	Assess if it is viable to establish emissions baseline and goal for refrigerant gases and identify aging equipment that should be prioritized for replacement.	BSP-Conservation; CAMP; Fish	Short
TC1	Inventory and dispose of stockpiles of obsolete chemicals such as pesticides.	Wildlife; Fish	Short
TC6	Reduce the release of PCBs by completing remediation on hatchery raceways and continuing to seek fish feed that is lower in PCBs.	Fish	Short
MEDIUM-TERM (2025-2027)			
F6	As small equipment is replaced or added, order electric chainsaws, weed whips, mowers, forklifts, etc. whenever possible. Purchase extra batteries and chargers.	Wildlife; Fish	Medium
F10	Implement transition to alternative fuels through purchasing for bulk fuel sites and staff guidance on buying alternative fuels at commercial sites.	CAMP; Wildlife; Fish	Medium
F15	Identify tasks that could be done via walking, biking, UTV, or drone rather than vehicle/vessel. Acquire the necessary equipment and develop policies and communications to encourage work outside vehicles.	Wildlife; Fish; ENF	Medium
H1	Track advances in the literature and support research to establish better data on hatchery fish digestion emissions. Assess if it is viable to establish emissions baseline and goal.	Fish; BSP-Conservation	Medium
H2	Track advances in the literature and support research to identify approaches to reduce hatchery fish digestion emissions.	Fish; BSP-Conservation	Medium
W2	Install partial recirculating aquaculture systems (PRAS) in hatcheries to reduce the quantity of water diverted from streams and maintain lower water temperatures.	Fish	Medium
TC3	Assess hatchery chemicals list for persistent, bioaccumulative, and toxic (PBT) chemicals; identify and implement alternatives.	Fish	Medium
TC9	Ensure proper fleet vehicle maintenance to prevent oil leaks and ensure efficient fuel consumption.	CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Medium
LONG-TERM (2027-2030)			
F8	Track technology advances for electric and hybrid vessel motors; acquire and test motors as they come on market.	Fish; Wildlife; ENF	Long
F13	Improve vessel fuel efficiency through hull design, engine upgrades, maintenance, removing weight, and reducing speeds and idling.	Fish; Wildlife; ENF	Long
H3	Implement approaches to reduce hatchery fish digestion emissions.	Fish	Long
CS2	Identify tasks that could be done via walking, biking, UTV, or drone rather than vehicle/vessel. Change contracts to specify these practices.	Wildlife; Fish	Long

FISH PROGRAM ACTIONS		LEAD PROGRAM	TIMEFRAME
OT3	Assess regulations like daily catch limits to identify agency decisions that may be creating unnecessary vehicle trips.	Fish; Wildlife	Long
RG2	Replace aging equipment with lower global warming potential models; perform regular maintenance.	CAMP; Fish	Long
RG3	Ensure that surplus equipment is disposed of properly.	CAMP; Fish	Long
SW2	Ensure all work sites have recycling and compost bins where the service is available.	CAMP; RD; Fish; Wildlife	Long
SW3	Implement signage, flyers, intuitive bin colors, etc. to ensure staff have the necessary information to sort waste properly.	CAMP; RD; Fish; Wildlife	Long
W4	Implement signage, flyers, etc. to encourage staff to conserve water.	CAMP; RD; Fish; Wildlife	Long
TC5	Partner with regulatory agencies to address currently used chemicals that impact fish and wildlife, such as insecticides harming pollinators.	Wildlife; Fish	Long
TC7	Review Ecology's Chemical Action Plans and identify actions within WDFW's purview to implement.	Wildlife; Fish	Long
TC8	Partner with regulatory agencies to address emerging chemicals concern that impact fish and wildlife, such as perfluoroalkyl and polyfluoroalkyl substances (PFAS) and 6PPD in vehicle tires.	Fish; Wildlife	Long

	WILDLIFE PROGRAM ACTIONS	LEAD PROGRAM	TIMEFRAME
SHORT-TERM (2022-2025)			
F2*	Install electric vehicle chargers at agency-owned offices, hatcheries, wildlife areas, and water access areas. Seek funding.	CAMP; RD; Fish; Wildlife	Short
F4	Institute a policy to select electric or plug-in hybrid vehicles as vehicles are replaced or added unless there is a significant operational demand issue.	BSP-Conservation; CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Short
F12	Institute a policy to select the smallest vehicle size that meets operational demands as vehicles are replaced or added.	BSP-Conservation; CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Short
B6	Assess feasibility and siting for solar energy systems on offices, wildlife area buildings, and hatchery buildings and ponds. Implement installations.	CAMP; RD; Wildlife; Fish	Short
TC1	Inventory and dispose of stockpiles of obsolete chemicals such as pesticides.	Wildlife; Fish	Short
MEDIUM-TERM (2025-2027)			
F6	As small equipment is replaced or added, order electric chainsaws, weed whips, mowers, forklifts, etc. whenever possible. Purchase extra batteries and chargers.	Wildlife; Fish	Medium
F7	Track technology advances for electric UTVs, snowmobiles, motorcycles, etc.; acquire and test as they come on market.	Wildlife; ENF	Medium
F10	Implement transition to alternative fuels through purchasing for bulk fuel sites and staff guidance on buying alternative fuels at commercial sites.	CAMP; Wildlife; Fish	Medium
F15	Identify tasks that could be done via walking, biking, UTV, or drone rather than vehicle/vessel. Acquire the necessary equipment and develop policies and communications to encourage work outside vehicles.	Wildlife; Fish; ENF	Medium
TC2	Identify and implement process improvements to pesticide management.	Wildlife	Medium
TC4	Ensure staff stay up to date on pesticide applicator licenses. Provide training and resources to ensure risks are assessed and mitigated.	Wildlife	Medium
TC9	Ensure proper fleet vehicle maintenance to prevent oil leaks and ensure efficient fuel consumption.	CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Medium
LONG-TERM (2027-2030)			
F8	Track technology advances for electric and hybrid vessel motors; acquire and test motors as they come on market.	Fish; Wildlife; ENF	Long
F13	Improve vessel fuel efficiency through hull design, engine upgrades, maintenance, removing weight, and reducing speeds and idling.	Fish; Wildlife; ENF	Long
CS2	Identify tasks that could be done via walking, biking, UTV, or drone rather than vehicle/vessel. Change contracts to specify these practices.	Wildlife; Fish	Long
OT2	Assess opportunities to promote visitation via bike, transit, etc. at more urban or high-use sites.	Wildlife	Long
OT3	Assess regulations like daily catch limits to identify agency decisions that may be creating unnecessary vehicle trips.	Fish; Wildlife	Long
SW2	Ensure all work sites have recycling and compost bins where the service is available.	CAMP; RD; Fish; Wildlife	Long
SW3	Implement signage, flyers, intuitive bin colors, etc. to ensure staff have the necessary information to sort waste properly.	CAMP; RD; Fish; Wildlife	Long
W4	Implement signage, flyers, etc. to encourage staff to conserve water.	CAMP; RD; Fish; Wildlife	Long
TC5	Partner with regulatory agencies to address currently used chemicals that impact fish and wildlife, such as insecticides harming pollinators.	Wildlife; Fish	Long
TC7	Review Ecology's Chemical Action Plans and identify actions within WDFW's purview to implement.	Wildlife; Fish	Long
TC8	Partner with regulatory agencies to address emerging chemicals concern that impact fish and wildlife, such as perfluoroalkyl and polyfluoroalkyl substances (PFAS) and 6PPD in vehicle tires.	Fish; Wildlife	Long

BUSINESS SERVICES PROGRAM - FINANCIAL SERVICES ACTIONS		LEAD PROGRAM	TIMEFRAME
SHORT-TERM (2022-2025)			
F4	Institute a policy to select electric or plug-in hybrid vehicles as vehicles are replaced or added unless there is a significant operational demand issue.	BSP-Conservation; CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Short
F12	Institute a policy to select the smallest vehicle size that meets operational demands as vehicles are replaced or added.	BSP-Conservation; CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Short
F19	Improve data on fleet inventory, fuel use, utilization, and MPG to enable better understanding of trends and opportunities to reduce emissions.	CAMP; BSP-Conservation; BSP-FSP	Short
B10	Improve data on energy use, facilities inventory, and utilities inventory through systems like Energy Star Portfolio Manager and meters/sub-meters to enable better understanding of trends and opportunities to reduce energy use. Implement recommendations in Washington State University Energy Program report.	BSP-FSP; CAMP; BSP-Conservation	Short
B11	Pursue funding for energy efficiency and renewable electricity projects including grants and utility incentives.	BSP-Conservation; CAMP; BSP-FSP	Short
FB1	Integrate Sustainability Plan implementation into the biennial budget process to identify which actions to implement and secure the necessary resources.	BSP-Conservation; BSP-FSP	Short
MEDIUM-TERM (2025-2027)			
B12	Assess and communicate the return on investment, payback period, and long-term cost savings of energy efficiency and renewable electricity projects.	BSP-Conservation; CAMP; BSP-FSP	Medium
SW1	Improve data on solid waste volume and makeup through systems like Energy Star Portfolio Manager and waste characterization studies to enable better understanding of trends and opportunities to reduce waste.	BSP-FSP; BSP-Conservation	Medium
W1	Improve data on building water use through systems like Energy Star Portfolio Manager to enable better understanding of trends and opportunities to conserve water.	BSP-FSP; BSP-Conservation	Medium
TC9	Ensure proper fleet vehicle maintenance to prevent oil leaks and ensure efficient fuel consumption.	CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Medium
FB3	Develop mechanisms to highlight long-term cost savings and returns on investment when making budget requests for Sustainability Plan implementation.	BSP-Conservation; BSP-FSP	Medium
LONG-TERM (2027-2030)			
C5	Revise Travel Authorization Form process to encourage alternatives to flights, such as virtual meetings.	BSP-FSP	Long
CS3	Explore using contract mechanisms like environmental preferences or design specifications to encourage contractors' use of alternative fuels, more efficient equipment, etc.	BSP-FSP; CAMP; Habitat	Long
OT5	Assess opportunities to facilitate carpooling among volunteers.	BSP-FSP	Long
CG1	Research alternatives to goods with a high environmental impact, such as office equipment and construction materials.	BSP-Conservation; BSP-FSP	Long
CG2	Develop purchasing policies and guidance to prioritize lower-impact goods. Provide staff communications and training.	BSP-FSP	Long
CG3	Explore using contract mechanisms like environmental preferences or design specifications to encourage contractors' use of lower-impact goods.	BSP-FSP; CAMP; Habitat	Long
CG4	Collaborate with DES to expand the goods covered by the environmental preference procurement mechanism (RCW 39.26).	BSP- FSP	Long
FB4	Explore budget mechanisms such as revolving loan funds to advance Sustainability Plan implementation.	BSP-Conservation; BSP-FSP	Long

REGIONAL DIRECTORS ACTIONS		LEAD PROGRAM	TIMEFRAME
SHORT-TERM (2022-2025)			
F2*	Install electric vehicle chargers at agency-owned offices, hatcheries, wildlife areas, and water access areas. Seek funding.	CAMP; RD; Fish; Wildlife	Short
F3*	Update lease terms to require installation of electric vehicle chargers at leased offices. Seek funding.	CAMP; RD	Short
B1	Utilize Energy Saving Performance Contracting to identify, prioritize, and implement energy efficiency improvements, such as pumps, insulation, lighting, windows, and weatherproofing.	CAMP; RD	Short
B6	Assess feasibility and siting for solar energy systems on offices, wildlife area buildings, and hatchery buildings and ponds. Implement installations.	CAMP; RD; Wildlife; Fish	Short
LONG-TERM (2027-2030)			
SW2	Ensure all work sites have recycling and compost bins where the service is available.	CAMP; RD; Fish; Wildlife	Long
SW3	Implement signage, flyers, intuitive bin colors, etc. to ensure staff have the necessary information to sort waste properly.	CAMP; RD; Fish; Wildlife	Long
W3	Install water conservation fixtures such as low-flow sinks and toilets, high-efficiency appliances, cisterns, etc.	CAMP; RD	Long
W4	Implement signage, flyers, etc. to encourage staff to conserve water.	CAMP; RD; Fish; Wildlife	Long

ENFORCEMENT PROGRAM ACTIONS		LEAD PROGRAM	TIMEFRAME
SHORT-TERM (2022-2025)			
F4	Institute a policy to select electric or plug-in hybrid vehicles as vehicles are replaced or added unless there is a significant operational demand issue.	BSP-Conservation; CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Short
F12	Institute a policy to select the smallest vehicle size that meets operational demands as vehicles are replaced or added.	BSP-Conservation; CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Short
MEDIUM-TERM (2025-2027)			
F7	Track technology advances for electric UTVs, snowmobiles, motorcycles, etc.; acquire and test as they come on market.	Wildlife; ENF	Medium
F15	Identify tasks that could be done via walking, biking, UTV, or drone rather than vehicle/vessel. Acquire the necessary equipment and develop policies and communications to encourage work outside vehicles.	Wildlife; Fish; ENF	Medium
TC9	Ensure proper fleet vehicle maintenance to prevent oil leaks and ensure efficient fuel consumption.	CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Medium
LONG-TERM (2027-2030)			
F8	Track technology advances for electric and hybrid vessel motors; acquire and test motors as they come on market.	Fish; Wildlife; ENF	Long
F13	Improve vessel fuel efficiency through hull design, engine upgrades, maintenance, removing weight, and reducing speeds and idling.	Fish; Wildlife; ENF	Long

BUSINESS SERVICES PROGRAM - HUMAN RESOURCES ACTIONS		LEAD PROGRAM	TIMEFRAME
SHORT-TERM (2022-2025)			
C1	Maintain high levels of telework implemented during COVID-19 by maximizing eligibility, providing home office equipment, informing employees of telework options, and providing training and resources to help teleworking employees and teams be successful.	BSP-HR; BSP-IT	Short
C2	Promote compressed workweek schedules by maximizing eligibility, informing employees of compressed schedule options, providing training and resources to help employees and teams on compressed schedules be successful, formalizing workplace norms to minimize disruption such as staggered coverage, and updating any policies that conflict with this direction.	BSP-HR	Short
C3	Provide financial incentives for commuting via sustainable modes (bike, walk, transit, vanpool, carpool).	BSP-HR	Short
C4	Provide employees with information and resources on how to use sustainable commute modes through an intranet page, trainings, etc.	BSP-HR	Short
C6	Create a Commute Trip Reduction Program to implement commute actions. Expand Employee Transportation Coordinator duties and transition to a new 0.5 FTE position in HR.	BSP-HR; BSP-Conservation	Short
MEDIUM-TERM (2025-2027)			
C7	Participate consistently in Thurston Regional Planning Council biennial employee commute survey. Develop a supplemental commute survey for staff outside Thurston County.	BSP-HR	Medium

HABITAT PROGRAM ACTIONS		LEAD PROGRAM	TIMEFRAME
SHORT-TERM (2022-2025)			
F4	Institute a policy to select electric or plug-in hybrid vehicles as vehicles are replaced or added unless there is a significant operational demand issue.	BSP-Conservation; CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Short
F12	Institute a policy to select the smallest vehicle size that meets operational demands as vehicles are replaced or added.	BSP-Conservation; CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Short
MEDIUM-TERM (2025-2027)			
TC9	Ensure proper fleet vehicle maintenance to prevent oil leaks and ensure efficient fuel consumption.	CAMP; Fish; Wildlife; ENF; BSP-FSP; Habitat	Medium
LONG-TERM (2027-2030)			
CS3	Explore using contract mechanisms like environmental preferences or design specifications to encourage contractors' use of alternative fuels, more efficient equipment, etc.	BSP-FSP; CAMP; Habitat	Long
CG3	Explore using contract mechanisms like environmental preferences or design specifications to encourage contractors' use of lower-impact goods.	BSP-FSP; CAMP; Habitat	Long

BUSINESS SERVICES PROGRAM - PUBLIC AFFAIRS ACTIONS		LEAD PROGRAM	TIMEFRAME
SHORT-TERM (2022-2025)			
CT2	Develop and provide staff training on climate change to build capacity, knowledge, and motivation.	BSP-Conservation; BSP-Public Affairs	Short
CT4	Develop public communications materials about climate change, sustainability actions the agency is taking, and what actions partners and the public can take.	BSP-Public Affairs	Short
MEDIUM-TERM (2025-2027)			
CT5	Develop and provide staff and volunteer training on climate change communications.	BSP-Conservation; BSP-Public Affairs	Medium
LONG-TERM (2027-2030)			
CT6	Use implemented actions as demonstration projects to highlight through signage and public communications materials to encourage others to carry out similar actions.	BSP-Conservation; BSP-Public Affairs	Long

BUSINESS SERVICES PROGRAM - INFORMATION TECHNOLOGY ACTIONS		LEAD PROGRAM	TIMEFRAME
SHORT-TERM (2022-2025)			
F14	Encourage virtual meetings and trainings through infrastructure, policies, and culture.	BSP-IT	Short
C1	Maintain high levels of telework implemented during COVID-19 by maximizing eligibility, providing home office equipment, informing employees of telework options, and providing training and resources to help teleworking employees and teams be successful.	BSP-HR; BSP-IT	Short