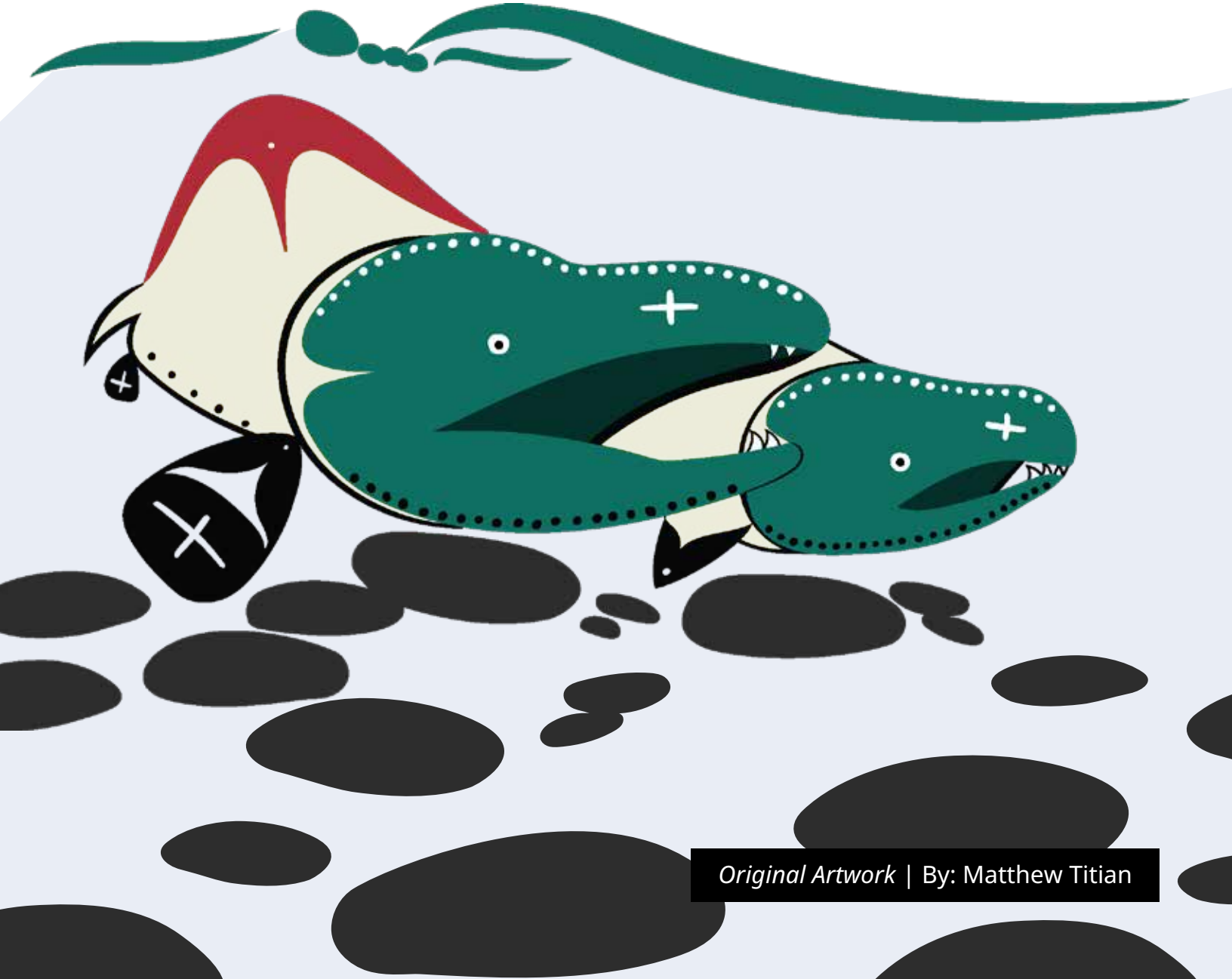
Uchucklesaht Tribe Government

# Climate Action Plan

April 2025



*Original Artwork* | By: Matthew Titian

# ƛ̓eekoo

Climate change is an urgent and important challenge for Uchucklesaht. As the stewards of our ha'houlthee (traditional territory) we have been given the responsibility for Uu-a-thluk (to take care of). We must use all the tools at our disposal to monitor and mitigate climate changes and continue to adapt as we have since time immemorial.

A sincere ƛ̓eekoo to all those who contributed to the development of this plan:

**UTG's Climate Action Team,** the planning process was led by Chris Monaghan, Tricia Bryant and Nigel Moore within our *Lands and Resources Department*.

**Moriah Cootes, Ray Bartram and Ryan Anaka** were interviewed to provide insights that informed the climate change vulnerability assessment.

**Experts** from Integral Consulting, Barkley Project Group, Origin, and Coastbuild provided the analyses that are the backbone of this report.

**Funding support** from *NRCan Indigenous Off-Diesel Initiative IODI* made this work possible.

**Documentarian,** *M1 Agency* followed our planning process and produced a film that captured its spirit.

**Guest speakers,** Judith Sayers, Michael Vegh, Cole Sayers, Janna Wale and Ben Gardiner spoke at our community events, and we appreciate immensely that they shared their time and insights.

**Visual designer**, Kevin Scholz *CreativeInlet* brought the plan to life with his creative talent and exceptional dedication.

Finally, a heartfelt thank you to the **Uchucklesaht Citizens**, especially our Elders, who engaged in this process. Your words are reflected throughout this plan, which would not be complete without them. This includes members of the *Climate Action Working Group*, who informed staff on Uchucklesaht values and priorities to guide a year-long planning process.

*Thank you for your wisdom,*

**Chief Councillor Wilfred Cootes**



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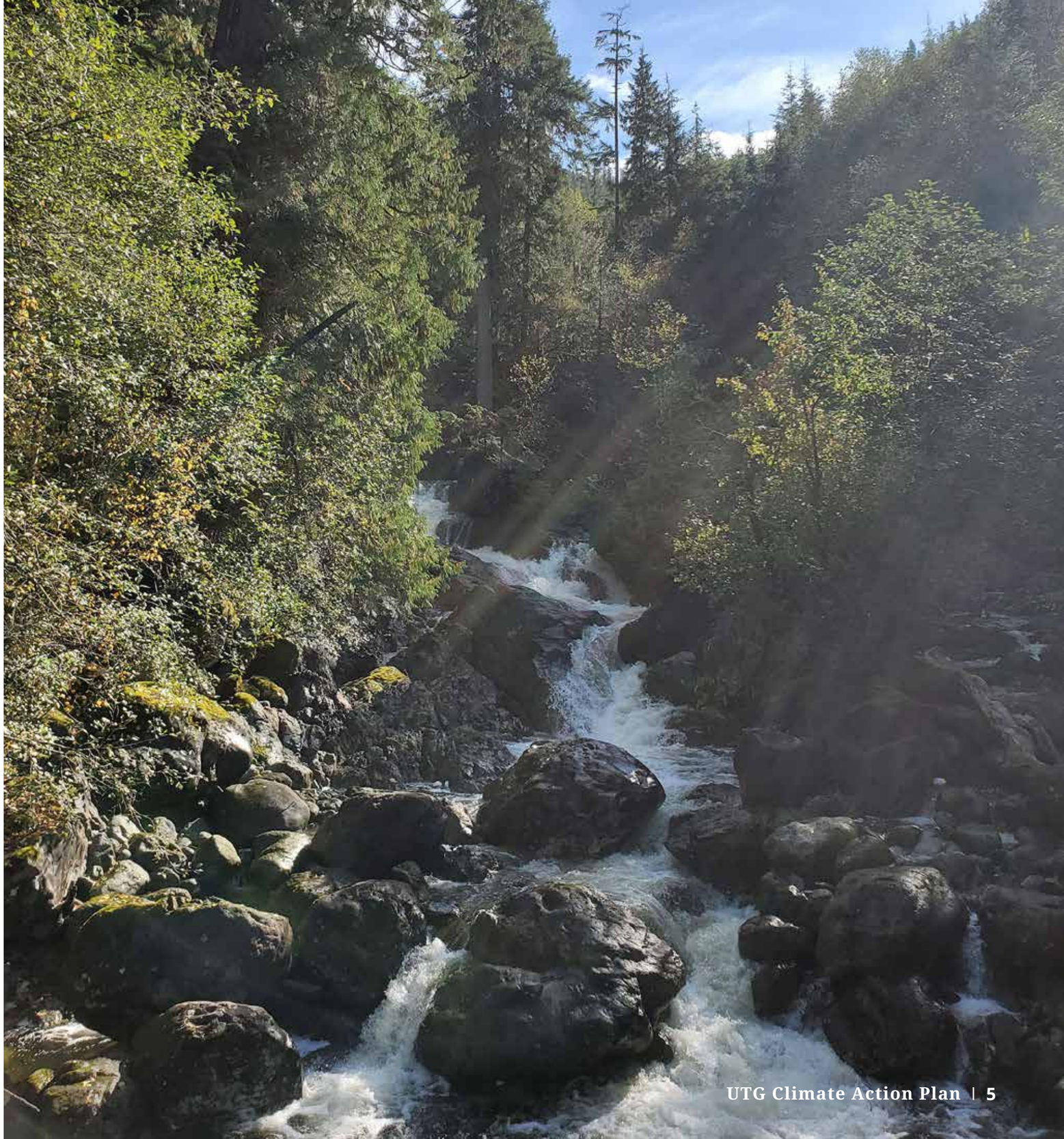
# Uchucklesaht's Climate Action Hiłmihsaqin

**(Vision)**

The Uchucklesaht Tribe acknowledges that climate change requires us to take action now and forever; to live c̓aa mapi (in balance) through generations.

We will meet this challenge by restoring Uchucklesaht's inherent responsibility as caretakers of the living and spiritual world of the ha'houlthee (traditional territory). The wisdom of our ancestors will guide us, the teachings of our elders will strengthen us, and the actions of our youth will carry us. As we work together to heal the land, reduce our emissions, and protect against impacts, we will continue to honour our sacred principles of Hishuk-ish tsa'walk (everything is one), Iisaak (respect), and Uu-a-thluk (to take care of). Our way of life holds the path to successful climate action and resilience.





# 1

# Introduction

The cause of climate change is the release of greenhouse gas (GHG) emissions from human activities primarily related to energy, waste, and land use. Uchucklesaht's operations across these sectors represent only a small fraction of the global picture but are nevertheless important. By taking actions to reduce our emissions, we honour our inherent responsibility as caretakers of the land. **Iisaak (respect)**.

Climate change is already upon us and we must be proactive in adapting to a changing world. Our ha'houlthee is threatened by changes in temperature and precipitation, hazards such as wildfires and stronger storms, and the distressing impacts we see on species such as salmon and cedar that are vital to our Uchucklesaht identity. We must act to protect our home from the threats of climate change. **Uu-a-thluk (taking care of)**.

Uchucklesaht's acknowledgment that the Earth's climate system is changing rapidly and dangerously requires us to take action. Global changes will have local consequences that affect Uchucklesaht lands and waters and the creatures that call them home, as well as all of our citizens, wherever they may reside. **Hishuk-ish tsa'walk (everything is one).**

# Our Approach

## Objectives

This Climate Action Planning process was undertaken in 2024-2025 to provide Uchucklesaht leadership, staff and citizens with the following:

### A Vision
A long-term collective vision to guide UTG decision-making using a climate lens.

### Data
Measurement of UTG's contributions to climate change across economic sectors.

### Education
Knowledge about the impacts of climate change to support a greater understanding of the risks posed to Uchucklesaht values, cultural practices and way of life.

### Solutions
A range of specific targets and actions that will reduce Uchucklesaht's greenhouse gas emissions and increase our resilience to the impacts of climate change cultural practices and way of life.

### A Plan
A timeline for implementing climate resiliency actions and achieving climate targets

## Scope

To comprehensively address climate change and apply the three sacred principles, our plan includes actions that fall under the categories of both **mitigation** (reducing our GHG emissions), and **adaptation** (building resilience to climate changes).

The scope of UTG's mitigation and adaptation actions, as well as opportunities for expanding the scope in future iterations of the plan, are described at the beginning of each section.

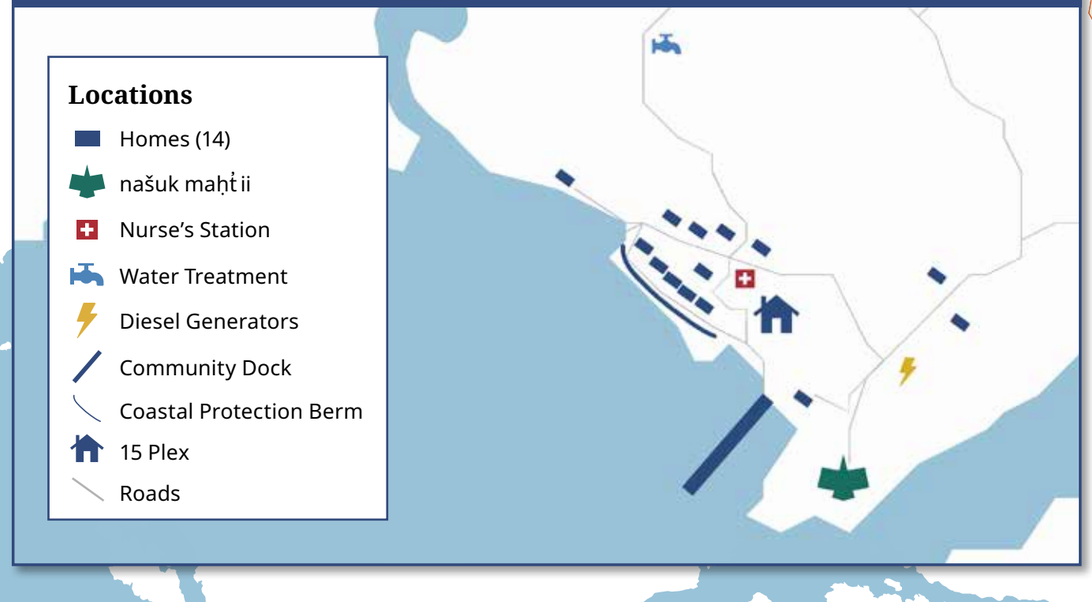
Recommended actions that are short-term (before 2035), and long term (after 2035) are captured to reflect both the urgency and the sustained nature of climate change.



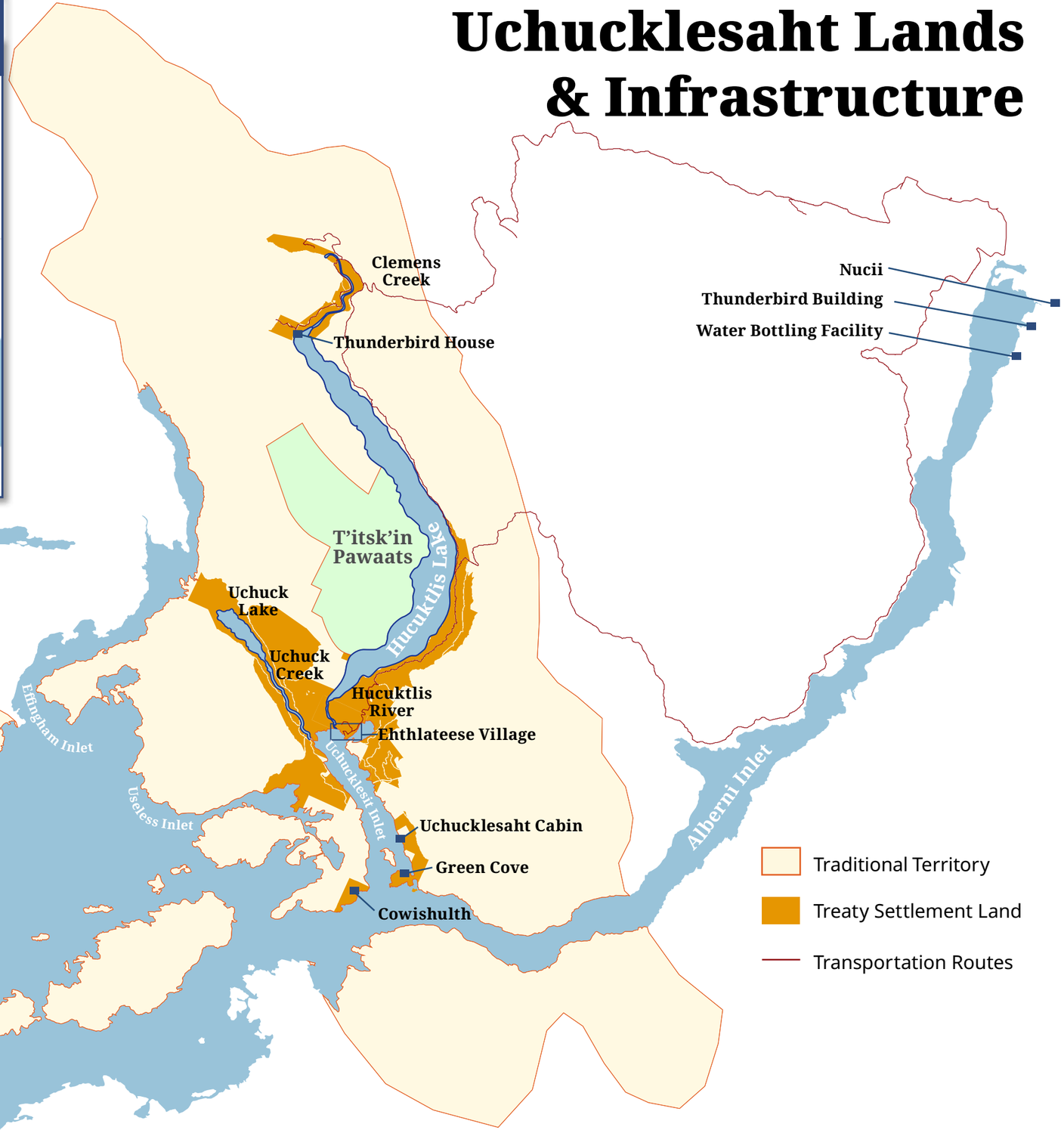
## Top Five Actions

1. **Construct ground-mounted solar PV and run-of river hydropower systems to displace diesel electricity generation in Ehthlateese**
2. **Develop forestry policy to maintain a diverse and heterogeneous landscape that sequesters carbon**
3. **Install climate and marine monitoring stations with data management and reporting systems**
4. **Develop and grow programs for youth involvement in UTG operations in the territory (guardians, staff positions, etc.)**
5. **Nucii building retrofit to heat pumps for heating, cooling and hot water at end of life of current systems**

# Ehthlateese Village




# Uchucklesaht Lands & Infrastructure



# Our Planning Process

## Expert Assessments

**2024 JAN — Selected Consultants**
- Quantifying emissions
- Energy evaluations
- Climate vulnerabilities
- Videographers

**2024 APR — Energy Evaluations**
- Energy data collected by staff
- Energy evaluations for four UTG buildings
- Summary report and recommendations received

**2024 NOV — Climate Change Vulnerability Study**
- Assessment completed with input from UTG staff, leadership, consultants, and citizens.

**2024 DEC — Additional Energy Assessments**
- Geothermal and wind feasibility report complete
- Excess power from clean energy projects
- Lodge Retrofit Pathway

**2025 JAN — UTG Sectoral Emissions**
- Greenhouse gas emissions quantified

**2025 APR — Draft Climate Action Plan**
- First draft completed

**2025 MAY — Final Climate Action Plan**
- Review process concluded and CAP finalized

## Citizen Engagement

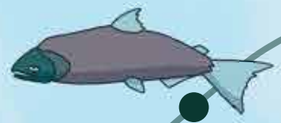
**2024 FEB — Established Climate Action Working Group**
- Citizens and staff met every four weeks

**2024 APR — Launched the Climate Action Survey**
- Received community insights and priorities from 61 citizen respondents

**2024 MAY — Community Engagement #1**
*Envisioning UTG's Climate-Resilient Future*
- Climate education and collective visioning
- Guest speaker Mike Vegh

**2024 AUG — Community Engagement #2**
*Taking Action on Climate Change*
- Options for reducing emissions
- Guest Speaker Cole Sayers

**2024 OCT — Community Energy Workshop**
- Energy Efficiency Education in Ehthlateese
- BC Hydro demonstration and free products



**2024 DEC — Community Engagement #3**
*Adapting to Our Changing Climate*
- Climate vulnerabilities and adaptation strategies
- Guest Speaker Janna Wale

**2025 APR — Community Engagement #4**
*Celebrating Our Path to Climate Resilience*
- Implementation framework
- Celebrating our plan with Guest Speaker Judith Sayers
- First showing of a short documentary *Uchucklesaht Climate Action Story*

**2025 MAY — Present Plan to Leadership**
- Present Climate Action Plan to UTG Executive Council

# Uchucklesaht Voices

Uchucklesaht citizens participated in the development of this plan through a variety of platforms. Their input is reflected throughout this plan as indicated by the wind icon:

## The Wind Icon

Look for this Wind icon to hear the voices of the Uchucklesaht citizens on Climate Action

## Community Events

### Five community events were hosted:

- Envisioning Uchucklesaht's Climate-Resilient Future
- Taking Direct Action on Climate Change
- Energy Efficiency in Ehthlateese
- Adapting to Our Changing Climate
- Celebrating the Path to Climate Wisdom & Resilience

### Indigenous expert guest speakers

- Michael Vegh | *Heilsuk Nation Climate Action Team*
- Judith Sayers | *President of Nuu-chah-nulth Tribal Council*
- Cole Sayers | *President of Clean Energy BC*
- Ben Gardiner | *BC Hydro*
- Janna Wale | *Pacific Institute for Climate Solutions*

## Climate Action Working Group Members

Lauren Baader
Charlie Cootes
Lorraine Cootes
John Charles Cootes
John Kelly Charles Cootes
Ryan Cootes
Cheryl Ginger
Gina Laing
Laurissa Lucas
James Robinson
April Martin
James Martin
Cynthia Mills
Robin Mills
Tristan O'Daniel
Lauren Smith
Linden Smith
Madeline Smith
Michael Smith
Frank Styan
Sharon Styan Jr.
Valerie Styan
Malachi Yeager-Rosario



### How concerned are you about climate change?

**54%** Fairly concerned – we should take appropriate action
**36%** Very concerned – this needs to be UTG's top priority
**8%** Slightly concerned – but we have other priorities
**2%** Not at all – I don't think it is an issue:

### What are your climate priorities?

**69%** Food security
**63%** Wildfires
**61%** Ocean warming and changes to the marine environment
**53%** Drought and freshwater resources
**31%** Flooding
**25%** Reducing emissions from diesel generators in Ehthlateese
**25%** Coastal erosion
**17%** Reducing emissions from transportation
**15%** Reducing emissions from resource economic activities in the territory
**8%** Reducing emissions from Uchucklesaht-owned business ventures
**2%** Other

**61** **Unique survey responses**

**20** **% of UTG citizens**

### Climate Action Survey

Demographic, multiple choice, and open-ended questions on topics related to climate change mitigation and adaptation

Survey results reflect the % of respondents who chose each answer. Some questions allowed multiple answers to be chosen, resulting in %s adding to more than 100

# Iisaak (respect)

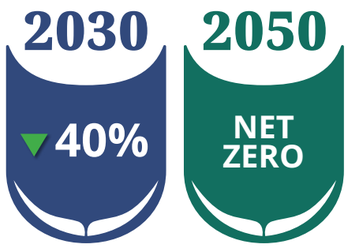
## Reducing our Emissions

Over the last century Earth's climate has undergone unprecedented change from human caused greenhouse gas (GHG) emissions. The Intergovernmental Panel on Climate Change (IPCC) estimates that the cumulative releases of GHGs to the atmosphere have now caused 1.0°C of global warming above pre-industrial levels. Future trends predict further change, with global warming almost certain to reach 1.5°C between 2030 and 2050. Without action, the cascading impacts of a warmer, less hospitable world will be felt in every region and community.

As stewards of the lands, waters, air, and resources of our ha'houlthee since time immemorial, climate change represents a threat to our deep relationship with the land and our identity. And as self-determining peoples, we accept the responsibilities inherent in governing ourselves; to do everything in our power to preserve our lands and our world. By doing our part to reduce emissions, Uchucklesaht will continue to uphold our sacred principles.

# Our Approach

## Objectives




The recommended actions within this plan support the achievement of a 40% GHG reduction by 2030 and Net Zero emissions by 2050 from a 2023 baseline year. This aligns with ambitious domestic and international targets to reduce emissions.

Net Zero refers to offsetting all UTG emissions with carbon that is removed from the atmosphere by lands managed by UTG.

## Scope

UTG activities were grouped into five distinct sectors: **Built Environment**, **Transportation**, **Industry**, **Waste**, and **Land Use**. Within each sector, only activities that are directly controlled or purchased by UTG are in scope. This is critical for presenting solutions that are within our jurisdiction and supported by accessible baseline data and future tracking possibilities. We included the following:

- All UTG-owned buildings
- All buildings on UTG Treaty Settlement Lands (TSL)
- All UTG marine and road fleet vehicles
- All energy generation in Ehthlateese
- Waste from all UTG citizens (estimated based on population)
- TSL land use
- Enterprises wholly owned by UTG with operations on TSL

While the majority of activities within this scope are captured in this report, an exception was forestry operations due to the inaccessibility of complex data. Future iterations of the plan should seek to include these emissions, and may also consider capturing activities that are influenced but not directly controlled by UTG (i.e. citizen emissions, third party businesses, lifecycle emissions from materials, and land use in the territory but outside of the TSL).

Data was acquired through the following means: energy assessments (*ASHRAE & EnerGuide*), energy modeling, fuel sales, utility service providers, and requests made to partner stakeholders. All information was compiled into an internal model using 2023 as the baseline year. Growth assumptions varied by sector and activity to create a 2050 emissions forecast. Assumptions and uncertainties are recorded in an excel-based model.

# Quantification of UTG Emissions

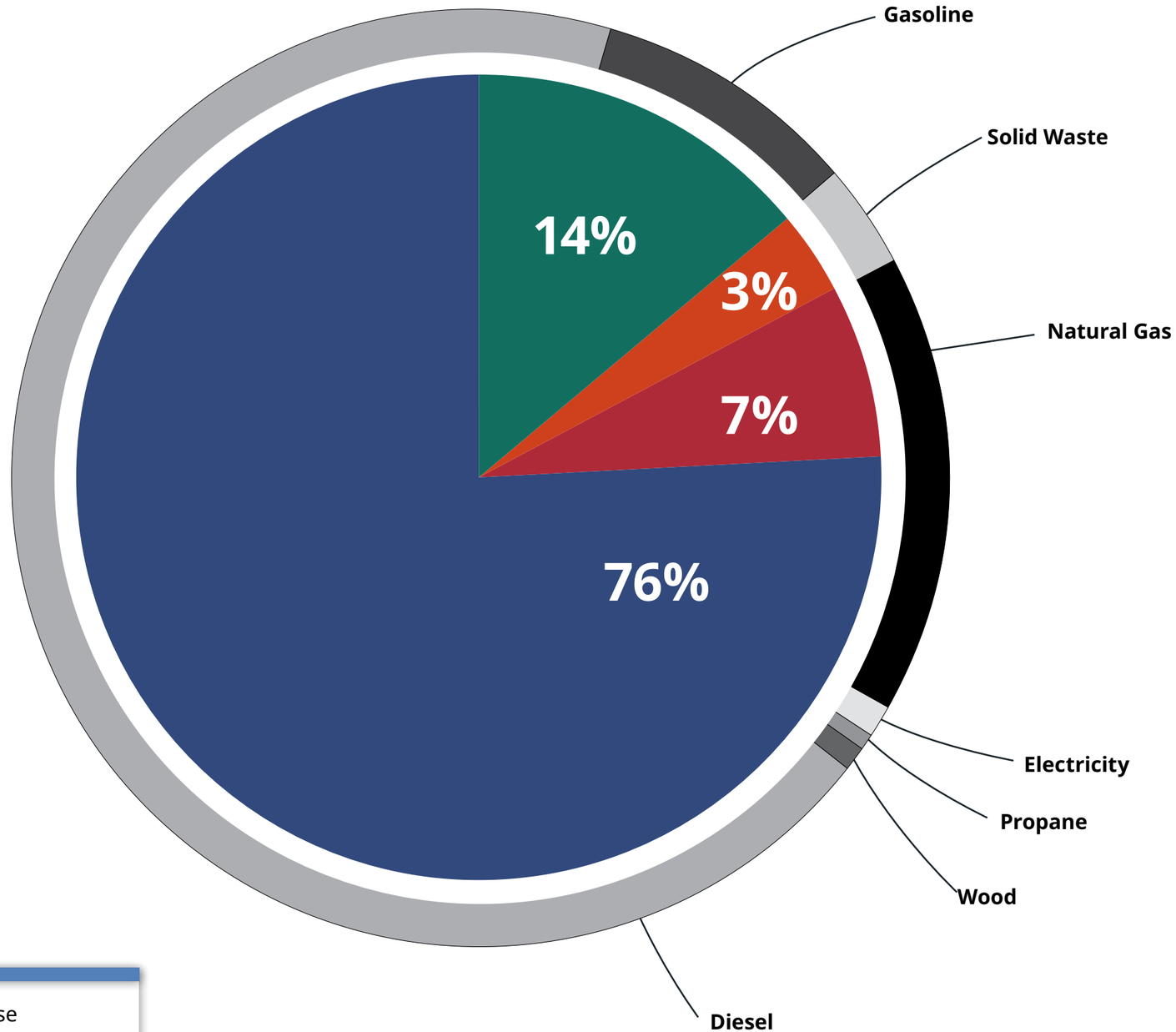
Total UTG GHG emissions in 2023 (expressed in tonnes of CO2-equivalent) were quantified by sector and fuel type.

Given the breakdown of emissions, two critical actions stand out: (1) replacing diesel with clean energy in Ehthlateese, and (2) protecting/enhancing the carbon sequestration value of TSL forests.

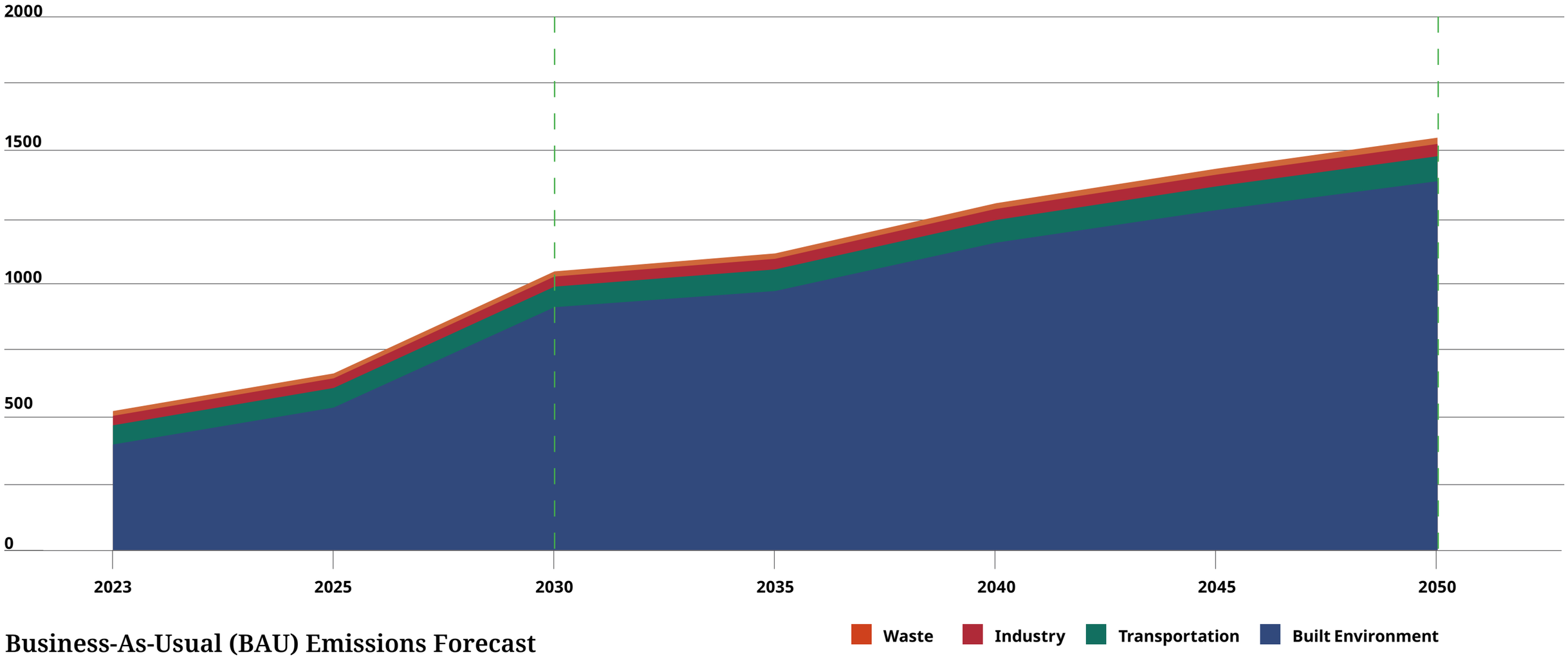
## UTG 2023 Emissions Baseline:

GHG Emissions by Sector (520.1 $tCO_2e$)

- **Waste**
  18 $tCO_2e$
- **Industry**
  35.45 $tCO_2e$
- **Transportation**
  71.92 $tCO_2e$
- **Built Environments**
  394.73 $tCO_2e$
- **Land**
  (-21,688) — (-13,323) $tCO_2e$
  (Not included in graph)




"Our atmosphere is not going to get healthy if we continue to use diesel generation"




# Business-As-Usual (BAU) Emissions Forecast

## Scenario 1 BAU (shown above)

Without action, GHG emissions for all sectors will rise to 1,542.97 tCO2e by 2050.

The primary reason for UTG's rapidly rising emissions under the business-as-usual scenario is the growth and development of the community in Ehthlateese, which currently relies on a diesel generation station for electricity.

## Scenario 2 BAU

Without action, GHG emissions for all sectors will rise to 1,542.97 tCO2e by 2050.

Scenario 2 includes an aggressive expansion of UTG's commercial water business as compared to Scenario 1, where the business grows more steadily. This illustrates the potential emissions impact of this enterprise.

"I feel that if we are eventually going to be fully functional, we can take renewable energy into serious consideration whether this be by turning lights on with energy generated by wind, solar, hydropower and/or biomass; we could also implement waste reduction programs, encourage sustainable transportation and opt for sustainable and nontoxic/natural materials."

# Emission Reduction Pathways

On our current path, UTG's emissions are set to increase significantly in each of the five sectors. Sectors have varying emissions growth rates based on projected activities and plans.  This business-as-usual (BAU) scenario includes projected emissions for each sector up to 2050.

To address the projected growth in emissions, a list of emission reduction actions and their GHG impact, costs, and co-benefits have been identified for each sector, resulting in a 2050 emission reduction forecast. Taken together, these actions support the achievement of ambitious emissions reduction targets.



# Built Environment

## 2023 Baseline

394.58 $tCO_2e$

This sector accounts for 394.73 tCO2e of UTG emissions, and includes all emissions related to UTG-owned buildings and their associated infrastructure.

## 2050 Forecast

1379.93 $tCO_2e$

If emissions continue to grow unabated, the business-as-usual scenario will see a 250% increase (1,379.50 tCO2e) by 2050. The main driver of growth are citizens returning to Ehthlateese, with a projected permanent population of 70 people by 2050.

Future planned development to accommodate growth will also play a critical factor in rising emissions. Potential near-term infrastructure developments include a longhouse, maintenance building, townhouses, residential homes, water and septic expansion, commercial ventures, daycare, smokehouse, composting facility, and community store.

### Treaty Settlement Lands

338.00 $tCO_2e$ — 1306.41 $tCO_2e$

Ehthlateese

328.00 tCO2e — 1293.00 $tCO_2e$

3.25 tCO2e — 4.23 $tCO_2e$

Thunderbird House

2.90 tCO2e — 3.81 $tCO_2e$

1.00 tCO2e — 1.34 $tCO_2e$

Uchucklesaht Cabin

3.00 tCO2e — 3.60 $tCO_2e$

### Port Alberni

56.58 $tCO_2e$ — 73.52 $tCO_2e$

Thunderbird Building

3.91 $tCO_2e$ — 5.07 $tCO_2e$

21.61 tCO2e — 28.08 $tCO_2e$

Nucii Campus

1.89 tCO2e — 2.45$tCO_2e$

29.17 tCO2e — 37.92 $tCO_2e$

Electricity  Wood  Natural Gas

# Transportation

## 2023 Baseline

71.92 $tCO_2e$

This sector accounts for 71.92 tCO2e of UTG emissions, and includes all tailpipe emissions for UTG owned and operated marine and on-road vehicle fleet.

## 2050 Forecast

94.31 $tCO_2e$

If emissions continue to grow unabated, the business-as-usual scenario will see a 41.6% (94.31 tCO2e) increase by 2050. The main driver of growth is expanding fleet operations to meet increasing UTG responsibilities and demands.

### UTG On-Road Fleet

30.11 $tCO_2e$ — 39.31 $tCO_2e$

General Operations (Diesel)

13.58 tCO2e — 17.95 $tCO_2e$

Garbage Collection (Diesel)

11.21 tCO2e — 14.54 $tCO_2e$

Gasoline Vehicles

5.32 tCO2e — 6.82 $tCO_2e$

### UTG Marine Fleet

41.8 $tCO_2e$ — 55.00 $tCO_2e$

Water Taxi

16.72 tCO2e — 22.00 $tCO_2e$

Field Operations

25.08 tCO2e — 33.00 $tCO_2e$



# Industry

## 2023 Baseline

35.45 $tCO_2e$

This sector accounts for 35.45 tCO2e of UTG emissions, and includes all production and transportation emissions related to the UTG-owned Thunderbird Spirit Water commercial venture.

## 2050 Forecast

46.16 $tCO_2e$ — 364.08 $tCO_2e$

If emissions continue to grow unabated, the business-as-usual scenario will see a 29% to 804% increase by 2050. The range depicts two scenarios for growth, the first (1) assumes current operations are steadily increasing emissions at 5% every 5 years, while the second (2) assumes a major scaling of operations to deliver as much as 20,000 liters of water per day beginning in 2030.

### Water Bottle Plant

35.45 $tCO_2e$ — 46.16 $tCO_2e$ — 364.08 $tCO_2e$

Electricity

1.14 tCO2e — 1.48 $tCO_2e$ — 2.87 $tCO_2e$

Natural gas

31.57 tCO2e — 41.10 $tCO_2e$

Water Bottle Transport

0.42 tCO2e — 0.55 $tCO_2e$ — 316.78 $tCO_2e$

Water Bottle Pumping

2.32 tCO2e — 3.03 $tCO_2e$

## Other Industry

This sector is intended to include all commercial operations that are entirely owned by UTG and occur at least in part on TSL. UTG's commercial forestry operations on TSL should be within this scope, however they are not included due to a lack of available data. Future updates to this plan should include forestry and other commercial activities undertaken by UTG.

### What are your energy priorities?

**67%** More efficient and sustainable homes and community buildings

**63%** Energy self-sufficiency/sovereignty

**58%** Jobs and training in the clean energy economy

**47%** Clean energy in Ehthlateese

**42%** Lowering my energy bills

**37%** Power Outages and reliability

### Would you like Uchucklesaht to develop clean energy projects?

**83%** Yes, I would like Uchucklesaht to develop clean energy projects

**17%** Neutral / No Opinion

**0%** No

### Do you support the following forms of clean energy?

**87%** Solar panels on rooftops of UTG buildings (yes)

**85%** Solar panels on rooftops of private homes (yes)

**58%** Run-of-river hydropower near Ehthlateese (yes)

**55%** Large solar farm on hillside behind community (yes)

**57%** Large batteries to store clean energy (yes)

**52%** Small wind turbines in or near the village or other UTG infrastructure (yes)

**47%** Geothermal power in the territory (yes)

**47%** Large wind turbines in the territory (yes)

**45%** Wave or tidal power (yes)

# Waste

## 2023 Baseline

18 $tCO_2e$

This sector accounts for 18 $tCO_2e$ of UTG emissions, which assumes comparable per capita household waste bound for the landfill between the ACRD and the population of Uchucklesaht. These emissions arise from the decomposition of waste, which results in the release of methane, a powerful greenhouse gas. Future tracking should incorporate a waste audit to gather specific local waste generation data in Ehthlateese.

## 2050 Forecast

23 $tCO_2e$

If emissions continue to grow unabated, the business-as-usual scenario will see a 27.8% (23 tCO2e) increase by 2050. The main driver of growth is the projected population growth in the village, and the corresponding increase in waste produced by each household.

# Land

## 2023 Baseline

Our baseline estimate of the carbon sequestration potential of UTG's Treaty Settlement Lands (3,067 Ha) is between 13,323 - 21,688 $tCO_2e$/year. While this is a significant range, each hectare of land has a sequestration potential based on it's unique features and the ecosystems it supports. With the sheer number of micro-climates spread across the TSL, this fluctuation means obtaining an accurate potential is currently a complex calculation outside of the current scope of this plan. However, the estimate provided paints a general picture of a land base with significant potential to store carbon. Mindful future development practices and forestry operations should therefore aim to maintain the positive climate impact that Uchucklesaht Lands currently provide.

## Climate action co-benefits

- Improved health quality
- Reduced noise, costs, and maintenance
- Trade training opportunities



Recommended actions will reduce

**▼ 84%**

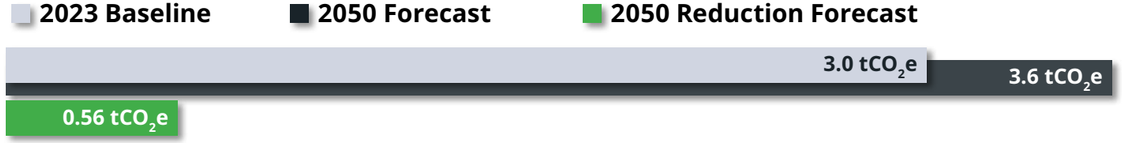
of BAU forecasted $CO_2e$ emissions

BUILT ENVIRONMENT

# Uchucklesaht Cabin

The Uchucklesaht Cabin is an off-grid UTG-owned property on Uchucklesit Inlet. Electricity is powered primarily by solar photovoltaic panels, with a gas generator for emergency backup. Propane is used for hot water and appliances.

## Emission Pathways




## Recommended Actions for Reducing Emissions

| | Action | Item (Detail) | Cost | Annual Reduction | Timing | Pay-back Period |
|---|---|---|---|---|---|---|
| 1 | Building Envelope | Attic insulation | $1300 (plus labour) | 0.153 tCO2e | 2026 | TBD |
| | | Air-sealing throughout | | | | |
| 2 | Energy Efficiency | LED lighting | $80 (plus labour) | 0.139 tCO2e | 2026 | TBD |
| | | Reduce phantom loads | | | | |
| 3 | Heating System | Install electric baseboard heater, utilizing hydro power | $150 | 2.75 tCO2e | 2030 | TBD |
| 4 | Energy System | Install micro-hydro system | Labour (components purchased) | | | |

If enacted, total emissions for the 2050 BAU Forecast will be reduced by **3.04 tCO2e** or **0.2%**.

## Climate action co-benefits

- Improved health quality
- Reduced noise, costs, and maintenance
- Trade training  opportunities



Recommended actions will reduce

**▼ 42%**

of BAU forecasted $CO_2e$ emissions

BUILT ENVIRONMENT

# Thunderbird House

The Thunderbird House is an off-grid UTG-owned property on Hucuktlis Lake. Electricity is provided by a diesel generator (16 kW), and woodstoves are used for supplemental heat.

## Emission Pathways


## Recommended Actions for Reducing Emissions

| | Action | Item (Detail) | Cost | Annual Reduction | Timing | Payback Period |
|---|---|---|---|---|---|---|
| 5 | Building Envelope | Additional attic insulation | $2230 | 0.64 tCO2e | 2025 | TBD |
| | | Air-sealing doors and outlets | | | | |
| 6 | Energy Efficiency | LED lighting | $300 (plus labour) | 0.16tCO2e | 2025 | TBD |
| | | Reduce phantom loads | | | | |
| 7 | Energy System | Downsize diesel generator (4kW) | $39,500 | 1.41 tCO2e | 2030 | 24 yrs |
| | | Install solar photovoltaics microgrid (18 kW PV, 10 kWh storage) | | | | |

If enacted, total emissions for the 2050 BAU Forecast will be reduced by **2.21 tCO2e** or **0.15%**.

## Climate action co-benefits

- Increased energy sovereignty
- Improved material lifespan
- Reduced costs and maintenance



Recommended actions will reduce

**83%**

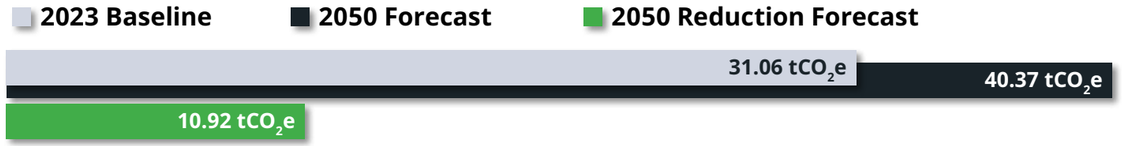
of BAU forecasted $CO_2e$ emissions

BUILT ENVIRONMENT

# Nucii Campus

The Nucii Campus is a grid connected UTG-owned property in Port Alberni. The campus is composed of five buildings: administration (A), leased space (L), carving room (C), food fish freezer (F), and gymnasium (G). Electricity is powered by the provincial transmission system, and non-electric heating of the administration and gymnasium buildings are supplied by natural gas.

## Emission Pathways




## Recommended Actions for Reducing Emissions

| | Action | Item (Detail) | Cost | Annual Reduction | Timing | Payback Period |
|---|---|---|---|---|---|---|
| 8 | Building Envelope | Window replacements (A,C,F,G) | $16,125 | 2.92 tCO2e | 2030 | 21 yrs |
| | | Air-sealing doors (A,C,F,G) | $1,500 | 1.46 tCO2e | 2025 | 4 yrs |
| 9 | Energy Efficiency | Install Energy Recovery Ventilator (A) | $12,500 | 5.84 tCO2e | 2030 | 8 yrs |
| 10 | Heating System | Upgrade to cold climate heat pumps (A, G) | $195,650 | 20.8 tCO2e | 2040 | 7 yrs |
| 11 | Hot Water | Insulate tank (A) | Labour | 0.02 tCO2e | 2025 | 2 yrs |
| | | Replace at end of life with heat pump water heater (A, L) | $22,100 | 0.015 tCO2e | 2040 | 13 yrs |
| 12 | Energy System | Install 210 kW rooftop solar photovoltaics | $544,876 | 2.39 tCO2e | 2040 | 19 yrs |

If enacted, total emissions for the 2050 BAU Forecast will be reduced by **33.45 tCO2e** or **2.2%**.


## Climate action co-benefits

Increased self-sufficiency
Reduced operating costs



Recommended actions will reduce

**▼13%**

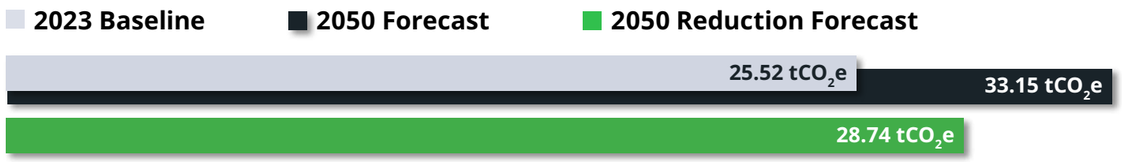
of BAU forecasted $CO_2e$ emissions

BUILT ENVIRONMENT

# Thunderbird Building

The Thunderbird Building is a grid connected UTG-owned property in Port Alberni. The building is a highly efficient multi-use facility housing offices, apartments, and short stay accommodation. While the apartments are an economic venture, emissions will be captured in this sector. Electricity is powered by the provincial transmission system, and a component of the building's heating (hydronic heating loop to feed the water source heat pumps) is serviced by natural gas.

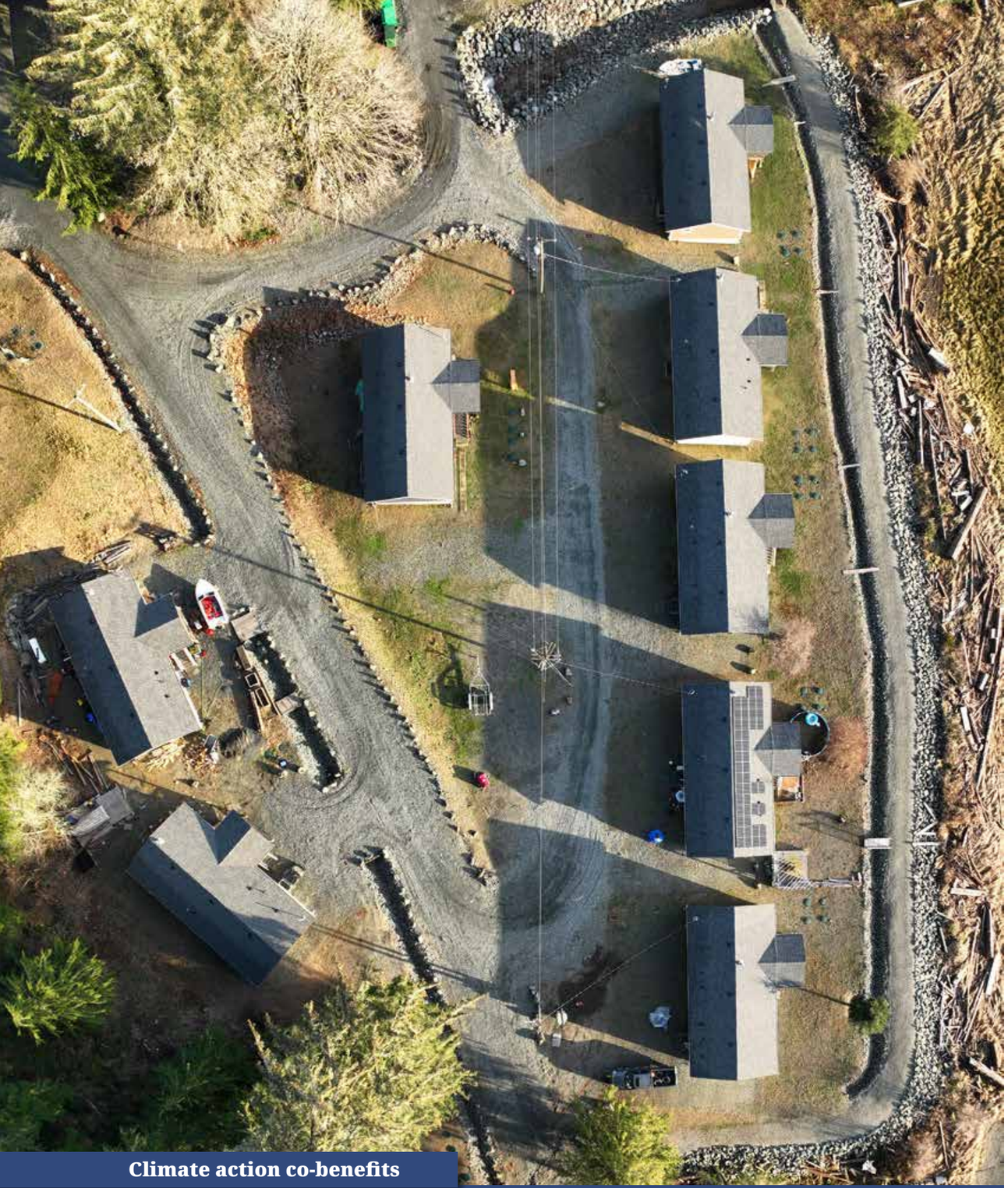
## Emission Pathways




## Recommended Actions for Reducing Emissions

| | Action | Item (Detail) | Cost | Annual Reduction | Timing | Payback Period |
|---|---|---|---|---|---|---|
| 13 | Building Envelope | Install LED lights | $102,625 | 0.48 $tCO_2e$ | 2025 | 21 yrs |
| | | Set exterior lighting to motion sensor | | | | 4 yrs |
| | | Install window coverings | | | | 12 yrs |
| 14 | Heating System | Retrofit cooling towers to heat pump system | TBD | 2.76 $tCO_2e$ | 2040 | TBD |
| 15 | Hot Water | Replace hot water tanks with heat pump water heater at end of life | TBD | > 50% | 2040 | 2 yrs |
| 16 | Energy System | Install 96 kW rooftop solar photovoltaics | $225,000 | 1.17 $tCO_2e$ | 2040 | 21 yrs |

If enacted, total emissions for the 2050 BAU Forecast will be reduced by **4.41 tCO2e** or **0.29%**.



## Climate action co-benefits

- Increased self-sufficiency
- Local renewable energy jobs
- 25+ year revenue source
- Reduced noise



Recommended actions will reduce

**▼89%**

of BAU forecasted $CO_2e$ emissions

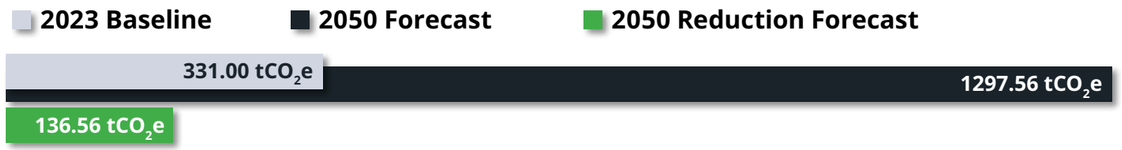
BUILT ENVIRONMENT

# Ehthlateese Village

Ehthlateese is currently the only permanent settlement for citizens on the Treaty Settlement Lands of the Uchucklesaht Tribe. Following an upsetting housing stock assessment, all housing in Ehthlateese was condemned in 2018. Through Treaty and fiscal support from Canada a concerted revitalization process has since taken place. As of 2025, the Village contains 14 single-family homes (Step 3), a 15-plex, nurses' station, našuk maḥt̓ii, community water and septic infrastructure, streetlights, and EV charging station.

Electricity of provided by diesel generators (192 kW peak), supplemented by solar photovoltaic (PV) systems on the roof of the našuk maḥt̓ii and one home. Woodstoves provide supplemental heat in each single family residence.

## Emission Pathways




## Recommended Actions for Reducing Emissions

| | Action | Item (Detail) | Cost | Annual Reduction | Timing | Payback Period |
|---|---|---|---|---|---|---|
| 17 | Building Envelope | Step 4 or above of the BC Energy Step Code (New Builds) | TBD | 147 tCO2e | 2040 | 21 yrs |
| 18 | Energy System | Develop a 750 kW ground-mounted solar and battery system | $7,000,000 | 707 tCO2e (end capacity) | 2027 (start) | 0 yrs (grant-funded & revenue-generating) |
| | | Develop a 300 kW micro-hydro system | $20,000,000 | 307 tCO2e (end capacity) | 2030 (start) | TBD |

If enacted, total emissions for the 2050 BAU Forecast will be reduced by **1,161 tCO2e** or **75%**.


**Climate action co-benefits**

- Reduce noise
- Lower maintenance costs
- Backup battery source



Recommended actions will reduce

**▼77%**

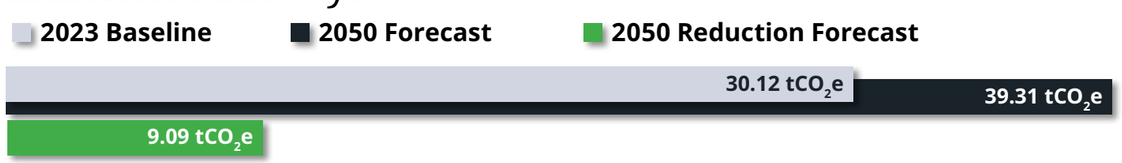
of BAU forecasted $CO_2e$ emissions

TRANSPORTATION

# On-Road UTG Fleet

The on-road fleet consists of nine trucks and two utility vehicles for general operations and garbage collection. These are split between operations in Port Alberni and the TSL. The fleet is used frequently for travel between Port Alberni and Ehthlateese, a distance of 60 km by steep resource roads.

## Emission Pathways




## Recommended Actions for Reducing Emissions

| | Action | Item (Detail) | Cost | Annual Reduction | Timing | Payback Period |
|---|---|---|---|---|---|---|
| 19 | Hybrid Technology | Replace end of life trucks with hybrid models | TBD | 4 tCO2e | 2030 | TBD |
| 20 | Electrification | Replace fossil fuel vehicles with electric models | TBD | 26.22 tCO2e | 2035 | TBD |

If enacted, total emissions for the 2050 BAU Forecast will be reduced by **30.22 tCO2e** or **2%**.


## Climate action co-benefits

- Decreased marine noise pollution
- Backup battery source in emergency situations
- Improved air quality



Recommended actions will reduce

**93%**

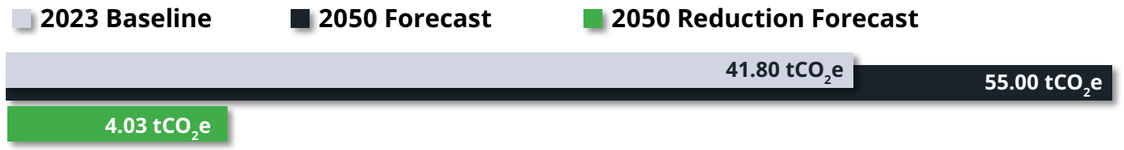
of BAU forecasted $CO_2e$ emissions

TRANSPORTATION

# Marine UTG Fleet

The marine fleet includes six boats for field operations that are used approximately daily and one 12 passenger semi-weekly water taxi. The UTG marine fleet is often used to transport people and materials between Port Alberni and Ehthlateese, a distance of approximately 23 nautical miles (42 kilometers).

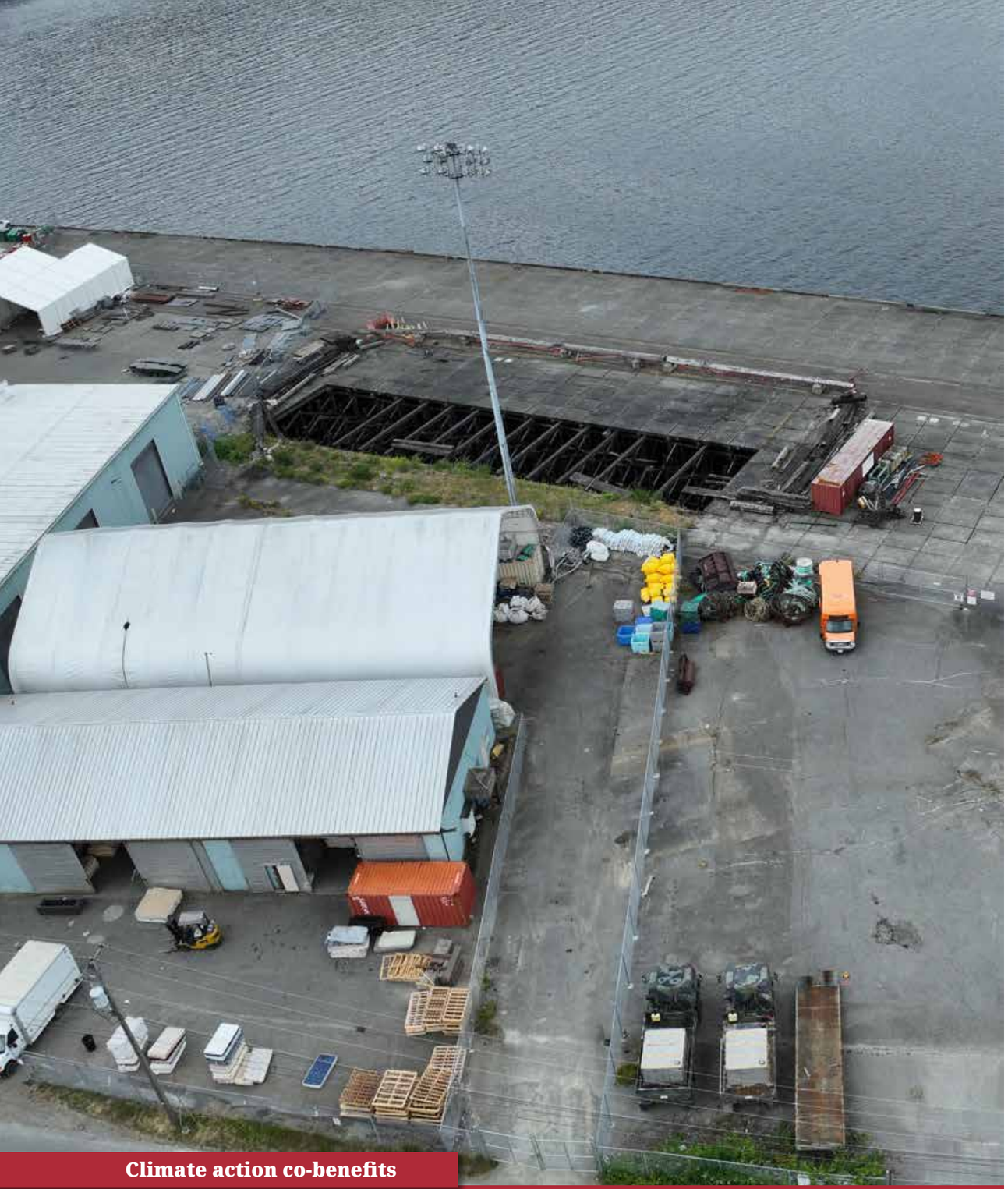
## Emission Pathways




## Recommended Actions for Reducing Emissions

| | Action | Item (Detail) | Cost | Annual Reduction | Timing | Payback Period |
|---|---|---|---|---|---|---|
| 21 | Electrification | Adopt electric motors for marine vessels | TBD | 47.5 tCO2e, rising to 52.97 by 2050 | 2040 | TBD |

If enacted, total emissions for the 2050 BAU Forecast will be reduced by **52.97 tCO2e** or **3.4%**.



## Climate action co-benefits

**Improved material lifespan and affordability**
**Reduced costs and maintenance**
**Sustainable job opportunities**



INDUSTRY

# Water Bottling Plant

Recommended actions will reduce

**▼54%**

of BAU forecasted $CO_2e$ emissions

## Scenario 1

The Water Bottling Plant is a grid connected UTG-owned property in Port Alberni, with water pumping operations within the TSL. The plant building is the operational hub, currently producing small batches for local markets.

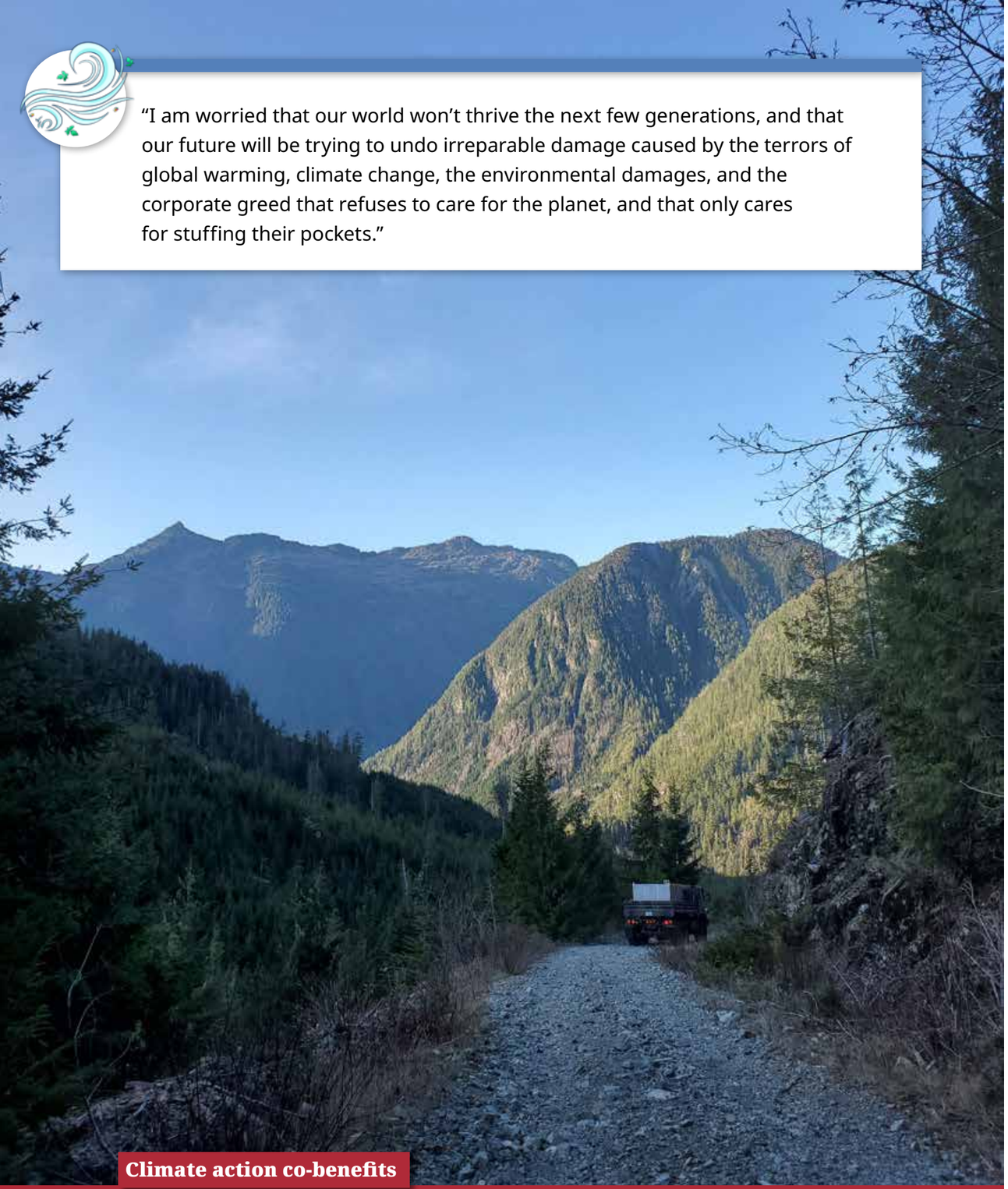
Under scenario 1, no major scaling of the operation will take place prior to 2050.

## Emission Pathways


## Recommended Actions for Reducing Emissions

| | Action | Item (Detail) | Cost | Annual Reduction | Timing | Payback Period |
|---|---|---|---|---|---|---|
| 22 | Building Envelope (22) | LED upgrades | TBD | 0.23 tCO2e | 2025 | TBD |
| | | Air-sealing throughout<br>Additional insulation as needed | | 8.22 tCO2e | 2035 | |
| 23 | Energy System (23) | Siphon intake | $500,000 | 2.49 tCO2e | 2025 | 250 yrs reduce fuel intake by $2000/yr |

If enacted, total emissions for the 2050 BAU Forecast will be reduced by **10.94 tCO2e** or **0.71%**.



> "I am worried that our world won't thrive the next few generations, and that our future will be trying to undo irreparable damage caused by the terrors of global warming, climate change, the environmental damages, and the corporate greed that refuses to care for the planet, and that only cares for stuffing their pockets."

**Climate action co-benefits**

- Sustainable jobs
- Improved material lifespan
- Reduced costs & maintenance



INDUSTRY

# Water Bottling Plant

Recommended actions will reduce

**▼27%**

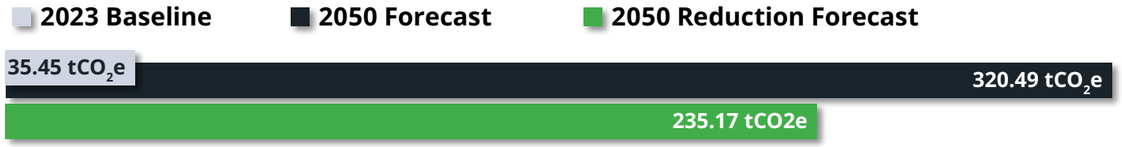
of BAU forecasted $CO_2e$ emissions

## Scenario 2

Under scenario 2, the operations of the plant will scale up significantly, producing as much as 20,000 liters of bottled water per day for expanded markets. This fuels significant growth in emissions, due largely to transportation of water from the source to the water bottling plant, which requires daily trucking on steep resource roads.

This scenario is not used in the 'Emissions Forecast with Reduction Pathways' section of this plan.

## Emission Pathways




## Recommended Actions for Reducing Emissions

| Action | Item (Detail) | Cost | Annual Reduction | Timing | Payback Period |
|---|---|---|---|---|---|
| Building Envelope | LED upgrades | TBD | 0.23 tCO2e | 2025 | TBD |
| | Air-sealing throughout | | 8.22 tCO2e | 2035 | |
| Energy System | Implement battery and electric water pumping solution instead of gas/diesel generator | TBD | 2.38 tCO2e | 2040 | TBD |
| Transport | Transition diesel water trucks to compressed natural gas | TBD | 66.18 tCO2e | 2040 | Unknown |
| | Replace gas delivery vehicles to hybrid or electric | TBD | 8.31 tCO2e | 2035 | Unknown |

If enacted, total emissions for the 2050 BAU Forecast will be reduced by **85.32 tCO2e** or **4.7%**.

## Climate action co-benefits

Reduced environmental impacts

Engaging and enabling environmentally conscious behaviour in the community



Recommended actions will reduce

**▼20%**

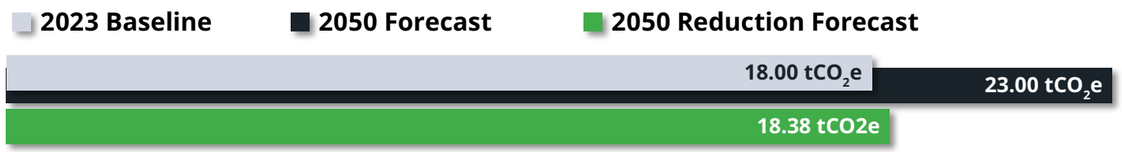
of BAU forecasted $CO_2e$ emissions

WASTE

# Ehthlateese Waste

Waste handling in Ehthlateese is operated by UTG's village maintenance team. Twice a week, a truck fitted for garbage collection collects household waste and transports it to the landfill in Port Alberni. The total round-trip trucking distance is approximately 120 km by steep resource roads.

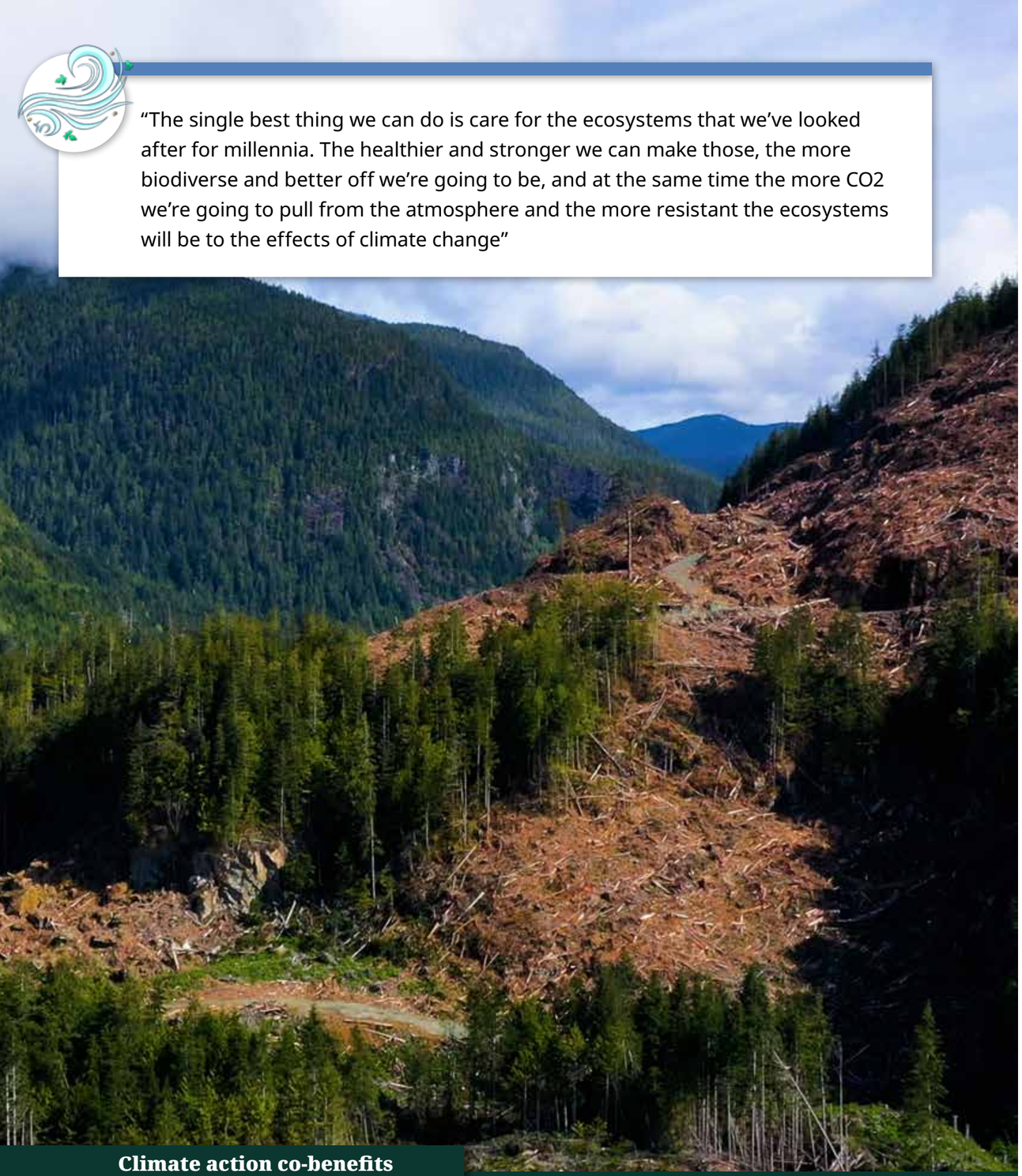
## Emission Pathways




## Recommended Actions for Reducing Emissions

| | Action | Item (Detail) | Cost | Annual Reduction | Timing | Payback Period |
|---|---|---|---|---|---|---|
| 24 | Landfill Diversion | Reduce waste from UTG citizens and operations by 20% | Minimal | 4.62 tCO2e | 2030 | >1 yr |
| 25 | Ehthlateese Waste Management Upgrades | Offer composting, waste separation program in Ehthlateese | TBD | TBD | 2030 | TBD) |
| | | Build waste handling wharf in Ehthlateese to enable regular garbage collection by Lady Rose Marine Services | TBD (Grant funded infrastructure. Ongoing waste collection costs) | TBD | 2030 | TBD |

If enacted, total emissions for the 2050 BAU Forecast will be reduced by **4.62 tCO2e** or **0.3%**.



"The single best thing we can do is care for the ecosystems that we've looked after for millennia. The healthier and stronger we can make those, the more biodiversity and better off we're going to be, and at the same time the more CO2 we're going to pull from the atmosphere and the more resistant the ecosystems will be to the effects of climate change"

**Climate action co-benefits**

- Improved ecosystem health
- Reconnection with land
- Protection of key species
- Erosion, landslide and flood resilience




LAND USE

# Treaty Settlement Lands

This sector comprises all land use across UTG's Treaty Settlement Lands (3,067 Ha). It accounts for the vast carbon sinks including wetlands, old growth forests, lakes and other environments within the TSL. Land use also comprises emissions sources from forestry operations and land development across the TSL.

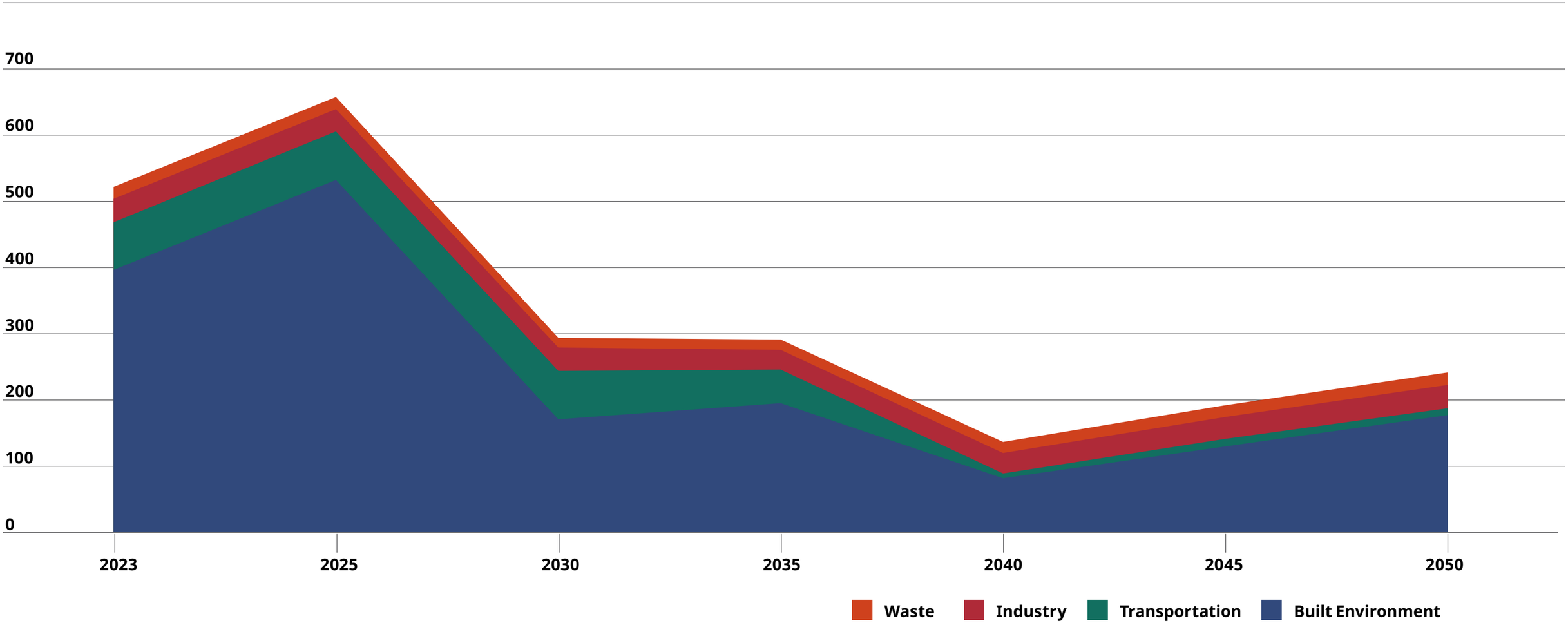
The critical finding of this sector is that the scale of carbon sequestration currently provided by the TSL landscape is likely 10x the annual emissions of all other UTG emissions. Given this reality, the single most important action UTG can take to meet our emission reduction targets is managing the landscape in a manner that ensures strong forest health.

## Sequestration Potential

**Low Estimate** **High Estimate**


## Recommended Actions for Reducing Emissions

| | Action | Action | Cost | Annual Reduction | Timing | Payback Period |
|---|---|---|---|---|---|---|
| 26 | Map TSL forest cover and set carbon sequestration targets | Develop strategies for enhancing sequestration through long-term management of forest health | Estimated $50,000 Plus staff time | 13,323 to 21,688 tCO2e | 2030 | >1 yr |




# Emissions Forecast with Reduction Pathways

## UTG Emission Reduction Targets from 2023 baseline (520.1 $tCO_2e$):

40% reduction in net emissions by 2030 = 312 $tCO_2e$

Net zero emissions by 2050 = Enhanced GHG sequestration by TSL forests offsets all emissions from UTG operations

**If all recommendations are implemented:**

By 2030, UTG can reduce emissions by 750.31 tCO2e to 292.43 $tCO_2e$

By 2050, UTG can reduce emissions by 1,302.86 tCO2e to 240.22 $tCO_2e$

"I am concerned about our lands, our water and our people. I believe our land heals us. We lost our connection to our land, we need to find ways to reconnect to it in modern ways."

**What climate impacts are you most concerned with?**

**75%** I am equally concerned with all of these

**26%** Impacts on plants and animals including marine and terrestrial ecosystems

**11%** Impacts on infrastructure including UTG buildings, homes, roads and utilities

**2%** I am not concerned with climate change impacts

**0%** Impacts on community health, wellbeing and Uchucklesaht way of life

# 3

# Uu-a-thluk (taking care of)

## Building Our Resilience

Uchucklesaht's traditional knowledge tells us that climate change will touch all of us because everything is connected. We have already begun to witness the worrying effects of climate change on our lands and amongst our people. As these changes accelerate over the coming decades, the impacts to our ha' houltheee, our waters, our air, and on all creatures will be profound. In some cases they may be devastating.

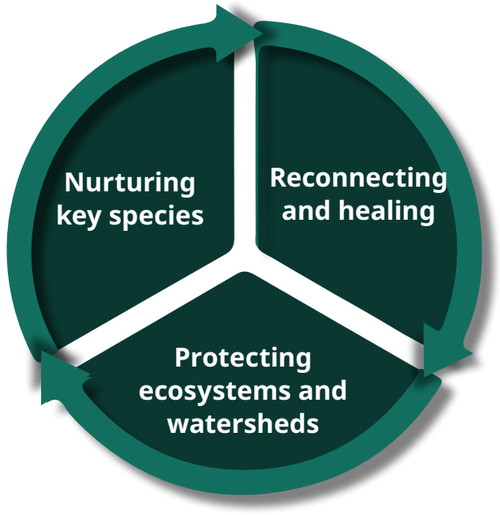
Against this troubling backdrop our inherent role as caretakers of the lands and waters is more vital than ever. This responsibility extends not only to the protection of our ha' houlthee, but to all Uchucklesaht citizens, no matter where they may reside. Climate change confronts our citizens with a variety of socio-economic threats, including to their health, wellbeing, and spiritual lives.

As a first step towards building Uchucklesaht's resilience to climate change we must develop a stronger understanding of potential impacts, of the concerns and objectives of our people as they relate to climate issues and of the tools and approaches to climate change adaptation that can be deployed over the short, medium and long-term.

# Our Approach

Key climate change-related concerns expressed by Uchucklesaht citizens included food security, wildfires, extreme weather including heatwaves and flooding, marine and freshwater ecosystem impacts, fisheries, forestry practices, and pollution.

Citizens were asked about their goals for the future as it relates to climate change, three themes appeared. (Pictured right)




## Scope

Climate change adaptation planning was supported by a vulnerability assessment that broadly assessed likely climate change hazards and changes to the natural environment of UTG Treaty lands and waters, as well as the human (socioeconomic) systems that Uchucklesaht citizens rely on. The assessment paid particular attention to key species that are vital to Uchucklesaht identity, including Salmon, Cedar and understory plants including but not limited to fern, huckle berry, thimble berry, salmon berry, and salal.

Future climate change vulnerability assessment work should dive deeper into how key species and ecosystems are changing through detailed, long-term monitoring and analysis that combines western science with traditional knowledge.



# Expected Climate Changes

## Precipitation

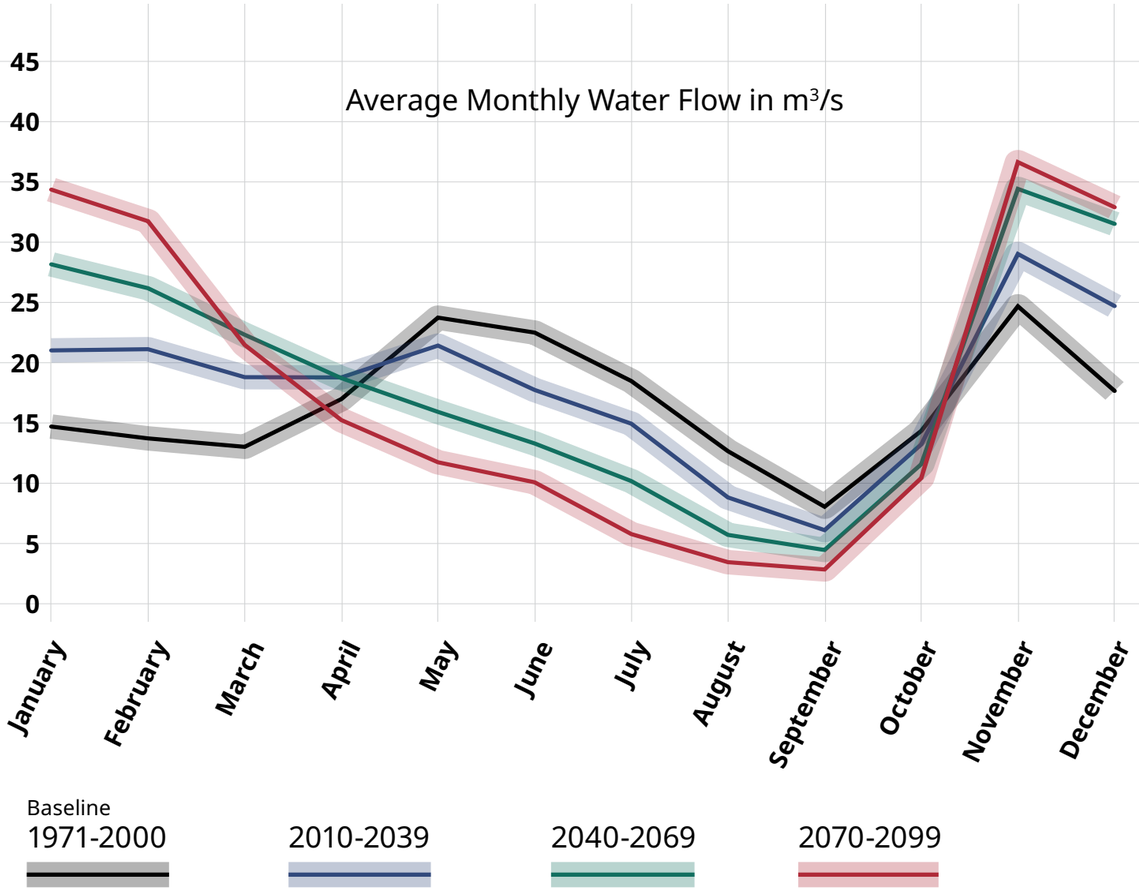
| Changes | Environment |
|---|---|
| Wetter winters | Increasing storminess and flash flooding from rain on snow events |
| | Higher slope erosion |
| Drier summers | Decrease in snowpack |
| | Increase in drought conditions |
| More precipitation as rain | Decrease in groundwater recharge |

## Air Temperature

| Changes | Environment |
|---|---|
| Increasing wintertime temperatures | Soil moisture stress and higher evapotranspiration |
| Increasing summertime lows | Increasing wildfire risk |
| | Increasing heatwaves |

## Water Temperature

| Changes | Environment |
|---|---|
| Freshwater temperature increases | Increasing chance for stress from pathogens |
| Marine water temperature increases | Changes in marine food webs |
| | Increases chance of harmful algae blooms |

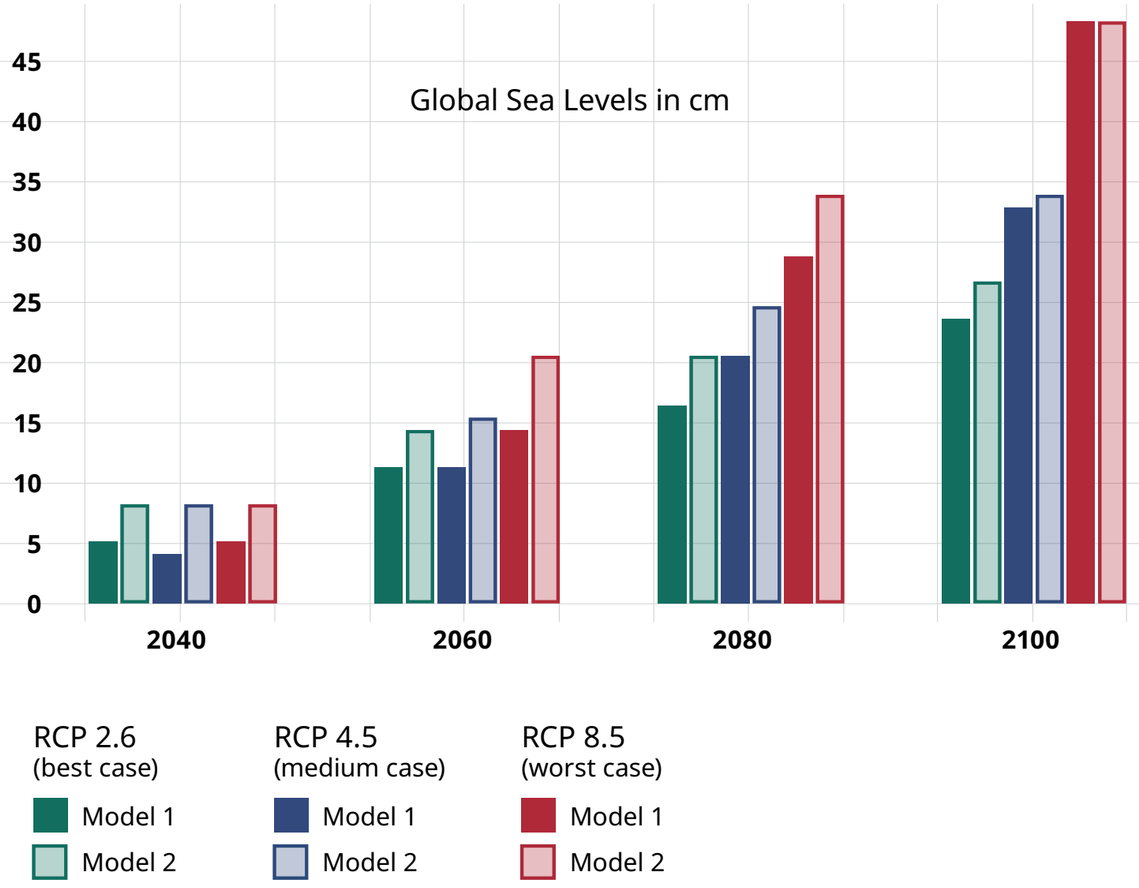



## Streamflow

The changing pattern of precipitation, along with increasing temperatures, will lead to higher winter and early spring stream flows as well as lower summer and fall flows, as detailed in the Figure above. Essentially, streams are predicted to tend towards a single higher annual peak flow in the winter rather than the historical multi-peak flow regime driven by autumn rains and spring melt.

This also tends toward less groundwater recharge; as soil reaches water retention capacity, any additional water flows over land as runoff. With higher temperatures, precipitation also spends less time in the soil before it evaporates or transpires. The gradual lowering of flows over the summer months is due to a combination of reduced snowpack recharge and lower precipitation during the summer. Local weather station data have already shown a steady decrease in stream flow over the years in the spring and summer months (May–September).






## Sea Level Rise

Since 1800, sea levels have risen about 30 cm per century. Trends in global sea levels are greatly modified by regional processes, including the rise of land due to glacial uplift and tectonic movement.

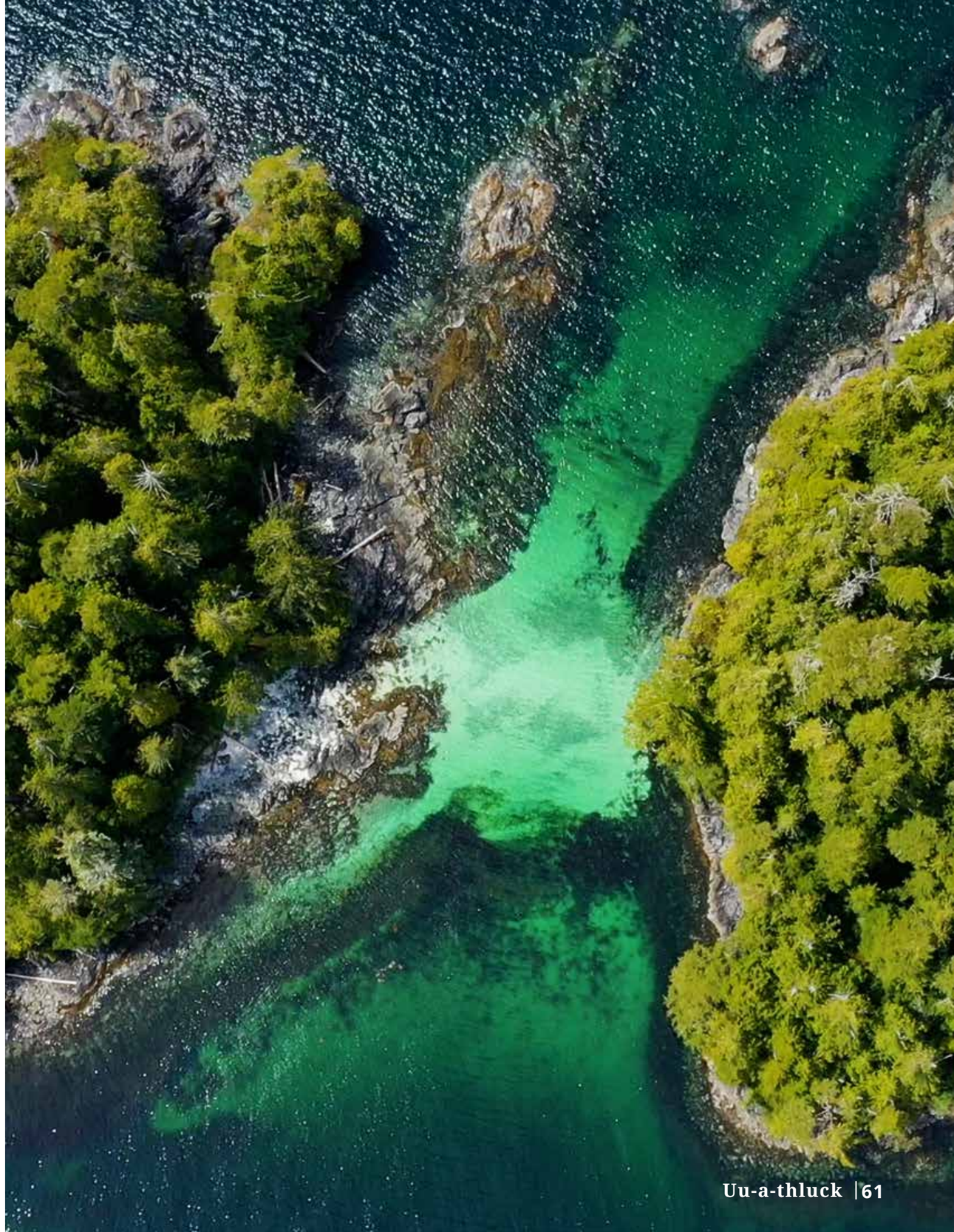
Local sea level rise projections for two models are shown in the figure above. Note that previous data from Model 2 also provides projections for a less likely scenario of up to 910 mm by 2100 and 3,100 mm of sea level rise by 2200, which is far more severe. Such an increase would likely be catastrophic for Ehthlateese.

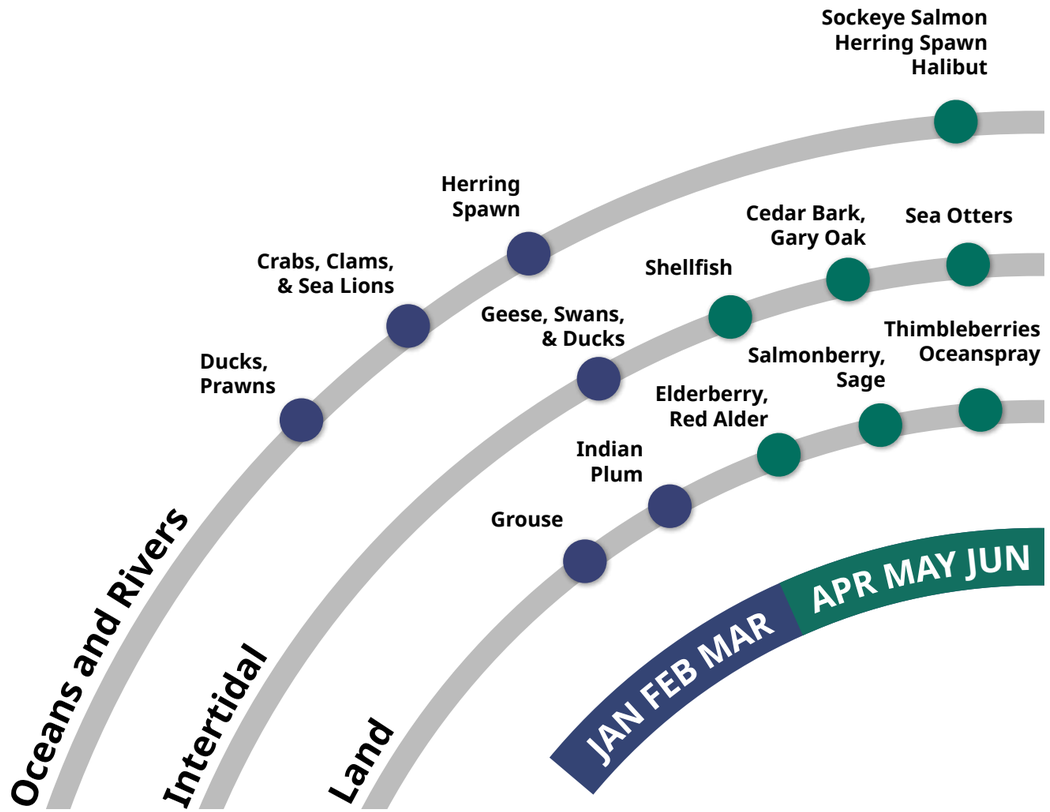
Whether saline water will intrude into Hucuktlis Lake warrants further study and site-specific surveys on flow rates and depths of Hucuktlis River. If Hucuktlis Lake were to become more saline, ecosystem responses might translate into an increase in shellfish viability and reduction in salmon spawning habitat.

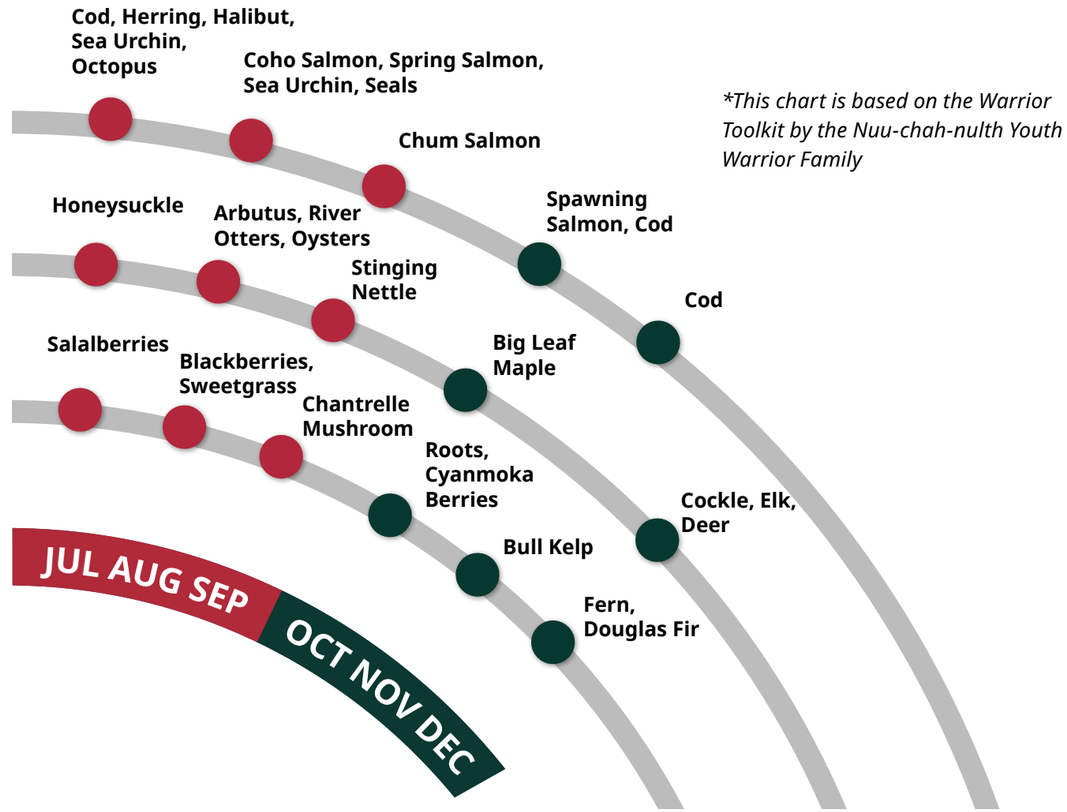
# Summary of Five Critical Impacts

1. It is certain that increases in air and water temperature will stress current habitats, and higher variability in seasonal rainfall and increased drought will pressure salmon and tree species.
2. By 2040, higher-intensity rain events will lead to more frequent landslides that impact mountain roads. The combination of higher-intensity rainfall and increased sedimentation will have impacts on salmon habitat.
3. By 2070, increasing temperatures will likely result in Cedar dieback and die off events and may affect certain understory plants, including thimble berry, salmonberry, and salal. Younger trees and those occurring in drier areas will be more vulnerable.
4. Increasing summertime temperatures will negatively impact community health, especially for sensitive populations and outdoor workers.
5. The highest risk climate hazards to infrastructure and development on Uchucklesaht land include coastal flooding, landslides, and wildfires.








**This chart is based on the Warrior Toolkit by the Nuu-chah-nulth Youth Warrior Family*

# Impacts to Our Traditional Food and Keystone Species

Climate change will alter the timing and availability of harvest species. As climate change accelerates, the seasonality of harvests will undergo long-term change due to new terrestrial and aquatic environmental conditions. The traditional harvest wheel presented above will shift according to those new conditions.

**What are the key species that you would like UTG to focus on in assessing climate change impacts on ecosystems?**

- **84%** Salmon
- **57%** Cedar
- **39%** Elk
- **35%** Clams/Shellfish
- **10%** Berries

# Ocean

"Salmon is our life. It's our life blood. Our people are known as the Salmon People. I grew up as a child hearing stories from my Elders and they talked about us being part of the cycle of the Salmon People. The whole process involves everything, the river, the lake, and how we treat it."

## Salmon

Salmon is a keystone species to Uchucklesaht at heightened risk from climate change. Climate change is expect to negatively impact salmon populations through the following mechanisms:

1. Erosion leading to the infilling of salmon spawning and rearing habitat
2. High freshwater temperatures reducing the viability of salmon incubation and increasing disease likelihood
3. Changes in streamflow impeding upstream salmon migration and reducing stable spawning and rearing habitat
4. Rising ocean temperatures affecting the availability of nutritional food sources

Generally, Pink and Chum salmon species are expected to adapt more readily to climate changes than Sockeye, Chinook and Coho salmon as they have lower exposure to warm river water temperatures (migrate shorter distances upstream earlier in the summer/fall and spend shorter periods rearing as juveniles in river water).

"Salmon is life, just like water is life. Without the salmon we can't feed the rest of the ecosystem, we can't feed us. We're all connected, Hish-uk ts'a-walk. We're going to start fading away if we don't start doing anything now about climate change."

"I think we should stop fishing salmon completely for the odd years …Alternate these fishing practices…On years we are not taking fish we could substitute other wildlife, dear, oysters, beef, pork, chickens.  We should invest in our people to learn how to farm Uchucklesaht lands"

## Other Fish

By 2060, fisheries models for the west coast of Vancouver Island predict an overall decline in fish stocks of 77 to 85 percent under moderate to severe climate scenarios. Herring and salmon are estimated to be the most adversely affected, followed by stocks of sharks, rays and skate. On the other hand, stocks of rockfish and shellfish are expected to increase, and pelagic invertebrates (i.e., squid) could double in density. Flatfish harvest is expected to remain consistent. Marine mammal biomass is expected to decline by up to 20 percent.

## Kelp, Algae and Shellfish

Marine warming events are expected to become more frequent and severe, leading to significant kelp losses (such as were experienced during the pacific marine heat wave of 2013-2016) and larger, more harmful algal blooms.

In the near term, many shellfish species are projected to increase in abundance in our region as a result of higher ocean temperatures. However, in the long term, they will be affected negatively by increased sea surface temperature, sea level rise, and ocean acidification. Additionally, increased occurrence of harmful algae blooms will increase the risk of paralytic and diarrhetic shellfish poisoning. It is unclear the degree to which any short-term increases in shellfish populations will be offset by these other negative pressures.

# Land

"Cedar as a plant is a powerful symbol of strength and revitalization. The deep respect for cedar continues to be culturally, spiritually and economically important to Indigenous Peoples."

## Cedar and Other Trees

Climate change affects trees in four key ways:

1. Reducing trees' ability to grow and reproduce
2. Creating miscues in timing responses, causing trees to harm themselves
3. Increasing the abundance of biological pathogens
4. Altering frequency and magnitude of forest fires

Our forests are the lungs of our territory and provide us with abundance. Climate change impacts on trees will affect many other species.

**TSL Viability by Year**

| Species | 2040 | 2070 | 2100 |
|---|---|---|---|
| Western Redcedar | Viable | Viable | Limited Viability |
| Western Hemlock | Viable | Viable | Viable |
| Douglas Fir | Viable | Viable | Viable |
| Amabilis Fir | Viable | Viable | No Viability |
| Yellow Cedar | Viable | Limited Viability | No Viability |
| Sitka Spruce | Viable | Limited Viability | No Viability |

Viable  Limited Viability  No Viability

"When taking many of our understory plants from their native habitats, it's really hard to encourage healthy and proper growth of those species. They all have unique niches in the ecosystems in the territory and require very specific temperature, humidity, and other details to optimally produce. Very hard to reproduce this in a community garden."

"We have medicinal foods, plants, and herbs that are effective for work on all systems of the body. We have some of the most powerful plant medicines in the world. Even our berries are incredibly powerful medicinal foods."

## Understory Plants

Climate change affects understory plants in four key ways:

1. Fluctuation in the seasonality/timing of flowering and pollination
2. Precipitation-related disturbances such as droughts, erosion and floods
3. Heat stress from increased temperatures (some short-term benefits may occur due to overstory disturbances)
4. Altering frequency and magnitude of forest fires

Understory vegetation has been used by Uchucklesaht since time immemorial for use as food, medicines, and in cultural practices. Our traditions rely on the seasonality and availability of these plants.

**TSL Viability by Year**

| Species | 2040 | 2070 | 2100 |
|---|---|---|---|
| Deer Fern | Viable | Viable | Viable |
| Sword Fern | Viable | Viable | Limited Viability |
| Huckle Berry | Viable | Viable | Viable |
| Thimble Berry | Viable | Limited Viability | No Viability |
| Salmon Berry | Viable | Limited Viability | No Viability |
| Salal Berry | Viable | Viable | Viable |

Viable  Limited Viability  No Viability

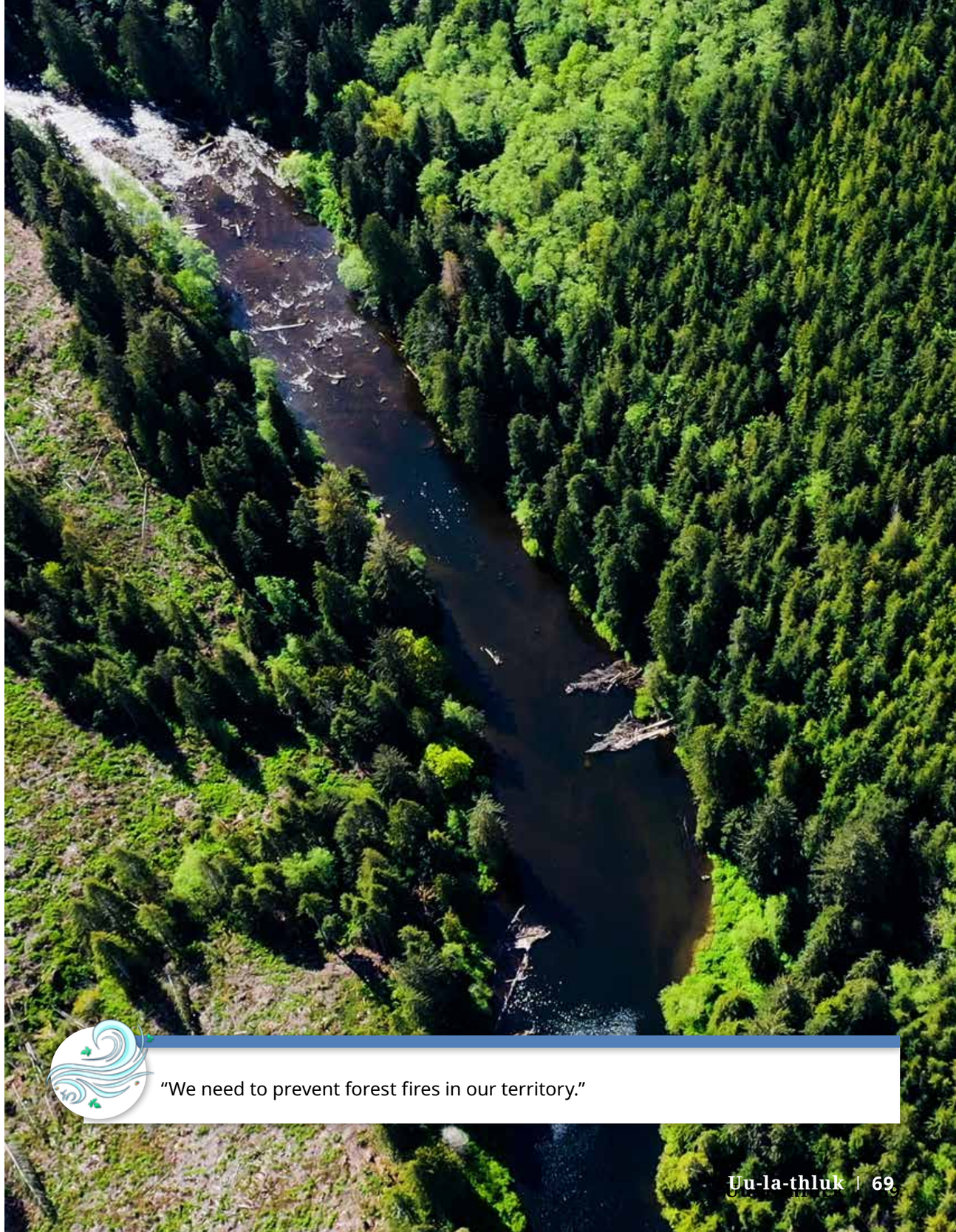
# Climate Hazards and Impacts to our Social and Economic Wellbeing

Climate change will increase the magnitude and likelihood of several natural hazards that pose threats to Uchucklesaht infrastructure, commercial enterprises, and the health of citizens.

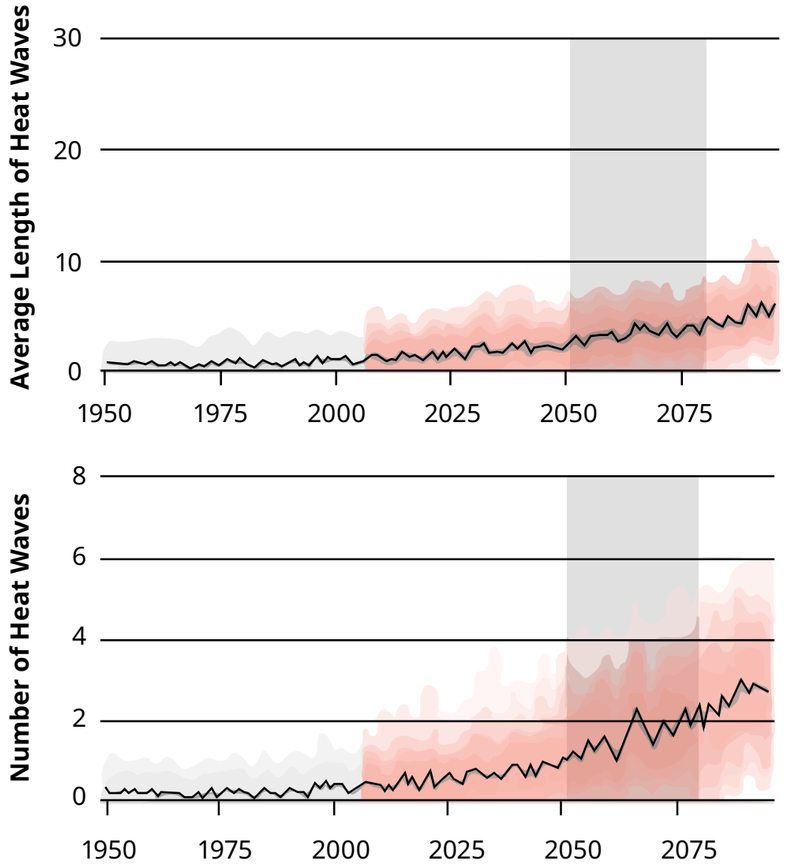
Health impacts include the ability to participate in traditional practices that contribute to mental, physical and spiritual health. For example, climate change will impact practices such as fishing, collecting medicines and cedar-stripping.

As hazards become more frequent and impactful, more resources will be demanded for planning and response. This will be compounded by growth in the UTG population as well as in UTG infrastructure and assets that are exposed and vulnerable to hazards. Hazards include heatwaves, wildfires, flash floods and landslides, and coastal storms, sea-level rise and tsunami.





"We need to prevent forest fires in our territory."




# Heatwaves

## Hazard Magnitude and Likelihood:

Research indicates that by 2070 we can expect the number of heatwaves occurring on UTG lands to increase from an average of less than one per year to more than two, and for the average length of heatwaves to increase from 2 days to 5 days. The number and duration of heat waves are projected to increase further inland, with higher values in Port Alberni.

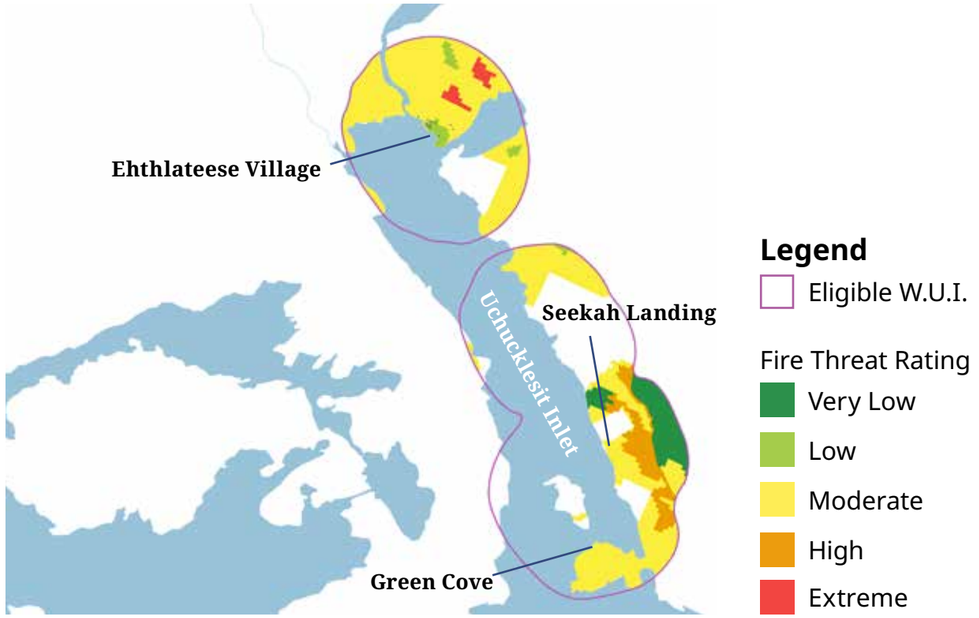
## Community Health, Social, Economic, and Infrastructure Impacts:

Increasing summertime temperatures will negatively impact community health, especially for elders and outdoor workers. Rising temperatures are linked to heat-related illnesses, such as heat exhaustion and dehydration.

## Historical Example:

The June 2021 heatwave resulted in hundreds of attributable deaths in BC, mass-mortalities of marine life, reduced crop and fruit yields, rivers flooding from rapid snow and glacier melt, and a substantial increase in wildfires, the latter contributing to catastrophic landslides following the event.






# Wildfires

## Hazard Magnitude and Likelihood:

Increase in the duration and severity of future droughts will result in an increased wildfire risk. As the local climate becomes wetter and warmer, there are also likely to be more lightning strikes, which increase wildfire incidence. The threat from wildfire in Uchucklesaht Territory is influenced by topography, weather, and fuel. Areas of steeper terrain, southerly or western-facing aspects, high densities of woody fuel and understory vegetation, and those that have been recently logged are most at-risk. The UTG Wildfire Resiliency Plan finds that the relative risk of wildfires on TSL is significantly less than in warmer and drier areas of the interior. However, effects of fire and smoke from other areas of Vancouver Island will have significant health and travel impacts on citizens.

## Community Health, Social, Economic, and Infrastructure Impacts:

Wildfires can disconnect citizens from the services that they depend on as well as threaten to destroy their homes and property. UTG-owned assets and critical health, transportation, water, and other infrastructure can also be affected or destroyed. Wildfire smoke poses health risks to citizens including exacerbation of respiratory issues and effects on mental health.

## Historical Impacts:

In 2023, the Cameron Lake wildfire provided a case study on the impacts of wildfire on UTG citizens. The fire resulted in the closure of Highway 4, reducing citizen access to critical health and other services, and disrupting UTG operations.

## Flash Floods and Landslides

### Hazard Magnitude and Likelihood:

As climate change warms the air and oceans, these systems will have more energy and moisture, meaning that winter storms will occur more frequently with higher intensity. Recent research indicates that, with climate change, atmospheric rivers may see a more poleward shift, occurring in Uchucklesaht Territory with greater frequency and intensity. Changing precipitation patterns including an overall rise in rain volume heighten flood and erosion risks. Increased soil saturation can lead to landslides, and greater surface runoff can lead to flash floods. Rain-on-snow events, where rain falls on an existing snowpack, can be swift and intense. Together, these factors create a higher likelihood of more severe, less predictable flood events.

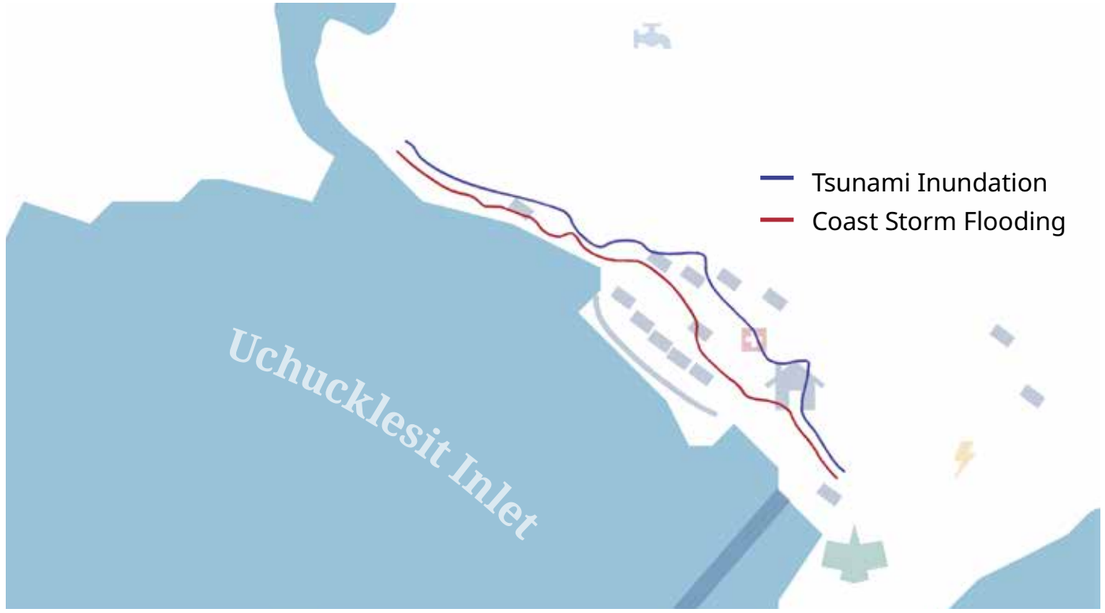
### Community Health, Social, Economic, and Infrastructure Impacts:

The increasing risk of landslides and road washouts from flooding will impede road access to Ehthlateese. Emergency road closures can lead to food and energy shortages, delays in emergency response, and a lack of access to medical care. Impacts to UTG's commercial enterprises are also possible: a decrease in groundwater recharge has potential impacts on Uchucklesaht's commercial water business that depends on year-round groundwater availability in the Hucuktlis Lake Watershed, and the combination of droughts and flash flooding may impact any future micro-hydro energy project.

### Historical Impacts:

In the late 1980s, the village of Ehthlateese experienced a severe flash flood that caused damage to critical infrastructure and housing. The upland creek quickly became inundated and water spilled over the bank, flooded downstream, and washed a significant amount of sediment onto the developments below – hitting roads, utility poles, and citizen homes.






## Coastal Storms, Sea-Level Rise and Tsunami

### Hazard Magnitude and Likelihood:

With climate change, the threat of coastal flooding will increase and be compounded by sea-level rise. Lower atmospheric pressure raises local sea levels, and when combined with storm-induced wind wave events and already rising sea levels due to climate change, the severity of coastal flood hazards will increase into the future. According to a Coastal Vulnerability Study completed for UTG in 2019, when factoring in sea-level rise, a 1-in-200 year storm may cause inundation of up to 6.0 metres above the mean tide level in Ehthlateese. In comparison, a 1-in-500 year Tsunami event is estimated to cause 10 metres of inundation. Climate change will increase the frequency and severity of coastal storms, meaning that today's 1-in 200 storm may in fact be experienced multiple times before the end of this century.

### Community Health, Social, Economic, and Infrastructure Impacts:

The Ehthlateese village shoreline is not fully protected from major coastal storms or tsunamis. Coastal hazards include coastal wave flooding, coastal erosion, and tidal inundation. Impacts may include extensive flooding to flow-lying homes, damage to structures, and dangers to public health, including mold and mildew after flood events.

### Historical Impacts:

In 1964 a tsunami hit the West Coast of Vancouver Island causing major flooding in the village. Water raced under and into homes and swept belongings into the inlet.

# Our Adaptation Strategies

Four broad categories of responses have been identified for Uchucklesaht to consider:

## Reactive strategies

Focus on emergency response to climate-related hazards but take no direct action to mitigate future impacts. Reactive examples include establishing storm warning systems, suppressing wildfires or providing emergency preparedness kits to households.

## Protection strategies

Aim to maintain and observe current conditions and protect infrastructure in place. Protection examples include preventing the spread of invasive species in the forest through selective cutting of infected trees. This also may include building coastal protection structures to protect vulnerable infrastructure.

## Incremental strategies

Accommodate some change but look to create a more desired condition. Incremental examples include promoting species genotypes that are better adapted and more resilient to drought conditions. These strategies can also involve policies and programs to help people and properties deal with the impacts of climate change, including home improvements.

## Transformation strategies

Intentionally facilitate change in a direction that is more compatible with future climate conditions. Transformation can include introducing species that were not historically present but may be better adapted to future climate conditions. For infrastructure, this may include managed retreat to areas that are less vulnerable to hazards.

## Strategy Considerations

It is important that decisions regarding which strategies to deploy reflect Uchucklesaht's desired approach to the issues of ecosystem change, food security and traditional harvesting practices, which consistently ranked as a top concern of citizens. Actions that achieve the following outcomes would be particularly well-suited to addressing these concerns:

- Develop knowledge about how climate change is driving ecosystem change and how key species are being impacted
- Restore and create healthy ecosystems with viable populations of harvest species

## Reactive Strategies

### Actions before 2035

| Action | Benefit | Resources Required | |
|---|---|---|---|
| Supply emergency survival kits to Ehthlateese residents and guests | Supports the health and wellbeing of each household during an emergency with access to a kit | Funding to secure enough kits, accounting for maximum guests | 27 |
| Continue updates to the All-Hazard Emergency Plan | Emergency Operations Centre will be more prepared to handle evolving situations (staff training and latest equipment) | Staff time to develop refinements and necessary additions Funding to secure emergency management training | 28 |
| Outfit tsunami early warning system to include other hazards | Preparedness detection for wildfires, storms, floods, and heatwaves | Funding required to develop Potential partnership with academia | 29 |

## Protection Strategies

### Actions before 2035

| Action | Benefit | Resources Required | |
|---|---|---|---|
| Install climate and marine monitoring stations with data management and reporting systems | Supports environmental management | Funding secured for all equipment and consultant support through 2026 Share data with Maa Nulth Nations and others | 30 |
| Research and monitor climate impacts on shellfish in specific harvest areas | Supports environmental management and food security | Shellfish surveys included in current DLR budget Considering hiring shellfish expert to support analyses | 31 |
| Study future availability of drinking water and identify potential infrastructure upgrades needed due to climate change | Supports water security<br>Supports planning for future village housing and infrastructure upgrades | Funding secured through DRIF grant | 32 |

| Action | Benefit | Resources Required | |
|---|---|---|---|
| Develop a forestry policy to protect existing stands and maintain a diverse and heterogeneous landscape, including establishing corridors between habitat types | Supports food security, environmental management<br>Supports cultural heritage protection | Staff time to develop and implement policy Legal support required for drafting policy Policy may result in reduced forest harvest revenues in short term | 33 |
| Develop digital inventory of plant species including cultural uses and gathering sites within the territory, and develop program for species identification awareness amongst citizens | Supports food security, environmental management Supports cultural heritage protection Opportunities for citizen involvement in on-the-land activities | Funding required to develop digital inventory Staff time required to collect cultural use information and implement awareness program that engages citizens meaningfully | 34 |
| Carry out wildfire risk reduction programs including implementing strategic fuel breaks | Supports Hazard Risk Reduction | BC FireSmart Program already being implemented in village Additional programs and fire-suppression equipment should be considered | 35 |
| Upgrade Culverts in vulnerable areas | Supports Hazard Risk reduction | Co-ordination with relevant agencies required upgrade culverts on non-UTG roads Funding required for culvert upgrades on UTG roads | 36 |
| Update Coastal Vulnerability Study | Supports hazard risk reduction. Informs coastal protection measures. | Funding secured through First Nations Adapt Program | 37 |

### Actions between 2035-2050

| Action | Benefit | Resources Required | |
|---|---|---|---|
| Enact invasive plant management including an invasives policy that minimizes actions that can cause spread | Supports environmental management | Staff time to develop and implement policy<br>Legal support required for drafting policy<br>Funding for invasives management work to support policy | 38 |
| Upgrade and raise crest height of berm in Ehthlateese to protect against coastal storms | Supports hazard risk reduction | Funding required for investigation, design and construction | 39 |

## Incremental Strategies

### Actions before 2035

| Action | Benefit | Resources Required | |
|---|---|---|---|
| Undertake Hucuktlis Lake sea-level rise and salinity study | Supports water and food security | Funding secured through DRIF grant | 40 |
| Address rising stream temperatures by retaining adequate riparian cover, and undertake other Salmon habitat restoration and enhancement projects | Supports food security, environmental management<br>Supports cultural heritage protection Opportunities for citizen involvement in on-the-land activities | Funding required to identify and implement projects Collaboration with DFO or other Salmon experts | 41 |
| Develop plant monitoring program (cedar radial growth, dieback events, new species, invasives, cascading effects and tipping points) | Supports food security, environmental management<br>Supports cultural heritage protection<br>Opportunities for citizen involvement in on-the-land activities | Funding required to develop monitoring program<br>Staff time required to support monitoring and data management | 42 |
| Implement heat safety programs including a cooling centre in Port Alberni and incorporation of best practices for design of future buildings such as passive cooling and backup power to run AC | Supports community health and elder support | Funding required to build cooling centre and develop back-up power sources for key buildings<br>Staff time required to develop and implement new buildings policy with passive cooling design elements | 43 |

### Actions between 2035-2050

| Action | Benefit | Resources Required | |
|---|---|---|---|
| Establish Salmon hatchery and consider species that are better adapted to warmer water and have shorter freshwater life stages (ie. Pink & Chum) | Establish Salmon hatchery and consider species that are better adapted to warmer water and have shorter freshwater life stages (ie. Pink & Chum) | Establish Salmon hatchery and consider species that are better adapted to warmer water and have shorter freshwater life stages (ie. Pink & Chum) | 44 |
| Enhance forest recovery after disturbances through stand tending to influence succession | Supports environmental management.<br>Opportunities for citizen involvement in on-the-land activities.<br>Supports economic development | Funding for ongoing stand tending work | 45 |
| Identify functional species groups and manage forest units for keystone species success | Supports environmental management and food security | Funding required for expert-led study | 46 |
| Identify streams where fish passages are threatened due to sediment, landslides or low flow and investigate cold water storage and release structures | Supports environmental management and food security | Funding for investigation of cold water release structures | 47 |
| Plant cultivars or seeds that are more drought and heat adapted at test sites or in greenhouses that simulate future climate conditions | Supports environmental management and food security | Funding required to develop digital inventory<br>Staff time required to collect cultural use information and implement awareness program that engages citizens meaningfully | 48 |

# Transformational Strategies

## Actions before 2035

| Action | Benefit | Resources Required | |
|---|---|---|---|
| Include Urchins, Squid and other more adapted species in food fish program | Supports food security | Staff time required to co-ordinate alternative sources of seafood. Potential future cost savings from utilizing more abundant species | 49 |

## Actions between 2035-2050

| Action | Benefit | Resources Required | |
|---|---|---|---|
| Learn from other Nations about harvest species that will become more prevalent in UTG territory | Supports food security and environmental management | Staff time required to co-ordinate with other Nations | 50 |
| Develop programs to encourage citizen-led stewardship such as beach keepers, stream keepers, shoreline cleanups, foraging, Plant ID walking tours, etc. | Supports environmental management<br>Supports community health<br>Opportunities for citizen involvement in on-the-land activities | Staff time to co-ordinate or lead activities<br>Some funding for equipment and expert support as required | 51 |
| Minimize new roads and deactivate underutilized roads to promote ecosystem integrity | Supports environmental management | Co-ordination with relevant agencies required – likely substantial staff time investments<br>May have economic development downsides from decreased access to territory | 52 |
| Employ nature-based strategies to improve coastal storm and sea-level rise resilience in Ehthlateese (clam gardens, living driftwood levees, drift sills, coastline vegetation) | Supports environmental management and food security<br>Supports hazard risk reduction | Funding already secured for first phase which involves identifying and conducting cost-benefit of various strategies<br>Significant funding would be required for future implementation | 53 |
| Establish UTG authority over all land use management decisions in Uchucklesaht Territory including entire watersheds of Hucuktlis Lake, Uchuck Lake, Snug Basin, Clemens Creek, Saa ch'ak wat'a Creek & Handy Creek | Supports environmental management and food security<br>Supports cultural heritage protection<br>Supports economic development | Significant investment of staff and leadership time to co-ordinate and lobby government agencies<br>Legal expenses Internal staffing requirements if implemented | 54 |
| Develop and grow programs for youth to learn about and become involved in UTG operations in the territory (guardians, future hatchery staff training program, etc.) | Supports cultural heritage protection<br>Supports community health<br>Supports economic development<br>Supports environmental management and food security | Funding required to support youth programs on ongoing basis<br>Staff support to co-ordinate and/or lead activities | 55 |
| Develop local sustainable businesses in areas such as food and clean energy that have positive environmental attributes | Supports economic development<br>Supports environmental management and food security | Thorough business planning requires time and financial investment<br>Financing required for business plan implementation Involves some level of financial risk<br>Staffing requirements | 56 |

### Who do you trust to lead the Uchucklesaht's response to climate change impacts?

**61%** Uchucklesaht should develop partnerships and engage with research institutions (e.g. Universities) to conduct research and assist in the response

**48%** UTG technical staff and trusted advisors (e.g. Consultants or Non-Profits) should take the lead with input from citizens

**39%** Uchucklesaht citizens should lead the response relying on traditional knowledge and experience

**34%** Uchucklesaht should engage with the Canadian and BC government to assist with the response

### If salmon populations decline significantly, what responses do you support?

**82%** Identify other opportunities for enhancing or protecting salmon populations and habitat in Uchucklesaht

**51%** Establish a hatchery to increase salmon stocks

**11%** Purchase salmon from other fisheries

**9%** Transition to harvesting other fish species

**2%** Other

# Community Engagement #3 : Adapting to Our Changing Climate

In December 2024, UTG convened a community meeting to review climate impacts and adaptation options. The following summarizes responses provided by citizens during the event:

### Which climate adaptation actions would you like UTG to prioritize?

- Self-sufficient food production and improving food security through both traditional and new practices
- Water security projects and infrastructure to support irrigation and other uses during drought
- Protecting watersheds, especially salmon habitat protection and restoration projects
- Taking action against destructive logging in the territory
- Identifying species best adapted to climate changes that are likely to become more prevalent in our territory, and pursuing cross-cultural exchange with other Nations that utilize these species
- Developing sustainable businesses that have positive social and environmental impacts, including in clean energy and food security

### Which climate impacts and hazards are you most concerned about and want to see UTG take action on?

1. Ecosystem changes including terrestrial, marine, and freshwater, and the impacts of those changes on key harvest species
2. Health impacts from lack of traditional food, medicines, and heatwaves, and mental health impacts from climate anxiety/disconnection from land
3. Cumulative impacts on Salmon
4. Impacts on water including freshwater ecosystems and water availability, and marine food webs
5. Heatwaves, extreme weather, and wildfires.

### How would you like to see Citizens involved and engaged in the adaptation process?

- Involve youth to build our long-term capacity for stewardship of the land
- Citizens as participants in decision-making processes
- Bring back cultural roles in land protection and monitoring (stream keepers, beach keepers, etc).

### Which adaptation strategy best describes the type of actions that you support?

(Transformation, Incremental, Protection, or Reactive)

- Transformation
- Incremental

“We do not own the entirety of our territory. Which means we do not own to the tops of the mountains; we do not manage the entirety of our watersheds. If we are looking at resilience and carrying these species through and improving the health of these ecosystems, in the long run we have to look toward the possibility of managing the entirety of our watersheds again. As we move forward through this process we’re going to be able to foster the health of those systems so that climate change becomes less of a problem for us.”

# 4

# Hishuk-ish tsa’walk (everything is one)

## Our next steps

UTG’s Climate Action Implementation Framework synthesizes all potential actions to support decision-makers in prioritizing short and long-term mitigation and adaptation actions. Actions were prioritized based on cultural significance and level of impact on reducing emissions and providing co-benefits to Uchucklesaht. By tracking, monitoring and sharing our progress, UTG citizens staff and stakeholders can continue to engage as we move from planning to action.

# Climate Action Prioritization Framework

## Short Term Actions (before 2035)

| | | |
|---|---|---|
| Critical | Install climate and marine monitoring stations with data management and reporting systems | 30 |
| Critical | Address rising stream temperatures by retaining adequate riparian cover and undertaking other Salmon habitat restoration and enhancement projects | 41 |
| Critical | Develop a forestry policy to protect existing stands and maintain a diverse and heterogeneous landscape | 33 |
| Critical | Develop and grow programs for youth involvement in UTG operations in the territory (guardians, staff positions, etc) that encourages engagement with elders and uchucklesaht knowledge-keepers. | 55 |
| Critical | Carry out wildfire risk reduction programs including implementing strategic fuel breaks | 35 |
| Critical | Construct 750 kW ground-mounted solar PV and battery system to displace diesel electrification in Ehthlateese | 18a |
| Critical | Construct 300 kW run-of-river hydropower system to supplement solar generation and displace diesel electrification in Ehthlateese | 18b |
| Critical | Map TSL forest cover, set carbon sequestration targets, and develop strategies for enhancing sequestration through forest management | 26 |
| Major | Develop digital inventory of plant species including cultural uses and gathering sites, and develop program for species identification awareness amongst citizens | 34 |
| Major | Include Urchins, Squid and other more adapted species in food fish program | 49 |
| Major | Develop programs to encourage citizen-led stewardship such as beach keepers, stream keepers, shoreline cleanups, foraging, Plant ID walking tours, etc. | 51 |
| Major | Research and monitor climate impacts on shellfish in specific harvest areas | 31 |
| Major | Undertake Hucuktlis Lake sea-level rise and salinity study | 40 |
| Major | Develop plant monitoring program (cedar radial growth, dieback events, new species, invasives, cascading effects and tipping points) | 42 |
| Major | Develop heat safety programs, a cooling centre in Port Alberni, and use passive cooling and backup power in design of future buildings | 43 |
| Major | Update Coastal Vulnerability Study | 37 |
| Major | Develop waste management solutions for Ehthlateese including composting and waste separation program, and wharf for regular collection services | 25 |
| Major | Replace UTG road fleet vehicles at end of life with hybrid or electric alternatives | 19-20 |
| Major | Nucii energy efficiency upgrades including window replacements, air sealing, hot water tank insulation and energy recovery ventilator install | 8-9 |
| Minor | Supply emergency survival kits to Ehthlateese | 27 |
| Minor | Upgrade Uchucklesaht Cabin (All recommended actions) | 1-4 |
| Minor | Develop programs for reducing waste diverted to landfill from UTG operations | 24 |
| Minor | Water bottling plant LED lighting upgrade | 22 |
| Minor | Thunderbird Building energy efficiency upgrades (LED lighting, window coverings, exterior motion lights, reduce space heater use) | 13 |
| Minor | Upgrade Thunderbird House (All recommended actions) | 5-7 |

## Long Term Actions (beyond 2035)

| | | |
|---|---|---|
| Critical | Establish Salmon hatchery on Clemens Creek | 44 |
| Critical | Employ nature-based strategies to improve coastal storm and sea-level rise resilience in Ehthlateese (clam gardens, living driftwood levees, drift sills, coastline vegetation) | 53 |
| Critical | Develop local sustainable businesses in areas such as food and clean energy that have positive environmental attributes | 56 |
| Critical | Establish UTG authority over all land use management decisions in watersheds of Hucuktlis Lake, Uchuck Lake, Snug Basin, Clemens Creek, Saa ch'ak wat'a Creek & Handy Creek | 54 |
| Critical | Adopt Step 4 or above of the BC Energy Step Code in construction of all future UTG buildings | 17 |
| Critical | Thunderbird Building retrofit to heat pump heating, cooling and hot water systems at end of life of current systems | 14-16 |
| Critical | Nucii retrofit to heat pump heating, cooling and hot water systems at end of life of current systems | 10-11 |
| Major | Enhance forest recovery after disturbances through stand tending to influence succession | 45 |
| Major | Plant cultivars or seeds that are more drought and heat adapted at test sites or in greenhouses that simulate future climate conditions | 48 |
| Major | Identify functional species groups and manage forest units for keystone species success | 46 |
| Major | Identify streams where fish passage is threatened due to sediment, landslides or low flow and investigate cold water storage and release structures | 47 |
| Major | Study future availability of drinking water and identify potential infrastructure upgrades needed due to climate change | 32 |
| Major | Upgrade and raise crest height of berm in Ehthlateese to protect against coastal storms | 39 |
| Major | Transition diesel water trucks to compressed natural gas | Sc2 |
| Major | Adopt electric motors for UTG marine vessel fleet | 21 |
| Major | Install 96 kW solar PV system on roof of Thunderbird Building | 16 |
| Major | Install 210 kW solar PV system on roof of Nucii buildings | 12 |
| Minor | Minimize new roads and deactivate underutilized roads to promote ecosystem integrity | 52 |
| Minor | Enact invasive plant management including an invasives policy that minimizes actions that can cause spread | 38 |
| Minor | Learn from other Nations about harvest species that will become more prevalent in UTG territory | 50 |
| Minor | Water bottling plant air sealing and insulation upgrade | 22 |
| Minor | Continue updates to the All-Hazard Emergency Plan | 28 |
| Minor | Replace Thunderbird Spirit Water gas-powered pump with siphon intake | 23 |
| Minor | Upgrade culverts in vulnerable areas | 36 |
| Minor | Transition water delivery vehicles to hybrid or electric | Sc2 |
| Minor | Implement alternative to gas/diesel generator for future Thunderbird Spirit Water pumping station (Production Well 2) | Sc2 |

■ Adaptation Pathways ■ Emission Reduction Pathways

Every **5** years

**Update this plan**

Every **2** years

**Track emissions**

Continuous

**Develop observational capacity**

# Monitoring and Tracking Progress

Climate action is a continuous long-term endeavor that should be supported by mechanisms for tracking actions and monitoring impacts on a periodic basis.

It is recommended that Uchucklesaht update this plan every five years. Plan updates should include a revised list of recommended actions, updated emissions quantification values and scope, updated information about observed climate impacts, and reporting on the implementation and effectiveness of actions since the previous Plan was created.

In terms of tracking emissions, an excel-based emissions quantification model was developed during this planning process to estimate emissions from all sectors. The model should be used by UTG staff to track emissions (annually or every two years).

Monitoring includes tracking climate changes occurring in the territory using climate monitoring equipment and activities to collect observations and enhance understanding of impacts. Many of the adaptation actions recommended in this plan involve developing this observational capacity or monitoring of environmental effects.

It is recommended that future plan updates be the responsibility of the Director of Lands and Resources, and that tracking of emissions become a core responsibility of the UTG Climate Action Coordinator moving forward. Future plan updates should be presented to UTG Executive Council for input and direction on priorities.

## Sharing the Plan

A digital version of this plan can be downloaded from the Uchucklesaht Tribe Government's website here:

www.uchucklesaht.ca/**ClimateAction**

# Uchucklesaht Tribe Government

**The Uchucklesaht Government** blends hereditary and modern governance to ensure responsible, transparent, and accountable leadership. It upholds the Uchucklesaht Tribe's political, social, and cultural strength while exercising law-making authority under the Maa-nulth Treaty. Governed by a Legislative, Executive, and People's Assembly structure, it remains committed to honoring the past while embracing the future.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