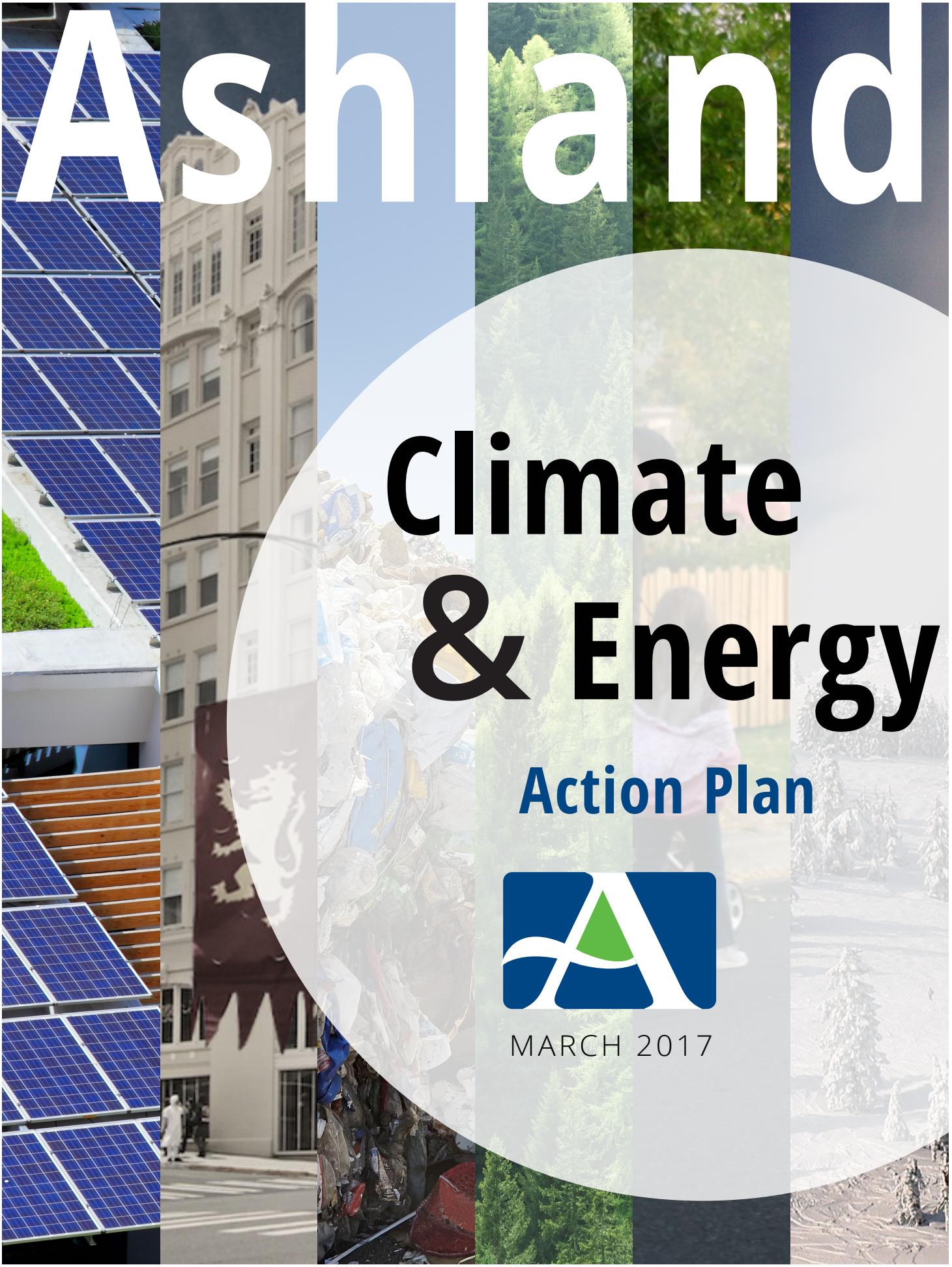

Climate & Energy

Action Plan

MARCH 2017

Acknowledgments

This document was formally adopted by the Ashland City Council on March 7, 2017

2015-2017 City Council

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Roadmap

INTRODUCTION

What is a climate and energy action plan, anyway? And why does Ashland need one?

PLAN ORGANIZATION

Get the lay of the land. This section introduces the plan's six focus areas and how they are structured.

CLIMATE CHANGE & ASHLAND

Learn about Ashland's greenhouse gas emissions footprint, anticipated climate change impacts, and the city's collaborative and inclusive approach to climate action.

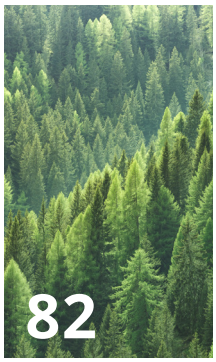
VISION FOR THE FUTURE

A glimpse of Ashland in 2050—a sustainable, healthy, happy, and resilient community—and the initiatives that will shape how to get there.

BUILDINGS & ENERGY

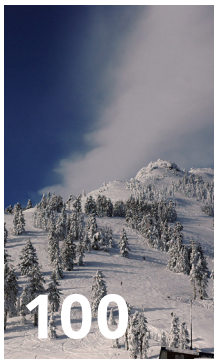
URBAN FORM, LAND USE & TRANSPORTATION

CONSUMPTION & MATERIALS MANAGEMENT



NATURAL SYSTEMS

PUBLIC HEALTH, SAFETY & WELL-BEING



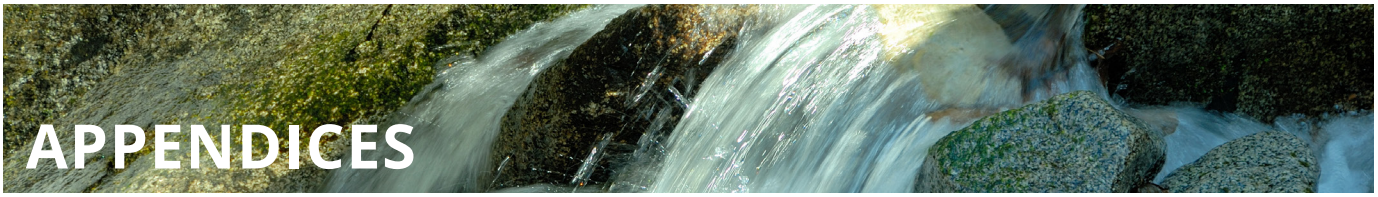
CROSS-CUTTING STRATEGIES

STRATEGIES & ACTIONS BY FOCUS AREA

This plan is divided into six focus areas, listed above. Each focus area section includes an introduction to its impact and importance, progress to-date, goals and benchmarks, and the strategies and actions that will get us there. Each broad strategy (e.g., "support cleaner energy sources") is driven forward by specific priority actions that focus on mitigation, adaptation, or both (e.g., "enhance production of on-site solar energy from City facilities").

IMPLEMENTATION PLAN

The body of the plan lays out the "what" and the "why"; the implementation plan addresses the "how" and the "when," including the structure and timeframe of priority actions, which City departments are responsible for accomplishing them, and how progress will be tracked.



APPENDICES

CLIMATE TRENDS SUMMARY

This summary provides more information on projected climate change impacts and trends in Ashland, including changes in temperature, precipitation, and natural hazard risk.

PUBLIC ENGAGEMENT PROCESS OVERVIEW

The public provided valuable input that helped shape the plan. See when and how the public was consulted, and how public input was used in the plan.

EMISSIONS MODELING AND TARGET-SETTING METHODOLOGY

Take a behind-the-scenes look at the process used to model Ashland's greenhouse gas footprint and set emissions-reduction targets.

ASHLAND GREENHOUSE GAS INVENTORY

This document summarizes the city's emissions by sector and activity type from 2011 through 2015, and sets the emissions baseline used to identify goals and prioritize strategies and actions throughout this plan.

EXECUTIVE SUMMARY

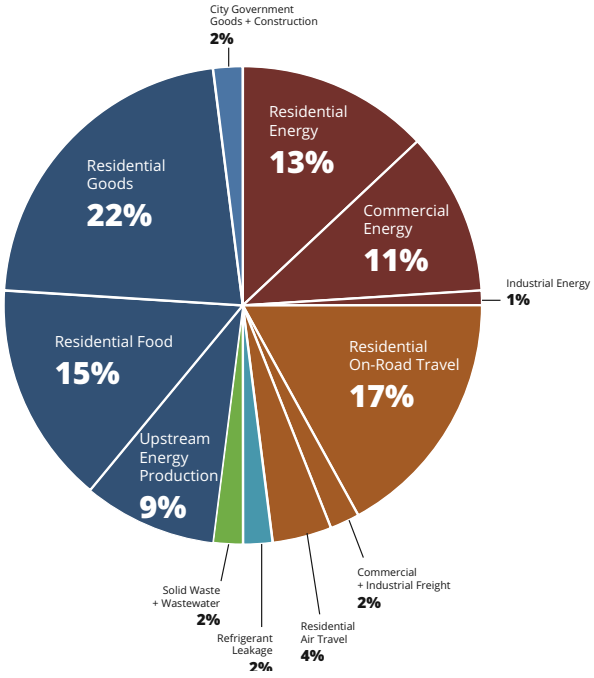
Executive Summary

WHY A CLIMATE AND ENERGY PLAN?

Climate change is already affecting Ashland and the surrounding region, and its impacts are projected to become much more severe in the coming decades. To minimize harmful impacts and play its part in curbing global carbon pollution, Ashland needs to take bold steps to reduce greenhouse gas emissions and build resiliency. This plan lays out a foundation for the City of Ashland to reduce its emissions and improve its resilience to future impacts of climate change on its environment, infrastructure, and people.

Greenhouse Gas Emissions

According to the City's 2015 greenhouse gas inventory, The vast majority (83%) of Ashland's emissions stem from five main sources: production of residential goods and food, residential travel, residential and commercial energy use, and upstream energy production. In 2015, Ashland's greenhouse gas (GHG) emissions footprint was approximately 300,000 metric tons of carbon dioxide equivalent (MT CO2e), representing 0.5% of Oregon's total emissions.



Climate Impacts

The impacts of climate change will have tangible effects on public health and quality of life for Ashland's residents and visitors. In addition to the direct dangers of wildfires, flooding, and extreme weather events made worse by climate change, secondary effects of more extreme temperatures, snowpack declines, and wildfire smoke include health and livelihood impacts to sensitive and exposed populations, heightened threats to species and habitats, and consequences for local natural resources and economies such as agriculture, outdoor recreation, and tourism.

BY THE 2080S, ASHLAND WILL LIKELY SEE...

An **86% decrease** in winter snowpack

90 more days of extreme heat annually

A **7 to 12°F increase** in temperature on the hottest day of the year

More than 1" of additional rainfall during heavy storms

More frequent and severe droughts, heat waves, and wildfires

Source: Oregon State University, 2016

HOW DID WE GET HERE?

The Ashland Climate and Energy Action Plan represents the culmination of a year-long process of engagement, input, and review. Many individuals and organizations played a role in shaping this plan. It incorporates input from:

- Over **240 community members** who attended a public open house.
- Over **135 individuals** who responded to an online survey.
- Representatives from over **15 local organizations, businesses, and institutions** who participated in interviews.
- Over **30 City staff members** who participated in facilitated workshops.
- **13 members** of the Mayor-appointed ad-hoc committee.

Formation of the plan was also informed by the following approaches:

- Leveraging and building on **progress to-date** and **existing plans and programs.**
- Emphasizing **equity** and **co-benefits.**
- Customizing strategies to fit **Ashland's unique context.**
- Prioritizing actions that help meet Ashland's **climate goals and vision.**

What will these impacts mean for Ashland's future?

These climate changes will threaten Ashland's people, resources, and economy. Here are some examples of challenges Ashland could face:

Sensitive and exposed populations like the very young, elderly, those with respiratory illness, and outdoor workers will be at risk from wildfire smoke and heat-related illnesses.

High elevation plants and wildlife will need to adapt to shifting or diminishing habitats.

Seasonal and climate-dependent industries such as agriculture, outdoor recreation, and tourism will be threatened under changing conditions.

ASHLAND'S CLIMATE VISION FOR 2050 IS TO BE A RESILIENT COMMUNITY THAT HAS ZERO NET GREENHOUSE GAS EMISSIONS, EMBRACES EQUITY, PROTECTS HEALTHY ECOSYSTEMS, AND CREATES OPPORTUNITIES FOR FUTURE GENERATIONS.

GOALS AND TARGETS

The plan's overarching goals and targets focus on addressing climate change risks by reducing Ashland's emissions of climate pollution ("climate mitigation") and preparing the city for unavoidable impacts ("climate adaptation"):

1 **Reduce Ashland's contribution to global carbon pollution by reducing greenhouse gas emissions associated with City, residential, commercial, and industrial activities.**

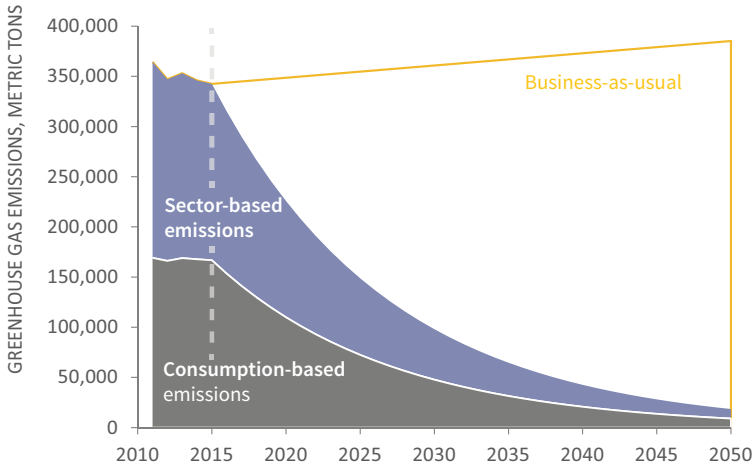
For the Ashland community:

Reduce overall Ashland community greenhouse gas emissions by 8% on average every year to 2050.

For City of Ashland operations:

Attain carbon neutrality in City operations by 2030, and reduce fossil fuel consumption by 50% by 2030 and 100% by 2050.

2 **Prepare the city's communities, systems, and resources to be more resilient to climate change impacts.**



STRATEGIC INITIATIVES

The following **overarching strategic initiatives** were identified to guide the strategies and actions presented in this plan. While the strategies and actions in this plan are organized by focus areas such as Buildings and Energy, Transportation and Land Use, and Natural Systems, these initiatives cut across these focus areas to emphasize synergistic and integrated solutions for addressing climate in Ashland.

- **Transition to clean energy.**
- **Maximize conservation of water and energy.**
- **Support climate-friendly land use and management.**
- **Reduce consumption of carbon-intensive goods and services.**
- **Inform and work with residents, organizations, and government.**
- **Lead by example.**

STRATEGIES AND ACTIONS

The Climate and Energy Action Plan presents strategies, priority actions, and other potential actions for six focus areas:

Buildings & Energy | **Urban Form, Land Use & Transportation** | **Consumption & Waste** | **Natural Systems** | **Public Health, Safety & Well-being** | **Cross-Cutting Strategies**

The plan lays out specific actions within the following strategies:

URBAN FORM, LAND USE + TRANSPORTATION

Strategy ULT-1. Support better public transit and ridesharing.

Strategy ULT-2. Make Ashland more bike and pedestrian-friendly.

Strategy ULT-3. Support more efficient vehicles.

Strategy ULT-4. Support more climate-ready development and land use.

Strategy ULT-5. Increase the efficiency of City fleet vehicles and employee commuting.

PUBLIC HEALTH, SAFETY + WELL-BEING

Strategy PHSW-1. Manage ecosystems and landscapes to minimize climate-related health impacts.

Strategy PHSW-2. Promote a sustainable local economy that minimizes emissions and vulnerability.

Strategy PHSW-3. Minimize public health impacts.

Strategy PHSW-4. Minimize public safety impacts.

CONSUMPTION + MATERIALS MANAGEMENT

Strategy CM-1. Reduce consumption of carbon-intensive goods and services.

Strategy CM-2. Support sustainable and accessible local production and consumption.

Strategy CM-3. Expand community recycling and composting.

Strategy CM-4. Reduce food waste.

Strategy CM-5. Improve the sustainability of City operations and purchases.

NATURAL SYSTEMS

Strategy NS-1. Promote ecosystem resilience.

Strategy NS-2. Manage and conserve community water resources.

Strategy NS-3. Conserve water use within City operations.

BUILDINGS + ENERGY

Strategy BE-1. Support cleaner energy sources.

Strategy BE-2. Encourage increased building energy efficiency and conservation.

Strategy BE-3. Maximize efficiency of City facilities, equipment & operations.

Strategy BE-4. Improve demand management.

Strategy BE-5. Prepare and adapt buildings for a changing climate.

CROSS-CUTTING STRATEGIES

Strategy CC-1. Educate and empower the public.

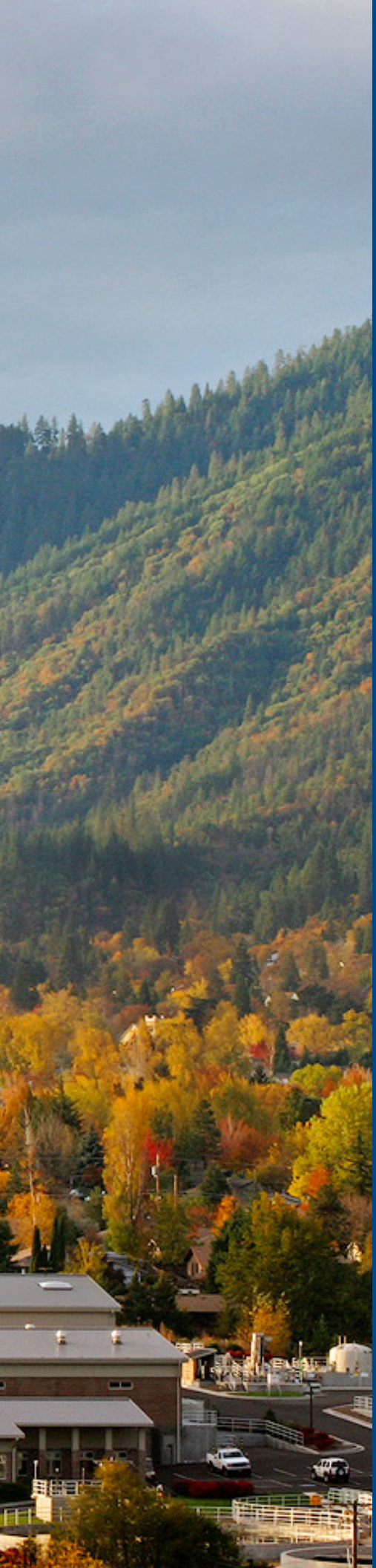
Strategy CC-2. Educate and empower City staff.

Strategy CC-3. Mainstream and integrate climate considerations.

Strategy CC-4. Engage with other governments and organizations around climate policy and action.

NEXT STEPS

This Climate and Energy Action Plan is only the beginning of an ongoing process. The Implementation Plan provides a framework for launching the implementation phase of the plan. This phase will require the City and community to take priority actions—outlining specific plans of action and resource needs among responsible parties—while monitoring and benchmarking progress along the way. As details are outlined during this implementation phase, more specific quantitative goals and milestones will be created, driving the pace of strategy implementation. This plan provides a proposed structure for ongoing plan implementation, monitoring, evaluation, and adaptive management, as well as a list of key actions to be taken in the initial phase of implementation.



INTRODUCTION

Introduction

Home of the Oregon Shakespeare Festival, Southern Oregon University, and abundant natural beauty and recreation opportunities, the City of Ashland is a great place to live and visit. Climate change threatens the vitality, livelihood, and surrounding environment that make Ashland what it is, with anticipated increases in severe heat, water scarcity, wildfire risk, and storm events. By the 2080s, scientists project that Ashland will experience more than an 80% decrease in winter snowpack, 90 more days of extreme heat annually, and more than an inch of additional rainfall during heavy storms.[1]

The City of Ashland has a responsibility to address climate change risks by reducing emissions and preparing the city for unavoidable impacts. Cities around the world are leading in this endeavor, including more than 125 cities and counties in the United States that signed the Compact of Mayors agreement to cut greenhouse gas emissions and prepare for climate change. Governments in the Pacific Northwest have led the charge on climate action, including the State of Oregon, which established a statewide target to reduce emissions by 75% below 1990 levels by 2050. Other Oregon cities have set greenhouse gas action goals, including Corvallis, Eugene, and Portland.

The City of Ashland has already taken initial steps to address climate change. Achievements include the solar power incentive program, home energy efficiency incentive programs, participation in and support of community outreach and awareness events such as Climate Week in 2015, and integration of climate change impacts into the Water Master Plan and 2016 Ashland Forest Plan. However, more work is needed. According to scientific models, to prevent the worst impacts of climate change, Ashland, along with the rest of the world, will have to reduce its greenhouse has emissions by 8% per year.[2] Every year this reduction is not met will mean that more reduction will be needed in the future.

Ashland's foundational Climate and Energy Action Plan (CEAP) provides a strategic framework and long-term vision for reducing greenhouse gas emissions and preparing for climate change in the city. It represents the culmination of a year-long process of engagement, input, and review from the public, key community stakeholders, City staff, and a Mayor-appointed committee. Participants voiced their concerns and priorities through online surveys, three public open houses, interviews, and facilitated workshops with City staff and committee members. This plan builds on this input and community progress to date by presenting a coordinated set of goals and strategies to guide City and community action.

This plan provides a roadmap for Ashland to sustain economic, social, and environmental prosperity for current and future generations of residents and visitors. **It represents the beginning of an ongoing and evolving process.** Implementation of the actions and attainment of targets set forth in this plan requires a long-term, dedicated effort by the Ashland community and all City departments and staff. As detailed in the Implementation Plan, the Ashland Climate and Energy Action Plan will be updated every three years to ensure that the city's actions toward addressing climate change are up-to-date, sufficient for meeting the City's goals, and beneficial for all. As progress is made and actions are underway, this plan and its future updates will serve as a foundation for taking meaningful action toward reducing greenhouse gas emissions and building resiliency to climate impacts in and around Ashland.

[1] Source: Oregon State University (2016).

[2] Source: Hansen (2016).

Plan Organization

The plan presents goals, targets, strategies, and potential actions for mitigating and adapting to climate change. It is organized into six focus areas:

Buildings and Energy: Energy used in residential, commercial, and industrial buildings, as well as opportunities to reduce energy use, expand renewable energy production, and prepare buildings for a changing climate.

Urban Form, Land Use, and Transportation: The form and function of land and transportation systems, including ways to reduce greenhouse gas emissions through urban planning, design, improved land use practices, and clean and efficient transportation systems.

Consumption and Materials Management: The lifecycle of goods and materials, including opportunities to reduce emissions associated with manufacturing, use, and disposal.

Natural Systems: Air, water, and ecosystem health, including opportunities to reduce emissions and prepare for climate change through improved resource conservation and ecosystem management.

Public Health, Safety, and Well-being: Health and assistance programs for disadvantaged populations, including preparing health, social, and emergency systems for climate change.

Cross-Cutting Strategies: Activities that address climate change more generally or across multiple sectors.

For each focus area, this document tells the story of Ashland's climate goals, progress to date, and strategies and actions for achieving those goals. The strategies and actions are presented in order of priority as articulated by the public, City staff, ad hoc committee, and the practices and plans of other cities and communities. They are organized in the following manner:

Strategies represent a thematic groupings of actions that all work toward a specific goal. Strategies within each focus area are ordered by priority.

Priority Actions are actions within a strategy that were prioritized, or shortlisted, from a broader set of potential actions. These priority actions underwent a more thorough assessment that evaluated cost, effectiveness, feasibility, and co-benefits. These actions are ordered from highest to lowest priority as identified through the evaluation process.

Other Actions are opportunities that were identified as potential actions but were not considered high-priority through the public and stakeholder engagement process.

Priority Actions are labeled by scope of impact, as follows:

Breadth of Impact

C — affects **community**-wide operations and climate goals.

M — affects **municipal** operations and climate goals.

Type of Impact

Mi — addresses **mitigation** goals (lowers GHG emissions).

Ad — addresses **adaptation** goals (builds resilience to climate impacts).

Mi/Ad — addresses **both mitigation and adaptation** goals.


VARSITY

CLIMATE CHANGE & ASHLAND

Climate Change & Ashland

According to the International Panel on Climate Change (IPCC), to have a likely chance of averting the most dangerous of climate change impacts, the world must reduce emissions enough to keep global temperatures from rising more than 2 degrees Celsius. This amount of emissions is called the world's "carbon budget" and the world is already on track to spend the remainder of this budget in just three decades.[3] The risks of climate change, including sea level rise, forest fires, and water shortages, exponentially increases with every degree of warming above 2 degrees. The following sections detail how Ashland may experience and contribute to climate change in the coming years.

[3] Source: World Resources Institute (2014)

HOW WILL CLIMATE IMPACT ASHLAND?

Regional projections indicate that by the 2080s, Ashland could experience the following climate-driven environmental changes:[4]

Heavy rainfall and drought risk

+0.8-1.3 in rainfall increase during the heaviest rain days*
+4-6 day increase in the longest dry spells*
More winter precipitation

Temperature increase and extreme heat

+7-12° F increase in the hottest day of the year
+39-90 more days a year of warm spells

Wildfire risk

+30% increase in probability of large wildfires**
-40 year decrease in average time between fires***
Increased burn acreage

Changes to snowpack and water availability

-71 to -86% decline in April 1 snowpack in the Middle Rogue subasin
More precipitation as rain instead of snow
Earlier spring snowmelt
Higher winter streamflow
Lower summer streamflow

[4] These ranges represent mean projections under the high emissions scenario (RCP 8.5). Source: Oregon State University, 2016
*Some models show decreases
**Source: Stavros, Abatzoglou, Larkin, McKenzie, & Steel (2014).
*** Source: Sheehan, Bachelet, & Ferschweiler (2015).

Climate Impacts

Every community will experience climate change differently. The geography, ecosystems, economy, demographic makeup, and social networks of a community all influence how climate change will affect a community and its ability to cope and adapt. In Ashland, more volatile rainfall patterns will increase the frequency and severity of droughts and flooding. More frequent extreme heat events will pose a danger to vulnerable residents. Snowpack will decrease, putting the City's water resources at risk. Plant and animal species will also be affected — some positively and negatively. Increases in temperature, combined with less consistent precipitation, will increase the frequency and severity of wildfires.

The impacts of climate change will have tangible effects on public health and quality of life for Ashland's residents and visitors. In addition to the direct dangers of wildfires, flooding, and extreme weather events made worse by climate change—including injury, death, and the destruction of property and livelihoods—there will be a variety of lesser-known impacts on Ashland's population. Wildfire smoke, for example, can cause serious health complications, especially for those with asthma or other respiratory conditions. Similarly, more frequent and severe heat waves can be deadly, especially for young children, the elderly, and exposed persons such as outdoor workers. Other changes, such as decreased summer stream flow and reduced snowpack, could have significant quality-of-life impacts on Ashland's residents, many of whom enjoy outdoor recreation and rely on the water supplied by the local watershed for their livelihoods. Ashland could even experience an influx of "climate refugees" who are displaced from their homes due to climate change impacts elsewhere.

Unfortunately, many of these climate risks will disproportionately affect certain groups. In the United States, communities of color, non-English speaking households, and low-income populations have historically been underserved by public programs and investments, resulting in limitations such as fewer transportation options, less resilient housing, and less reliable healthcare options. These inequities may limit the ability of these populations to respond to the impacts of climate change or benefit from new investments and actions taken to address climate pollution.

What will these impacts mean for Ashland's future?

These climate changes will threaten Ashland's people, resources, and economy. Here are some examples of challenges Ashland could face:

Sensitive and exposed populations like the very young, elderly, disabled, those with respiratory illness, and outdoor workers will be at risk from wildfire smoke and heat-related illnesses.

High elevation plants and wildlife will need to adapt to shifting or diminishing habitats.

Seasonal and climate-dependent industries such as agriculture, outdoor recreation, and tourism will be threatened under changing conditions.

Ashland's Greenhouse Gas Emissions

To keep global greenhouse gas emissions below what is needed to avoid 2 degrees Celcius warming, the IPCC estimates that global emissions need to be reduced by 40 to 70% by 2050, and that carbon neutrality needs to be reached by the end of the century. In 2015, the City commissioned a greenhouse gas inventory to understand and characterize the sources of Ashland's emissions and trends in emissions over time. In 2015, Ashland's greenhouse gas (GHG) emissions footprint was approximately 300,000 metric tons of carbon dioxide equivalent (MT CO2e), representing 0.5% of Oregon's total emissions. The vast majority (83%) of Ashland's emissions stem from five main sources: production of residential goods and food, residential travel, residential and commercial energy use, and upstream energy production.[5]

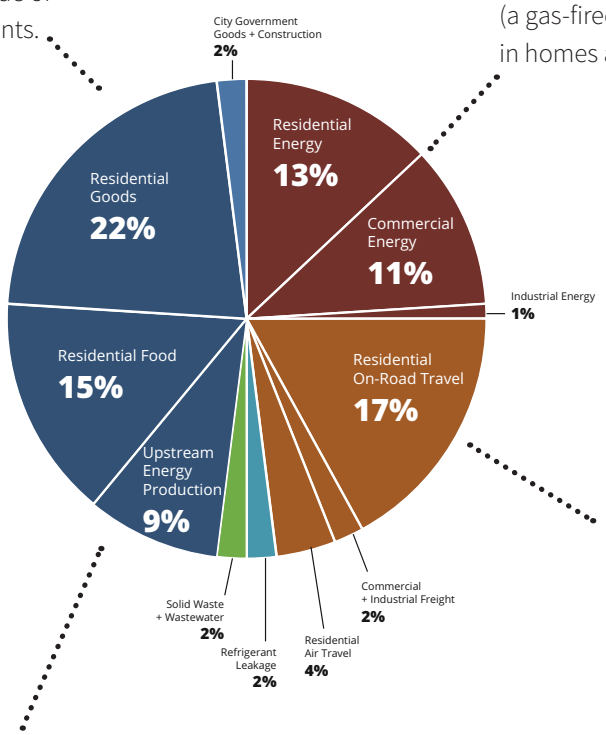
[5] Source: Good Company (2016).

WHERE DO EMISSIONS COME FROM?

The chart below shows how different sources and sectors contribute to Ashland's 2015 carbon footprint.

Production of Residential Goods including emissions associated with the manufacture and transport of durable household goods produced outside of Ashland for use by Ashland residents.

Residential and Commercial Energy Use (13% and 11%, respectively), including electricity and stationary combustion (a gas-fired furnace, for example) used in homes and commercial buildings.



Production of Residential Food including emissions associated with the production and transport of agricultural products grown outside of Ashland for consumption by Ashland residents.

Residential Travel including direct and upstream emissions associated with passenger cars and trucks used for noncommercial purposes.

Upstream Energy Production including the emissions generated by the extraction and production of usable fuel products (e.g., refined gasoline or electricity) used in Ashland.

Consumption-based emissions include emissions generated outside of the community to produce the goods and food consumed by Ashland residents.

Level of certainty: LOW

What's included?

- Household consumption of food and goods
- City government consumption, including from the production of goods and some purchased services
- Fuel production

Sector-based emissions include locally-produced emissions from buildings, cooling systems, and water and waste processing.

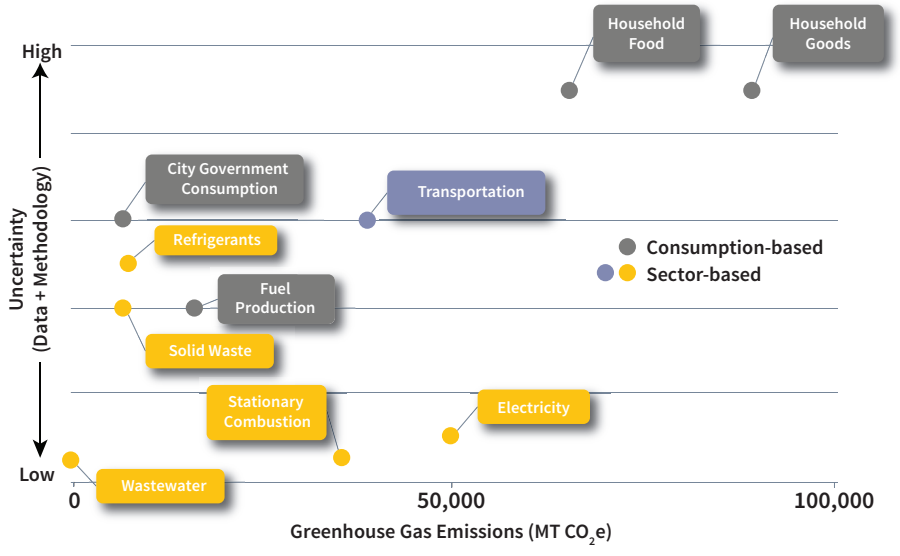
Level of certainty: HIGH

What's included?

- Building energy use in residential, commercial, and industrial sectors
- Transportation energy use
- Methane emissions from waste disposal
- Wastewater treatment
- Emissions from refrigerants

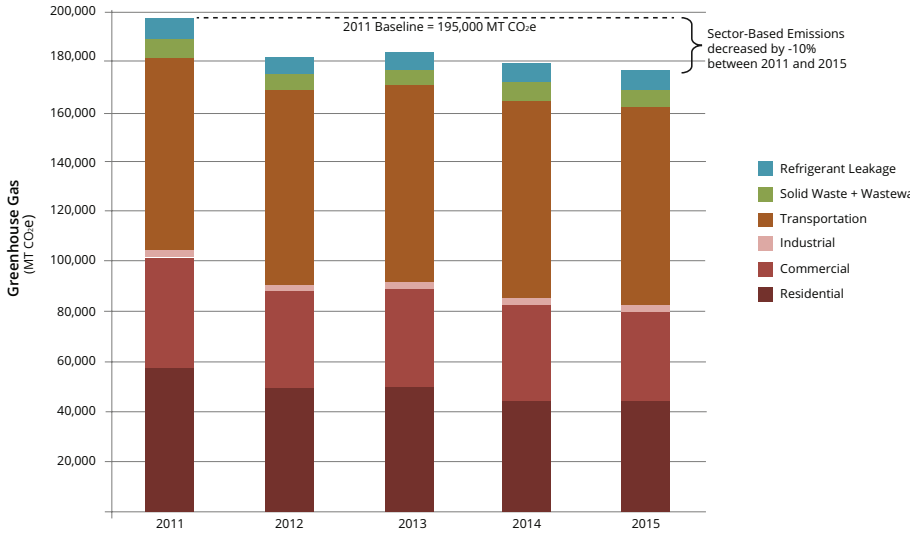
There is some degree of uncertainty in any GHG inventory. This uncertainty can come from incomplete data or uncertainty in translating units of activity into emissions.

Understanding the sources of uncertainty should improve future inventory and reporting efforts, including prioritization of additional data-gathering, framing inventory results, and developing mitigation goals and tracking systems.



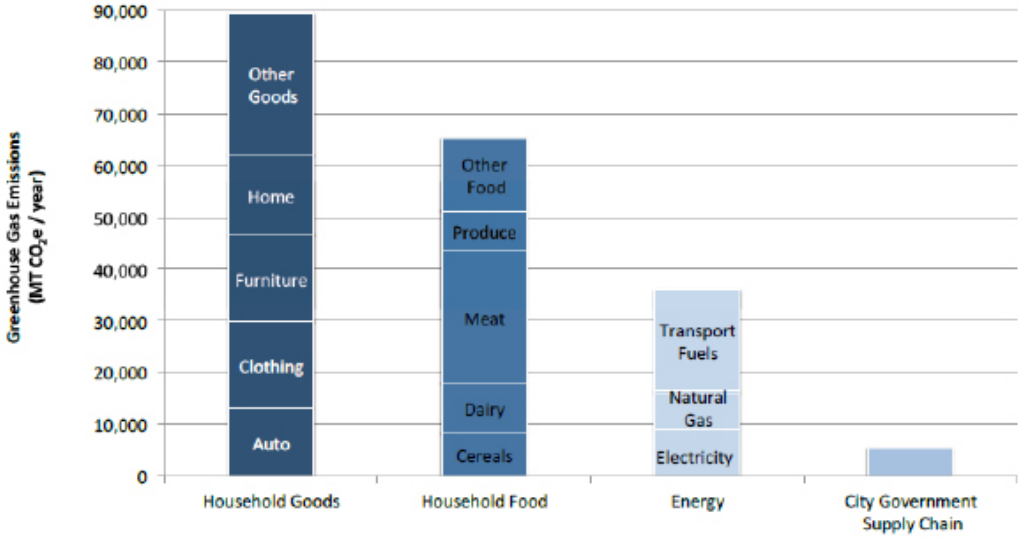
HOW HAVE ASHLAND'S EMISSIONS CHANGED OVER TIME?

Ashland's per-household GHG emissions have decreased nearly 6% over the past five years. Households in Ashland are producing nearly 25% fewer GHG emissions than the average Oregon household. Nearly all of Ashland's GHG reductions can be attributed to changes in emissions from the built environment. Together, residential, commercial, and industrial buildings saw their GHG emissions footprint decrease by 21% from 2011 to 2015, largely due to increased renewable electricity on the regional grid, decreased electricity use in the residential sector, and decreased natural gas use due to warmer winters.



HOW DO CONSUMPTION EMISSIONS STACK UP?

Emissions from household goods are dominated by home construction, furniture, clothing, and vehicle purchases, while the production of meat accounts for a large share of food consumption emissions from Ashland residents. The chart below shows these and other sources of consumption-based emissions in Ashland for the 2015 fiscal year.



Building on a Foundation

Ashland has already made notable progress toward reducing both its community emissions and its vulnerability to the potential impacts of climate change. Ashland has a variety of plans, policies, programs, and studies that are connected to the needs and solutions for addressing climate change issues and challenges. Some of these documents already emphasize climate solutions described in this plan, while others will need to be updated to integrate climate change and climate action. Where linkages are clear, this plan highlights "levers" in existing plans and programs and brings them together to address a common goal.

This plan builds on the great work Ashland has done to-date to present a more coordinated and strategic pathway toward realizing the city's climate vision.

City-supported events like the Ashland Climate Challenge have engaged the Public around climate issues.

The community solar project Solar Pioneer II gives citizens an opportunity to purchase locally-generated renewable energy.

The City recently completed a City Facilities Energy Audit that identified energy efficiency upgrade opportunities at City facilities.

A retro-commissioning incentive program provides financial and technical assistance to tune up energy systems in commercial and residential buildings.

A new city Water Master Plan will incorporate future climate risks to water supply and quality into future service planning and activities.

WHAT ARE WE DOING RIGHT NOW?

Below are examples of plans, programs, policies, and studies that link to the goals and actions of the Climate and Energy Action Plan:

PLANS

Comprehensive Plan

Water Master Plan

Transportation System Plan and Regional Transportation Model

Economic Development Strategy

Neighborhood Master Plans

Emergency Management Plan

Community Wildfire Preparation Plan

2016 Ashland Forest Plan

Ashland Trails Master Plan

PROGRAMS

Emergency management

Community Emergency Response Team (CERT)

Firewise

Forest Resiliency Project

Water conservation incentive and outreach

Energy efficiency assistance

Solar incentives

Renewable Energy Certificates (RECs)

Nature Center education

POLICIES

Land use code

Wildland-urban interface (WUI) code and fire code

Energy contract with BPA

STUDIES

City facility efficiency and solar assessment

Solid waste and recycling annual report

Renewable energy assessment

GHG inventory

A Coordinated Effort

Climate change is a cross-cutting issue. Contributions of greenhouse gas emissions stem from activities across sectors and sources, from transportation and energy to buildings and materials management. Strategies to prepare for climate change cut across traditional disciplines, ranging from water and natural resource management to public health and safety.

Multifaceted challenges require integrated solutions. Many of the solutions and strategies presented in this plan are not new, and many are already part of existing City plans, programs, and policies that are focused within individual City departments. This plan brings those solutions together in an integrated and strategic way to address the climate challenge, and where needed, proposes adjustments or expansions to meet climate goals. Implementing this plan requires forging relationships and coordinating across traditional departmental and stakeholder boundaries to form synergistic, efficient, and effective solutions.

This plan primarily focuses on strategies and actions that Ashland's City government can take to help address climate challenges. However, **all parties have a role and must be a part of the solution**, including Ashland residents, businesses, organizations, and government. This plan provides suggestions for actions that residents, visitors, businesses, and organizations can take to play their part in tackling climate change.

"Combating climate change is a fundamental responsibility for everyone, everywhere. The status quo is clearly unacceptable.

For the sake of future generations, making progress, together, as a community, is urgent."

Rich Rosenthal,
Ashland City Councilor and Chair of the CEAP ad-hoc committee

Key Terms

GREENHOUSE GAS

A gas that absorbs and emits thermal radiation in the atmosphere, contributing to the "greenhouse effect" by preventing heat from leaving the atmosphere. CO_2 is the most common greenhouse gas, but this category also includes methane, nitrous oxide, ozone, and even water vapor (picture a humid day). Greenhouse gases vary greatly in the strength and persistence of their warming effect; for example, methane has a greenhouse effect approximately 72 times stronger than CO_2, but its atmospheric lifespan is much shorter.

ENERGY

For this plan, "energy" refers to power or heat produced from fuels or processes and used for a variety of applications, including for transportation, heating, cooking, and electricity generation. In Ashland, energy is largely consumed in the form of natural gas, electricity, and gasoline. The majority of electricity consumed by Ashland residents is purchased from Bonneville Power Administration, which provides electricity largely from hydro and nuclear resources. Other sources of electricity for Ashland include locally-produced solar and hydropower, and sources from the regional electricity grid, which include coal, biomass power, and other renewable sources such as wind.

CLIMATE MITIGATION

Strategies and actions focused on slowing the pace and lessening the severity of climate change by reducing or offsetting greenhouse gas emissions. Overarching Goal 1 on page 30 focuses on mitigation.

CLIMATE ADAPTATION

Strategies and actions focused on changing behavior, land use, and environmental management to prepare, protect, and build resilience of infrastructure, ecosystems, public health, and quality of life to anticipated effects of climate change. Overarching Goal 2 on page 32 focuses on adaptation. Although used interchangeably in this plan, there are slight differences between climate adaptation, and resilience. The strategies and actions in this plan address both climate adaptation and resilience.

Adaptation refers to action to prepare for and adjust to new conditions, thereby reducing harm or taking advantage of new opportunities.*

Resilience refers to the capacity of a social or ecological system to continue to function despite disturbances.

SOCIAL EQUITY

Maintaining or creating a "level playing field" or equality of opportunity, often through 1) simple fairness and equal treatment, 2) distribution of resources to reduce inequalities in universal programs and services, and 3) redistribution of resources to level the playing field through targeted programs.** Social equity is a cornerstone of this plan—see the "Climate and Equity" section on page 40 for more information on the role of equity in climate action and the ways in which equity is reinforced through the Ashland Climate and Energy Action Plan.

***National Climate Assessment, 2014**

**** Norman-Major, 2011. "Balancing the Four E's; or Can we Achieve Equity for Social Equity in Public Administration?" Journal of Public Affairs Education. 17(2), 233–252**

*Ashland's climate vision for 2050 is to be a **resilient** community that has **zero net** greenhouse gas emissions, embraces **equity**, protects **healthy ecosystems**, and creates opportunities for **future generations**.*

She tells you that you're signed up to cook for tomorrow's nightly co-housing community dinner. "Yes, I remember. I do it every other Wednesday," you say, shaking your head and smiling slightly at her redundant yet endearing reminder.

A Summer Day in 2050

BY ISAAC BEVERS

Ashland High School class of 2017 and Ashland Climate and Energy Action Plan Ad-Hoc Committee member (2016-17)

Your eyes slowly open. The light from the morning summer sun seeps through the pergola on the south side of the apartment. A musing gratefulness for the grapevine it supports, which absorbs the summer sun, keeping your house cool, spreads in your senses, not yet separated from your mind by the day's plans. Sliding out of bed, you open the window and peer through the leaves. The smell of fresh bread and fresh-brewed coffee, accompanied by the hum of cheerful conversation, waft up from the street below. Occasionally, an electric car or bus silently passes by. A smile flits across your face as you watch a father calmly follow his two children as they excitedly weave through bicycles and pedestrians towards the awnings denoting the open air market nearby.

Realizing the air is clear of smoke for the first time in a week, you decide to go for a walk. The heat of the day looms in your mind, so you decide a short cool adventure through town to the Fairy Ponds is ideal. As you prepare for the day in the snug but well-designed space, the question of a local architect, Paula Laporte, crosses your mind; "Have you ever seen a bird's nest with a spare bedroom?" Arriving in the kitchen you take out the rice, lentils, and locally grown vegetables from last night's intentionally vegetarian dinner, place it in the willow basket-backpack, and go down the stairs to the street.

Emerging into to the small courtyard, you become distracted by the community garden's delights. Furtively, you take a ripe pear tomato from the same wall as your bedroom, put it into your mouth, and savor the concentrated sunlight. You exchange greetings with Eleanor, your older neighbor as she snips a few roses for her table. She tells you that you're signed up to cook for tomorrow's nightly co-housing community dinner. "Yes, I remember. I do it every other Wednesday," you say, shaking your head and smiling slightly at her redundant yet endearing reminder. Before leaving, you glance back and up at the roof tiles. Though they look like slate, you know they're powering the entire building.

Avoiding distraction, you decide not to walk through the market. As you go down East Main, you notice the changes from your youth. In the store fronts it is difficult to find any plastic or metal, and the colors displayed are reminiscent of the earth and the plants on your frequent strolls.

After walking through Lithia, soft and green, with playing children and late-morning sun-bathers, you reach the forest. Many of the Douglas Firs and the Big leaf Maples are dead or sickly, and the texture of the forbs has changed, yet the creek still flows and the hillsides have not eroded. They are held by the roots of young Ponderosa Pines and White Oaks planted 20 years ago.

You are hot and sweaty, and have reached your destination. You slide into the largest pool, shallower than when you were young, but still thigh-deep, dunk yourself in its refreshing coolness, climb onto a warm rock, bask in the heat, and are grateful.

Overarching Goals

This Climate and Energy Action Plan provides a strategic path toward achieving two primary goals:

GOAL 1: Reduce Ashland's contribution to climate change by **reducing community greenhouse gas emissions**.

GOAL 2: Prepare the city's communities, systems, and resources to be **more resilient to climate change impacts**.

Goal 1: Reduce Greenhouse Gas Emissions

Cities play an important role in reducing greenhouse gases. More than 80% of Americans and 50% of the world's population live in urban areas. Therefore, the design of cities, including their built environment and transportation systems, strongly influence GHG emissions. Ashland recognizes that it must minimize its negative impact on the global environment. While urgent action is needed, many climate actions cannot be completed overnight, so a long-term approach is needed to achieve deep reductions.

The Climate and Energy Action Plan presents the following long-term targets for reducing greenhouse gas emissions associated with city and community activities:

For the community:

- Reduce overall Ashland community greenhouse gas emissions by 8% per year, on average.

For City of Ashland operations:

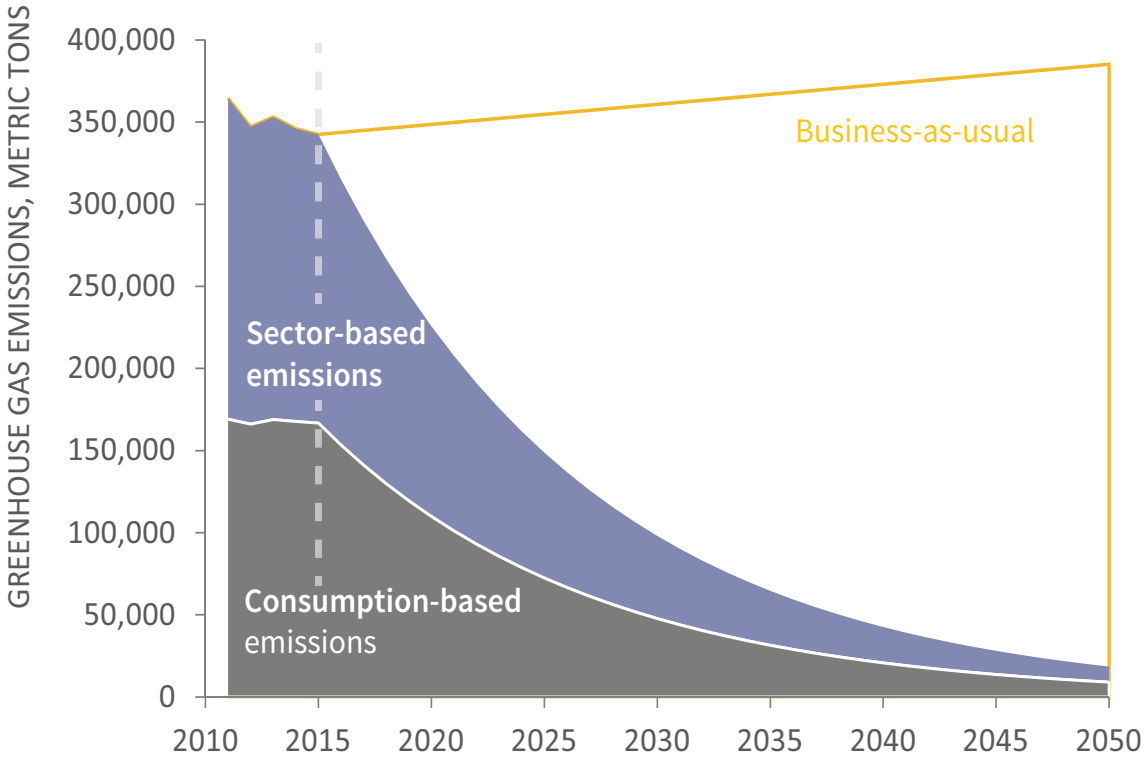
- Reach carbon neutrality by 2030.
- Reduce fossil fuel consumption by 50% by 2030 and 100% by 2050.

The 8% annual target represents emissions reductions necessary to prevent the worst climate change impacts (see the Methodology appendix for more information). Specifically, it identifies how much the world on average would need to cut emissions each year to result in a concentration of carbon dioxide in the atmosphere under 350 parts per million.

To further underscore the importance of setting and reaching this target, this plan recommends that the community and city targets and related goals be adopted by ordinance. This action indicates to the community the highest level of commitment by the City Council to take meaningful action.

ASHLAND'S TARGETED GHG EMISSIONS

8% per year average reduction in total emissions



The strategies and actions in this plan are a starting point and strategic framework for making and assessing progress over time. This plan does not provide a pathway for achieving this target, as the target represents a degree of action that cannot be accurately modeled using current greenhouse gas accounting methodologies. Consequently, some real-world reductions in Ashland may not be reflected in near-term GHG inventories because available tools for evaluating consumption-related emissions do not currently capture changes in Ashland's consumption behaviors. This plan assumes that methodologies will be refined in the future to enable more accurate measurement of emission reductions. For example, the Oregon Department of Environmental Quality is developing a tool that can be used to more accurately quantify consumption-based emissions, and will be applied to Ashland's next GHG inventory.

Emissions reductions were modeled against the proposed higher-level strategies in this plan. The "Moving the Needle: A Thought Experiment" section summarizes outcomes for that modeling exercise to reveal how various actions taken by the City and community could result in measurable emissions reductions.

Goal 2: Prepare for Projected Climate Change Impacts

Ashland will experience varying impacts of climate change at different times. Some of the impacts are already being felt, including lower snowpack and more smoke and heat in the summer.[5] As climate changes our environment and its systems and resources, Ashland will need to anticipate the changes and take action to mitigate or adapt to the impacts.

This goal calls for Ashland to recognize these climate change threats and take actions to ensure that Ashland can withstand the impacts while sustaining or improving quality of life for all its citizens. These actions could include approaches to minimizing the community's exposure to climate impacts, the sensitivity of people or infrastructure that are exposed, or capacity to adjust or bounce back.

Vision for the Future

A Strategic Approach

This plan presents a strategy that is customized to Ashland's unique characteristics. Ashland can influence its ability to address or prioritize particular climate and energy strategies as a result of its:

- **Utility ownership.** Ashland's electricity utility is municipally owned, which grants the City direct control over utility operations, business decisions, and related program activities.
- **Energy mix.** Ashland purchases energy from Bonneville Power Administration, which is largely sourced by hydropower.
- **Engaged community.** Ashland citizenry are highly engaged in community issues and activities.
- **Political will.** Ashland's leadership is historically supportive of innovative actions and environmental leadership.
- **History of climate action.** Ashland has a long history of environment- and climate-related policies and actions to build upon, including the first community solar project in Oregon and effective energy efficiency programs.
- **Heavy tourism influence.** Ashland's industry is largely tourist-based, meaning that a portion of the city's greenhouse gas emissions comes from the behavior of visitors over which the City has less direct influence. Ashland's interactions with tourists could also potentially give Ashland's actions a greater geographic reach, however, as visitors bring the Ashland experience back home with them.
- **Small city in a rural environment.** Ashland is a small town, which brings both benefits and challenges. On one hand, governments of small communities can have more direct contact and influence over their services and utilities. On the other hand, smaller communities have fewer available resources for climate action compared to larger cities, and advocating for changes at the state and national level could be more difficult.
- **Direct influence on water supply.** Ashland has direct ownership and control over much of its water supply. However, climate change will impact that supply.
- **Progressive state-level activities.** The State of Oregon has introduced ambitious climate policies and regulations, as well as tools and resources for supporting local climate action.

Given these particular characteristics coupled with information on Ashland's greenhouse gas emission sources and anticipated impacts from climate change, the following **overarching strategic initiatives** were identified to guide the strategies and actions presented in this plan. While the strategies and actions in this plan are organized by focus areas such as Buildings and Energy, Transportation and Land Use, and Natural Systems, these initiatives, described in the following sections, cut across these focus areas to emphasize synergistic and integrated solutions for addressing climate in Ashland.

- Transition to clean energy.
- Maximize conservation of water and energy.
- Support climate-friendly land use and management.
- Reduce consumption of carbon-intensive goods and services.
- Inform and work with residents, organizations, and government.
- Lead by example.

Transition to clean energy

Energy used for buildings and transportation makes up half of Ashland's historic greenhouse gas emissions. Most of these emissions are from the combustion of natural gas by residential and commercial buildings, electricity consumption, and gasoline used to fuel residential on-road travel.

Addressing energy-related emissions requires a combination of reduced and lower-carbon energy use. The majority of energy consumed by Ashland's buildings is purchased from Bonneville Power Administration (BPA), which sources its electricity largely from hydro and nuclear power. The majority of energy consumed by Ashland's transportation sector comes from the direct combustion of gasoline and diesel fuel. Switching existing fuels, such as natural gas and gasoline, to cleaner fuels such as low-carbon electricity can lower the overall emissions profile of Ashland's current energy use and reduce reliance on fossil fuels. Furthermore, the introduction of new clean energy sources, such as local renewable energy, as well as increased conservation and energy efficiency, can help offset the increased electricity loads caused by fuel-switching and increased cooling demands anticipated under future climate change. These actions in combination act synergistically to reduce total energy-related emissions.

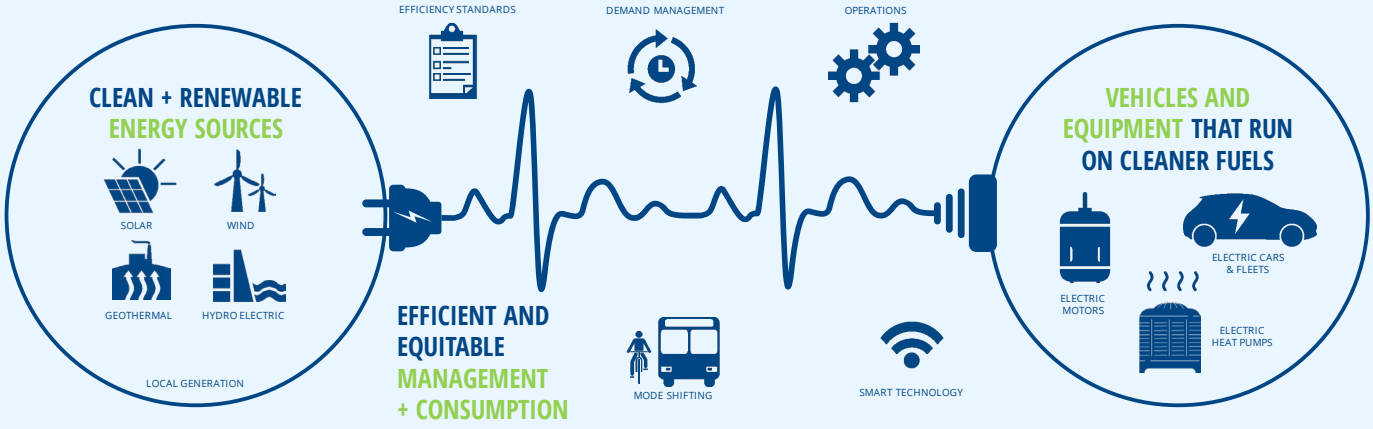
The following Climate and Energy Action Plan strategies are cornerstones of this clean energy transition:

- Support cleaner energy sources.
- Support more efficient vehicles.
- Improve energy demand management.

Example actions within these strategies include supporting community solar projects, smart grid technologies, and actions and initiatives that accelerate fuel-switching such as electric vehicle infrastructure requirements.

ASHLAND'S CLEAN ENERGY FUTURE: A BALANCED, COST-NEUTRAL APPROACH

Transitioning to a clean energy future in Ashland will require a combination of increased fuel-switching, clean renewable energy sourcing, and efficiency. Taking this three-pronged approach will allow the electric utility to offset potential revenue losses from efficiency and off-grid electrical consumption with new revenues from switching gas-fueled cars and natural gas-heated homes to electric vehicles and electricity-heated homes. Through this strategy, Ashland will be able to lower its overall energy consumption, costs, and associated emissions.



CITY OF ASHLAND'S CLEAN ENERGY FUTURE

Maximize conservation of water and energy

The production and use of energy and water resources for the built environment greatly influences Ashland's greenhouse gas emissions and vulnerability to climate impacts. Energy used by buildings accounts for almost a third of Ashland's greenhouse gas emissions. Water consumption for residential and commercial buildings and surrounding green spaces puts considerable stress on community water resources, which may become more scarce and in greater demand as temperatures increase and summer water availability declines.

Reducing water and energy resource use associated with Ashland's built environment will cut emissions, ease loads on the utility, and help secure resource supply and resiliency in a changing climate. The introduction of cleaner energy sources can reduce energy-related emissions to an extent, but improved energy use efficiency will also be required to achieve deep emission reductions. In general, cutting emissions through energy efficiency improvements can be more cost-effective than adding new renewable energy sources. The following Climate and Energy Action Plan strategies support water and energy efficiency:

- Encourage increased building energy efficiency.
- Adapt buildings to a changing climate.
- Manage and conserve community water resources.

Example actions include adjusting land use codes and incentives to support resource-efficient design, water reuse, and/or on-site storage systems; sponsoring building energy retrofit programs and water conservation rebate programs; introducing rate-based incentives; and providing educational materials aimed at awareness and behavior change. The introduction of passive and heat-tolerant building principles can also reduce cooling energy needs during heat waves and minimize heat-related public health impacts.

Support climate-friendly land use and management

The use and management of Ashland's lands play a significant role in both reducing greenhouse gas emissions and preparing for climate impacts. Development that promotes walking, biking, and riding transit reduces emissions from on-road vehicles that account for the majority of transportation-related emissions. Proper management and conservation of land resources can also support ecosystem services such as water storage and flow attenuation, shade, and biodiversity that make the city and its resources more resilient to threats posed by climate change.

Strategies in the Climate and Energy Action Plan that support climate-friendly land use and management are:

- Make Ashland even more friendly for people walking and biking to reduce dependence on vehicles.
- Support better public transit and ridesharing.
- Support more climate-ready development and land use.
- Promote ecosystem resilience.
- Manage ecosystems and landscapes to minimize climate-related health impacts.
- Manage and conserve community water resources.

Actions within these strategies feature transit-oriented development and infrastructure that supports walking and biking. Also, improved management and conservation of natural resources such as water and green spaces in and outside the city can help prepare the city for changes in temperatures, water availability, and wildfire risk.

Reduce consumption of carbon-intensive goods and services

The production and delivery of goods and services consumed by Ashland households contribute almost half of Ashland's greenhouse gas emissions. These goods and services include food, furniture, home construction materials, electronics, and clothing; and the production of transport fuels, natural gas, and electricity consumed in Ashland. Certain foods, such as meats, are more carbon-intensive to produce than dairy and grains, and therefore contribute the largest proportion of food-related emissions.

Despite the large contribution of household consumption to Ashland's greenhouse gas footprint, the City of Ashland has little direct control over household purchasing behavior and product manufacturing and transportation. As a result City-initiated options to reduce emissions from this source are limited. However, it is expected that as global markets and energy sources become greener over time, so too would the goods and services that Ashlanders consume. Strategies in the Climate and Energy Action Plan that contribute toward reducing emissions associated with consumption of goods and services are:

- Reduce consumption.
- Support sustainable and accessible local production and consumption.

These strategies promote reduced consumption, facilitating marketplaces for reuse and sharing such as tool-lending libraries and reuse fairs, expanding the construction and demolition debris code to promote material salvage; sustaining local food production such as through farmers' markets and community gardens; and distributing outreach and education materials on the impacts of consumer choices.

Inform and work with residents, organizations, and government

Reducing greenhouse gas emissions and building resilience to climate impacts in Ashland is a community-wide effort. Everyone, including residents, businesses, organizations, institutions, and departments within the City itself, must understand what is needed and work together to take action. This strategy involves the City working closely internally and with the public, local stakeholder groups, and other jurisdictions and agencies to communicate climate priorities, coordinate action, and inspire change. The City must continue to learn from and listen to these parties to ensure that actions are coordinated, relevant, and effective. This strategy involves paying particular attention to equity considerations in the context of climate change (see "Climate and Equity" section on page 113). Specific strategies within the Climate and Energy Action Plan that support this education and coordination effort include:

- Educate and empower the public.
- Educate and empower City staff.
- Mainstream climate considerations.
- Enhance City communication and coordination to minimize public health and safety impacts.
- Promote a sustainable local economy that minimizes emissions and vulnerability.
- Engage with other governments and organizations on regional, statewide, national, and international climate policy and action.

Lead by example

Although emissions from the City of Ashland's operations make up a relatively small proportion of the community's overall greenhouse gas emissions, City leadership in reducing its own operational emissions can inspire community action, enhance operational efficiencies, and reduce costs. This strategy involves the City taking actions to reduce its own GHG emissions footprint and make City operations more climate resilient, including by training internal staff, optimizing City facilities, and improving equipment and purchasing processes. Strategies in the Climate and Energy Action Plan that support City leadership are:

- Maximize energy efficiency of City facilities, equipment, and operations.
- Increase the efficiency of City fleet and employee commuting.
- Improve sustainability of City operations and purchases.
- Conserve water use within City operations.

Moving the Needle: A Thought Experiment

This plan sets forth an ambitious goal for reducing greenhouse gas emissions in Ashland. What does a reduction target of **8% per year** (95% reduction by 2050) mean for the average Ashlander and how the City operates? What kinds of changes would need to happen in Ashland to really move the needle on emissions?

This section provides a hypothetical experiment to demonstrate how a few example changes in Ashland's behaviors and infrastructure could result in meeting slightly less than half of the required greenhouse gas emission reductions. It is merely a thought experiment to demonstrate the linkage between behavior and emissions — the scenario presented does not necessarily reflect what is realistic or would result by taking the actions in this plan. For more information on how specific actions in this plan may contribute toward Ashland's greenhouse gas emission reduction goal, see the "What will this plan achieve?" section on page 43.

If the Ashland community made the achievements listed in the table below, then the community would be able to reduce its greenhouse gas emissions by an estimated **38% below 2015 levels by 2050**, equivalent to each Ashland resident and business reducing its footprint by about 1.4% per year. These estimates are based on assumptions from similar analyses conducted by other municipalities and organizations in the Pacific Northwest.

The progress that Ashland makes toward reducing its GHG emissions will also be influenced by broader state, regional, national, and international initiatives and policies. The federal Clean Power Plan, for example, if enacted, will reduce the GHG emissions associated with the U.S. energy grid by making power plants operate more cleanly and efficiently and expanding the capacity for zero- and low-emitting power sources. In 2016, the State of Oregon enacted legislation requiring Oregon's major electricity suppliers to obtain 50% of their power from renewable sources by 2040. The law also sets a timetable for eliminating coal-fired electric power in the state, and it establishes a community solar program for Oregon. These and other anticipated regulations and programs, such as changes to the federal Corporate Average Fuel Economy (CAFE) standards, will further contribute toward Ashland's emissions reduction goals and were taken into account in this analysis.

Ashland could achieve a **38% reduction** in greenhouse gas emissions **by 2050** if the community...

CONSUMPTION

- Reduced consumption-related emissions by 30% through activities such as product reuse, reducing meat consumption, or introduction of a carbon tax on products and services.

ENERGY

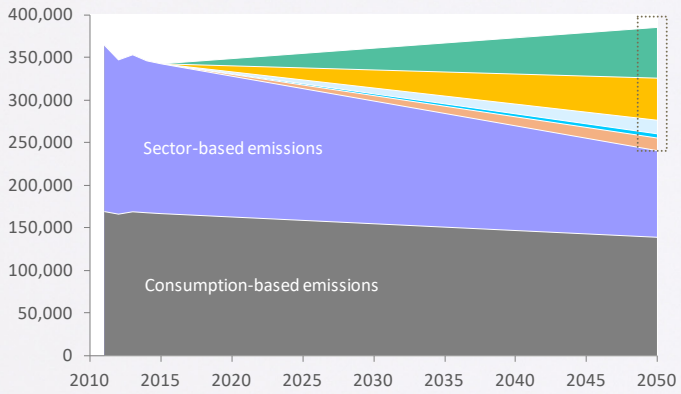
- Reduced energy use by 50% through energy efficiency measures.
- Shifted 50% of grid electricity consumption to distributed renewable energy generation.
- Transitioned 90% of natural gas used in buildings to electricity.

TRANSPORTATION

- Shifted 25% of motorized travel to walking or biking.
- For the remaining motorized travel:
  - Shifted 80% of private vehicles to electric vehicles.
  - Shifted 50% of commercial vehicles to electric vehicles.
  - Increased the average fuel efficiency of light-duty vehicles to 54.5 miles per gallon.

What if?

A significant contributor to Ashland's modeled emissions reductions is the transition of liquid fuels like gasoline and diesel to electricity as more drivers switch to electric vehicles. However, there is some uncertainty around the exact makeup of Ashland's future electricity sources. The model above assumes that 55% of electricity is from zero-emission sources by 2050. However, if Ashland were to have zero-emission electricity by 2050, then the emission reductions would increase from 46% to 54%—equivalent to an average reduction of 1.9%, instead of 1.4%, per Ashland resident per year.



The figure below shows how **Ashland could achieve a 38% reduction in emissions,** and example actions in the plan that could contribute.

Consumption (15%)

CM-1-2 Supporting "collaborative consumption" projects

CM-3-3 Strengthening the Demolition Debris and Diversion ordinance

CM-5-1 Introducing environmentally preferable purchasing guidance

Renewable energy (4%)

BE-1-2 Encouraging on-site and community solar energy production

BE-3-1 Installing solar at City facilities

BE-4-1 Introduction of virtual net metering

Transportation (1%)

ULT-1-1 Promoting transit, carpooling, and car-sharing

ULT-2-1 Expanding bicycle infrastructure

ULT-3-2 Requiring EV charging infrastructure in new development

Energy efficiency (13%)

BE-2-2 Requireing building energy scores

BE-2-3 Addressing energy efficiency barriers in rent/ lease properties

BE-2-4 Establishing energy efficiency standards for affordable housing

Transitioning from natural gas to electricity (4%)

BE-1-1 Developing a comprehensive electricity utility plan

BE-2-1 Increasing energy efficiency program participation

BE-3-1 Implementing City facility improvements

What will this plan achieve?

The modeled emission reductions in this section provide a sense of what could be achieved if Ashland took aggressive action on climate change by implementing actions set forth in the Plan. Reductions are presented as groupings of similar actions, but do not precisely represent the reductions associated with those actions. This is due to challenges in attributing emission reduction values to individual actions.

Potential emission reductions associated with individual actions can be difficult to quantify with certainty due to their interdependent nature. For example, reduced emissions associated with switching from gasoline to electric vehicles will depend largely on the mix of energy sources used to generate electricity and the average fuel economy of the vehicles. Emissions associated with use of electricity will in turn be affected by other actions in this plan, such as increased local renewable energy production. It is therefore difficult and counterproductive to single out reductions associated with any individual action.

Assessing emissions reductions is also complicated by uncertainty in underlying variables and assumptions. The efficacy of expanded education and outreach efforts around home energy efficiency will depend on many factors, including the populations to which outreach will be conducted, the extent to which the City has already reached existing residences, as well as external factors, such as the state of the economy, which influences people's willingness to take risks and invest in new technologies.

Given these limitations, actions in this plan were not quantitatively modeled for efficacy. Rather, actions were qualitatively assessed relative to other potential actions using a set of criteria that included estimated emissions reduction potential. Qualitative assessment informed the order of priority actions in this plan. It is expected that, at the time of implementation, the City will undertake more detailed modeling efforts to quantify anticipated outcomes.

What's in a goal?

Ashland has chosen to pursue a science-based target for cutting community greenhouse gas emissions, which means that the community is committed to doing its part towards preventing the worst impacts of climate change. This thought experiment demonstrates the extent of what would be needed to achieve these real emission reductions. Meeting this target means changing the way Ashland moves, lives, and functions as a community. It will not be easy, but it will be critical for addressing this global crisis that threatens our current and future livelihoods.

Climate and Equity

Equity is central to addressing climate change. Many of the countries most responsible for contributing to climate change, such as the United States, will not bear the brunt of global climate change impacts. Countries and communities that were not large historical emitters of greenhouse gases, such as small island nations, Arctic villages, and developing coastal communities, are facing a rapidly changing environment of thawing ice, flooded coasts, and extreme storms. Many of these communities do not have the resources or capabilities to protect, restore, or adapt to these changing conditions. It is the responsibility of the United States and its communities, as historical and current contributors to the problem, to be a committed and proportionate part of the solution. **This plan provides a foundation for ensuring that Ashland contributes to being part of the climate change solution.**

Climate change will also have a disproportionate impact on some local populations. In Ashland, elderly, low-income, disabled, and minority populations will be most vulnerable to many changing climate conditions, such as threats from severe heat, wildfire smoke exposure, and flooding.[6] These populations may also suffer from other secondary impacts of climate change, such as risks to seasonal employment and agricultural productivity. **Ashland will need to commit special focus when implementing all actions in this plan to ensure the continued and improved prosperity and quality of life of these populations in the face of a changing climate.**

Actions to address these inequities, such as reducing urban heat islands or providing disaster preparedness assistance to at-risk communities, will pay dividends not just for those populations but also for the greater Ashland community. When everyone is healthy, employed, and safe, the community enjoys greater economic and social stability and prosperity.

Elements of the Plan that Emphasize Equity

Equity is integrated throughout Ashland's Climate and Energy Action Plan. For example, the following plan elements emphasize and address equitable climate action:

- An **ambitious greenhouse gas emissions reduction target** that acknowledges the responsibility of developed societies to minimize harmful impacts to those who did not contribute to the problem.
- **Actions that focus on supporting vulnerable populations**, who will disproportionately suffer from many climate change impacts.
- **Including equity in prioritization criteria** for evaluating potential actions.
- **Progress indicators** that track equitable implementation of the plan, such as percent of Ashland residents experiencing health issues or with access to cooling centers.
- An **implementation plan** that calls for equity to be considered in the implementation phase of every action.

Co-Benefits

In addition to the larger societal benefits that result from equitable and inclusive climate action, many strategies and actions in this plan result in other co-benefits, such as enhanced natural aesthetics, public health, economic vitality, or quality of life. For example, the introduction of energy-saving equipment and behaviors not only addresses climate goals, but can also lower energy costs for residents and citizens. **This plan prioritizes these "win-win" solutions that benefit both the climate and other facets of the Ashland community.** Co-benefits associated with each action are identified with icons in the Implementation Plan.

Co-benefits considered in prioritizing the strategies and actions of this plan include the following:

Support for low-income and disadvantaged communities. When implemented carefully and correctly, actions such as local green job training and subsidy programs for energy efficiency upgrades can be especially helpful for low-income and disadvantaged communities.

Public health. Some actions that reduce greenhouse gas emissions also promote healthier lifestyles, such as supporting more people walking and biking and eating less carbon-intensive foods.

Quality of life and well-being. Many climate actions can also improve quality of life for Ashland citizens, such as benefits of green jobs to the local economy and creation of more comfortable and inviting homes through energy efficiency improvements.

Local habitat, recreation and aesthetic. In addition to enhancing ecosystem resilience, minimizing heat impacts, and storing carbon, actions that improve natural habitat and tree cover can also enhance natural beauty and provide recreational opportunities for visitors and residents.

"In urban settings, neighborhoods with low socioeconomic status have some of the highest needs for climate adaptation and resilience-building efforts. Applying the concept of social equity to these efforts can help ensure that all communities are involved."

U.S. Climate Resilience Toolkit

THE CLIMATE AND ENERGY ACTION PLAN AT-A-GLANCE

The table below summarizes the strategies and actions of this plan, detailed by focus area in the following sections.

BUILDINGS + ENERGY

	SCOPE	TYPE
Strategy BE-1. Support cleaner energy sources		
BE-1-1. Develop a comprehensive plan for the Municipal Electric Utility.	C	Mi
BE-1-2. Promote switching to low and non-carbon fuels.	C	Mi
BE-1-3. Facilitate and encourage solar energy production.	C	Mi/Ad
BE-1-4. Enhance production of on-site solar energy from City facilities.	M	Mi/Ad
Strategy BE-2. Encourage increased building energy efficiency and conservation.		
BE-2-1. Expand participation in energy efficiency programs & promote climate-friendly building/construction.	C	Mi/Ad
BE-2-2. Require building energy scores to identify and incentivize cost-effective energy efficiency improvements.	C	Mi/Ad
BE-2-3. Identify and adopt strategies to reduce energy efficiency barriers in rent/lease properties.	C	Mi/Ad
BE-2-4. Establish minimum energy efficiency standards for the affordable housing program.	C	Mi/Ad
Strategy BE-3. Maximize efficiency of City facilities, equipment & operations.		
BE-3-1. Use results from City Facilities Energy Audit to prioritize Capital Improvement Plans (CIPs) & maintenance improvements.	M	Mi
Strategy BE-4. Improve demand management.		
BE-4-1. Expand the current net meter resolution to include and incorporate virtual net metering.	C	Mi
BE-4-2. Implement utility-level smart grid technologies to facilitate efficiency and distributed energy solutions.	C	Mi
Strategy BE-5. Prepare and adapt buildings for a changing climate.		
BE-5-1. Encourage heat-tolerant building approaches such as cool roofs and passive cooling.	C	Mi/Ad

URBAN FORM, LAND USE + TRANSPORTATION

Strategy ULT-1. Support better public transit and ridesharing.		
ULT-1-1. Coordinate with neighboring local governments to promote use of transit, carpooling, and car-sharing.	C	Mi
ULT-1-2. Work with RVTD to implement climate-friendly transit.	C	Mi
ULT-1-3. Establish policies to support development near transit hubs without displacing disadvantaged populations.	C	Mi
ULT-1-4. Evaluate feasibility of expanded local transit options.	C	Mi
Strategy ULT-2. Make Ashland more bike- and pedestrian-friendly.		
ULT-2-1. Implement bicycle- and pedestrian-friendly actions in the Transportation System Plan and Downtown Parking Management Plan.	C	Mi
ULT-2-2. Explore opportunities to convert to shared streets where appropriate to provide multimodal connectivity.	C	Mi
Strategy ULT-3. Support more-efficient vehicles.		
ULT-3-1. Implement a local fuel-related tax.	C	Mi
ULT-3-2. Revise land use codes to require EV charging infrastructure at multifamily and commercial developments.	C	Mi
ULT-3-3. Develop and provide information about electric and hybrid vehicles on the City website.	C	Mi
Strategy ULT-4. Support more climate-ready development and land use.		
ULT-4-1. Regulate new development in the Wildfire Lands Overlay part of the urban growth boundary.	C	Ad
ULT-4-2. Revise community development plans to favor walkable neighborhoods and infill density.	C	Mi
ULT-4-3. Modify the WUI code to include construction techniques appropriate for wildfire-prone areas.	C	Ad
Strategy ULT-5. Increase the efficiency of City fleet vehicles and employee commuting.		
ULT-5-1. Provide carpool and vanpool parking, charging stations, and parking for EVs for City employees.	M	Mi
ULT-5-2. Conduct a city fleet audit and use it to set policy and targets.	M	Mi
ULT-5-3. Purchase verified carbon offsets to offset City staff travel.	M	Mi

CONSUMPTION + MATERIALS MANAGEMENT

Strategy CM-1. Reduce consumption of carbon-intensive goods and services.		
CM-1-1. Implement an education campaign for waste and consumption reduction strategies.	C	Mi
CM-1-2. Support "collaborative consumption" community projects.	C	Mi
CM-1-3. Determine and implement effective ways to reduce and track consumption based emissions.	C	Mi
Strategy CM-2. Support sustainable and accessible local production and consumption.		
CM-2-1. Partner with nonprofit organizations to promote the purchase of climate-friendly food and products.	C	Mi
CM-2-2. Expand community gardening and urban agriculture.	C	Mi/Ad
Strategy CM-3. Expand community recycling and composting.		
CM-3-1. Improve recycling programs, implement new education and outreach, and expand public space recycling.	C	Mi
CM-3-2. Update the multi-family recycling ordinance to encourage more diversion.	C	Mi
CM-3-3. Strengthen the Demolition Debris and Diversion ordinance to enhance enforcement, diversion, and reuse.	C	Mi
Strategy CM-4. Reduce food waste.		
CM-4-1. Support edible food donation.	C	Mi/Ad
CM-4-2. Provide a best practices guide to help households and businesses reduce food waste and consumption.	C	Mi/Ad
CM-4-3. Evaluate opportunities for recycling of commercial food waste.	C	Mi/Ad
Strategy CM-5. Improve the sustainability of City operations and purchases.		
CM-5-1. Introduce environmentally preferable purchasing (EPP) guidelines for City procurement.	M	Mi
CM-5-2. Assess the feasibility of co-digesting food waste and biosolids at the wastewater treatment facility.	M	Mi

NATURAL SYSTEMS

Strategy NS-1. Promote ecosystem resilience.		
NS-1-1. Manage forests to retain biodiversity, resilience, and ecosystem function and services in the face of climate change. Use best available science to inform fire management and planning.	C	Ad
NS-1-2. Use green infrastructure such as bioswales, permeable pavement, other pervious surfaces to reduce flood risk and minimize sediment entry into creeks from trails and roads.	C	Ad
NS-1-3. Undertake restoration efforts to retain and restore native fish and riparian species.	C	Ad
NS-1-4. Map and protect areas that provide ecosystem services.	C	Ad
Strategy NS-2. Manage and conserve community water resources.		
NS-2-1. Evaluate incentives for practices that reduce use of potable water for nonpotable purposes and recharge ground water.	C	Mi/Ad
NS-2-2. Explore water-efficient technologies on irrigation systems and consider requiring them during permitting.	C	Mi/Ad
NS-2-3. Expand water conservation outreach and incentive programs for residents and businesses.	C	Mi/Ad
Strategy NS-3. Conserve water use within City operations.		
NS-3-1. Evaluate the potential for installation of rainwater collection systems at City facilities for graywater uses, and investigate opportunities for graywater reuse at existing and new City facilities and properties.	M	Mi/Ad
NS-3-2. Implement efficiency recommendations from the City facilities water audit.	M	Mi/Ad

PUBLIC HEALTH, SAFETY + WELL-BEING

Strategy PHSW-1. Manage ecosystems and landscapes to minimize climate-related health impacts.		
PHSW-1-1. Promote the expansion of tree canopy in urban heat islands or areas that need air conditioning.	C	Ad
Strategy PHSW-2. Promote a sustainable local economy that minimizes emissions and vulnerability.		
PHSW-2-1. Engage leading employers in a dialogue on climate action.	C	Mi/Ad
PHSW-2-2. Support organizations, such as SOU, in evaluating risks to local food sources under climate change.	C	Ad
Strategy PHSW-3. Minimize public health impacts.		
PHSW-3-1. Work with vulnerable populations to create specific adaptation strategies that address public health.	C	Ad
PHSW-3-2. Identify and minimize potential urban heat impacts.	C	Ad
PHSW-3-3. Develop or enhance heat-warning systems for employees and the public.	C	Ad
Strategy PHSW-4. Minimize public safety impacts.		
PHSW-4-1. Update the City's emergency response plan and ensure that preparation and updates recognize and address likely climate change impacts.	C	Ad
PHSW-4-2. Identify and address populations and essential City services within the 100-year flood zone.	M	Ad

CROSS-CUTTING STRATEGIES

Strategy CC-1. Educate and empower the public.		
CC-1-1. Create a formal public outreach and education plan to inform the community about climate actions.	C	Mi/Ad
CC-1-2. Support capacity of community groups to implement climate mitigation and adaptation initiatives.		
CC-1-3. Assess the feasibility of a City-sponsored carbon offset program.	C	M
Strategy CC-2. Educate and empower City staff.		
CC-2-1. Ensure all City departments educate their staff members about the Climate and Energy Action Plan.	M	Mi/Ad
Strategy CC-3. Mainstream and integrate climate considerations.		
CC-3-1. Consider climate change in all City Council policy, budgetary, or legislative decisions and as part of the Council Communication document template.	M	Mi/Ad
CC-3-2. Incorporate CEAP goals and actions in future updates of city plans.	M	Mi/Ad
CC-3-3. Include consideration of climate action goals within the scope of every appropriate City Advisory Commission.	M	Mi/Ad
Strategy CC-4. Engage with other governments and organizations around regional, statewide, national, and international climate policy and action.		
CC-4-1. Engage with other governments and organizations around climate policy and action.	M	Mi/Ad

KEY

SCOPE OF IMPACT

- C — affects **community-wide** operations + climate goals.
- M — affects **municipal** operations + climate goals.

TYPE OF IMPACT

- Mi — addresses **mitigation** goals (lowers GHG emissions).
- Ad — addresses **adaptation** goals (builds resilience to climate impacts).
- Mi/Ad — addresses **both mitigation + adaptation** goals.

BUILDINGS & ENERGY

Buildings & Energy

While many people think of greenhouse gas emissions, they picture cars and trucks; however, commercial, residential, and industrial buildings are some of the largest energy users—and thus responsible for a large portion of greenhouse gas emissions. Ashland's built environment accounts for more than one-quarter (27%) of the city's total emissions, more than all types of transportation combined. This represents a significant opportunity to reduce emissions and help Ashland meet its reduction targets. On the plus side, because building emissions are primarily due to energy used for electricity, heating, and cooling, energy efficiency measures can dramatically reduce building emissions. Installing efficient lighting, heating, ventilation, and air conditioning (HVAC) systems, windows and insulation, and other upgrades can significantly reduce the amount of energy a building requires.

Because most buildings' energy use in Ashland is predominantly in the form of electricity, changes in the fuel mix used to generate electricity—for example, by replacing a coal-fired power plant with wind turbines—reduce the GHG emissions footprints of all buildings that draw electricity from the grid. These factors, among others, contributed to a reduction of 21% in overall emissions from Ashland's built environment from 2011 to 2015. The impact of energy efficiency improvements was especially pronounced among residential homes, which saw a 9% decrease in electricity demand over the same period.

Climate change will have complicated effects on Ashland's built environment. On one hand, warmer winters will mean buildings require less energy to heat, which will cause natural gas use to decline. The number of heating degree days—a measure of the number of degrees that a day's average temperature is below 65°F, commonly used to describe heating energy demand in buildings—decreased by 20% between 2011 and 2015, contributing to a 13% drop in natural gas use. Conversely, reduced snowpack due to climate change may affect regional hydropower capacity, and increased temperatures will increase energy demand for cooling during the dry summer months. The projected increase in wildfire frequency and severity may also put transmission lines at risk, making electricity less reliable in the region.

Progress to Date

Ashland's commercial, residential, and industrial building energy use declined 21% from 2011 to 2015. These changes were due largely to increased renewable electricity in the regional grid, decreased electricity use in the residential sector, and reduced natural gas use from warmer winters.

Ashland owns its own electric utility, which means that the City has greater control over its electricity rates and programs compared to other cities. This arrangement has contributed to the City's progress in supporting community renewable energy and improving building systems efficiency. The City has implemented three successful programs focused on expanding renewable energy sources and improving the energy efficiency of existing residential, commercial, and government buildings:

- A **retro-commissioning incentive program** provides financial and technical assistance to tune up energy systems in commercial and residential buildings. This program offers incentives to building owners and occupants to upgrade or replace building systems—including lighting, HVAC, heating—with newer and more efficient equipment.
- **Solar Pioneer II**, a 63.5-kilowatt City-sponsored community solar project, gives citizens the opportunity to "adopt" one of its 363 panels as a way to purchase local renewable energy.
- A **City Facilities Energy Audit** identified energy efficiency opportunities at the City's own facilities.

Goals and Indicators

Goals

- Reduce greenhouse gas emissions associated with Ashland's building energy use.
- Increase energy and water efficiency in City and private buildings.
- Protect Ashland's building stock and energy supply from climate impacts.

Potential Indicators

- Commercial and residential building energy use and associated emissions.
- Local clean renewable energy production.
- Energy and water use per unit building area.
- Proportion of buildings that use heat-resistant materials, passive buildings, and/or white roofs.

Strategies and Actions

Strategy BE-1. Support cleaner energy sources.

Efforts to support cleaner energy sources will minimize harmful pollution associated with energy use and help meet the additional energy needs as climate change causes temperatures to rise. This strategy deals with enhancing the use of cleaner fuels through fuel-switching in residential and commercial buildings and renewable energy production and generation.

PRIORITY ACTIONS

C Mi

BE-1-1. Develop a comprehensive plan for the Municipal Electric Utility.

The transition to low-carbon energy such as renewables will require taking a broad-level approach that transcends traditional utility boundaries. Although some aspects would not fall under the traditional purview of the utility, a comprehensive energy plan for the Municipal Electric Utility that addresses clean renewable energy, energy efficiency, and electrification of the transportation sector will provide a more strategic path forward for maximizing societal benefits and achieving climate goals. This plan would set targets, address policy and service issues, and identify potential solutions related to comprehensive energy planning. For example, the plan could delineate energy rate structures and efficiency/conservation program funding levels, targets for installation of solar photovoltaics within the City's distribution grid, a long-term strategy for wholesale power acquisition, and demand management. The recently adopted 10% new, local, and clean energy by 2020 ordinance is a key policy decision that would play a large role in development and shaping of this plan.

C Mi

BE-1-2. Promote switching to low and non-carbon fuels.

With relatively clean electricity sources, Ashland has great potential to reduce GHG emissions through switching from higher-carbon fuels such as natural gas and gasoline to lower-carbon electricity. This action calls for the City to work across departments in a coordinated and strategic manner to identify ways to promote this kind of fuel switching in the community.

C Mi/Ad

BE-1-3. Facilitate and encourage solar energy production.

Local generation of renewable energy can offset emissions associated with energy consumption from the electric grid, and in some cases, may also mitigate climate-related risks to the hydropower electricity supply due to snowpack declines and increased drought risk. This action calls for the City to support increased solar energy production in Ashland, such as through the installation of a large-scale community solar project or rooftop solar panels on buildings in the community. It is worth noting that City-sponsored community solar has faced cost challenges in the past, so this action would need to address potential financial hurdles, like finding a nongovernmental organization or institution to sponsor the project or by developing new models and policies to facilitate community interest and investment, such as virtual net metering and solar production aggregation. The new Oregon Renewable Energy Cooperative Law will facilitate this process, allowing renewable energy cooperative corporations to be created and capitalized without the requirement of securities registration. It will also be important to ensure that new renewable energy installations do not negatively impact natural habitats or ecosystems.

M
Mi Ad

BE-1-4. Enhance production of on-site solar energy from City facilities.

Enhancement of solar energy production capacity at City facilities and City-owned parking lots would reduce electricity demand from the grid, set an example for the Ashland community, and provide reliable power for both the City operations and broader community.

OTHER ACTIONS

- Establish a solar recognition program for neighborhoods or populations who support renewables, such as for those who meet a certain percentage of electricity needs through renewable energy.
- Coordinate with Oregon cities to promote and reinforce standards around renewable energy, such as higher renewable portfolio standards and requirements for new construction.
- Develop promotional materials that encourage solar investments.

Solar Pioneer I and II

From 2000 to 2002, the City of Ashland, in collaboration with the Bonneville Environmental Foundation, implemented the Solar Pioneer I project, involving installing photovoltaic arrays totaling 30 kilowatts (kW) at the Civic Center, Oregon Shakespeare Festival, and Southern Oregon University. The project was funded in part by voluntary contributions from more than 260 ratepayers, who paid small surcharges on their utility bills to support the project. In addition to bringing renewable energy to the city, the program aimed to inform Ashland residents about solar energy.

Building on the success of the first round of the program, Ashland launched Solar Pioneer II in 2007, which used the same community funding mechanism to finance a 63.4-kW photovoltaic system on the City service center.

Strategy BE-2. Encourage increased building energy efficiency and conservation.

In addition to changing the energy source, cutting energy use within buildings presents another opportunity to reduce emissions. This strategy presents actions to reduce energy consumption through efficiency improvements in the commercial and residential sectors.

PRIORITY ACTIONS

C Mi Ad

BE-2-1. Increase outreach efforts to expand participation in energy efficiency programs and promote climate-friendly practices in building and construction.

Ashland currently provides energy conservation incentives and educational materials to residents and businesses through its electric energy efficiency programs. The program currently provides guidance for conducting home energy audits, as well as incentives for weatherization, improved heating and cooling, and more efficient appliances. Expanded outreach efforts will ensure that all Ashland residents are aware of these valuable programs and understand actions they can take to be more energy efficient in the home. For example, the City could discuss with businesses ways to reduce energy use through appliance or lighting upgrades. The City could also explore other ways to promote climate-friendly buildings, such as through introducing new mandates into the land use code that require mitigation (e.g., reduced energy use) and/or adaptation (e.g., increased cooling) elements in the built environment.

C Mi Ad

BE-2-2. Require building energy scores to identify and incentivize cost-effective energy efficiency improvements.

Energy used in Ashland's building stock accounts for more than one-quarter of the city's greenhouse gas emissions. The City could require and facilitate energy audits and/or scores for Ashland's buildings, perhaps triggered at the point of sale or permitting phase for new development or major remodels. For example, the City of Portland requires commercial buildings over a certain size threshold to annually report their energy use. The City also recently proposed a policy that would require sellers of single-family homes to obtain a home energy performance report and disclose the report to the City and prospective home buyers. The audits could educate property managers about energy use and opportunities, help the City understand building energy use, and facilitate implementation of energy-saving measures.

C Mi

BE-2-3. Identify and adopt strategies to reduce energy efficiency barriers in rent/lease properties.

Residents and businesses who own their properties often have stronger incentives to invest in energy efficiency technologies and equipment than those who rent or lease their homes and offices. Although more difficult to motivate, the introduction of energy efficiency approaches in rental and lease properties presents a significant opportunity for reducing emissions from buildings.

C
Mi Ad

BE-2-4. Establish minimum energy efficiency standards for the affordable housing program.

Ashland's Affordable Housing Program is an ongoing program that provides incentives to promote affordable housing development and requirements for affordability. The establishment of minimum energy efficiency standards for these housing units present a valuable opportunity to make homes more comfortable and energy efficient for residents, while also lowering energy bills and supporting those most in need.

OTHER ACTIONS

- Coordinate with other cities to establish and implement more energy-efficient building code standards.
- Restart the energy and green business challenges.
- Expand partnership with the school district to support energy efficiency programs and solar installation.
- Enhance retailer, contractor, and building professional training and awareness of best practices and rebates.
- Implement a program to pay for actual energy savings instead of upfront payments for modeled savings.
- Explore opportunities to encourage increased shading of homes and other buildings, such as through increased tree canopy cover or design features.

Strategy BE-3. Maximize efficiency of City facilities, equipment & operations.

Although City buildings contribute only a small proportion of the city's overall emissions, efficiency improvements to City facilities can allow the City to lead by example and communicate to residents that energy-efficient buildings can be beautiful, affordable, and comfortable. This strategy aims to reduce emissions associated with the City's built environment and promote energy conservation.

PRIORITY ACTION

M
Mi

BE-3-1. Use results from City Facilities Energy Audit to prioritize City Facilities Capital Improvement Plans (CIPS) and maintenance improvements.

City facilities frequently undergo routine maintenance and improvement projects. This action calls for using an evaluation of City facilities to identify opportunities for energy (and water) efficiency upgrades, The evaluation could be used to integrate more energy-efficient practices and equipment into City maintenance schedules and prioritize efficiency upgrades within capital improvement plans (CIPs).

OTHER ACTIONS

- Continue to monitor and adjust load-shifting measures at the wastewater treatment facility.
- Pursue Leadership in Energy and Environmental Design (LEED) or ENERGY STAR certification for existing and new City buildings. Adopt the LEED for Existing Buildings (LEED-EB) rating system or equivalent to guide operation, management, and upgrade of the City's existing building inventory.

Strategy BE-4. Improve demand management.

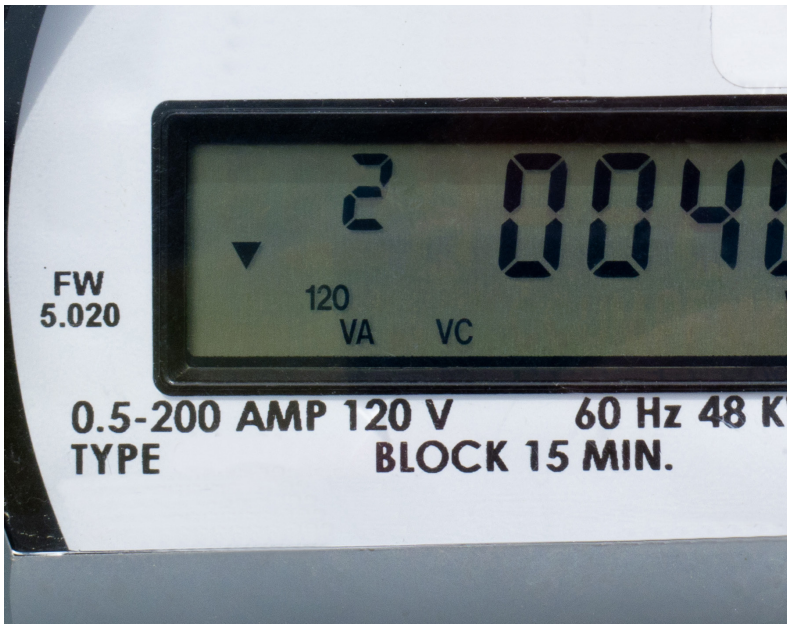
Managing the timing and intensity of energy demand can help make sure that more polluting forms of energy are not needed during peak times of high demand.

PRIORITY ACTIONS

C
Mi

BE-4-1. Expand the current net meter resolution to include and incorporate virtual net metering.

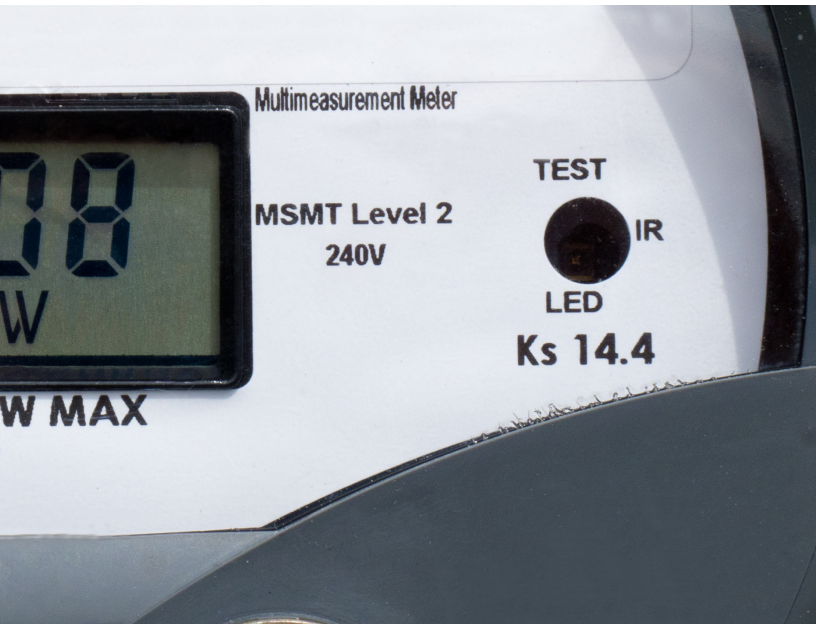
Net metering allows customers who generate their own electricity to sell the excess electricity back into the grid. Traditional net metering works at the level of the individual electricity meter, where excess energy supplied to the grid results in running the meter backwards. Virtual net metering, on the other hand, credits energy generation that occurs at another location against one's electricity bill. Working outside the utility meter enables residents to experience the financial benefits of generating renewable energy even if they are unable to generate the electricity on their own property. Expanding current net metering will make energy generation more cost-effective and available to Ashland's residents, including through such mechanisms as community solar.



C
Mi

BE-4-2. Implement utility-level smart grid technologies to facilitate efficiency and distributed energy solutions, such as storage.

Implementing new energy solutions requires bringing the electricity delivery systems, or the "grid," into the 21st century. Updating the grid involves enabling automation, remote control, and two-way communication. These updates help the grid to handle sources of electricity like wind and solar power and to integrate electric vehicles. Smart grids also collect data and allow residents to better understand their energy use and identify energy-saving opportunities. Implementing smart grid technologies will enable the adoption of clean energy solutions, and complementary strategies promoting renewable energy, electric vehicles, and energy efficiency will help realize the environmental benefits of the smart technologies.



Strategy BE-5. Prepare and adapt buildings for a changing climate.

The City can promote actions that help adapt buildings to withstand climate impacts such as extreme heat and wildfire, as well as protect building dwellers and visitors through improved design and functionality.

PRIORITY ACTIONS

C
Ad

BE-5-1. Encourage heat-tolerant building approaches such as cool roofs and passive cooling.

Buildings play a role in both withstanding climate change impacts as well as providing infrastructure to protect people from impacts. Buildings will be subject to potential increased flooding, extreme temperatures, and exposure to wildfires. At the same time, buildings can also shelter inhabitants and visitors from many of these impacts. To optimize the built environment to address climate change, the City can encourage heat-tolerant building approaches, such as cool roofs that block heat, green roofs, and passive cooling features such as improved air circulation designs. There are many venues available to encourage the public and developers to adopt these building approaches, including through education and incentive programs.

OTHER ACTIONS

- Consider future climate conditions when designing or upgrading City buildings and incorporate resilience-building elements such as heat-resistant materials, passive cooling, and white roofs.
- Enhance resiliency of building energy to fluctuations in energy markets and supply.

Southern Oregon University

Southern Oregon University (SOU) has used its position as one of Ashland's leading institutions to advance sustainability programs, both on campus and by serving as a hub to connect with and support the community. SOU's ongoing sustainability efforts include implementing energy efficiency and solar power projects, reducing waste, and conducting greenhouse gas inventories to assess its progress in reducing emissions. SOU was one of the first universities in the country to offset 100% of its energy and water use, with on-site renewable energy generation, carbon offset credits, and Water Restoration Certificates. The university also worked closely with Bee City USA—an organization that honors cities for their commitment to supporting pollinators —to create Bee Campus USA, an offshoot designation that recognizes pollinator-friendly campuses.

The Role of the Community

Here are some actions that everyday Ashland residents and organizations can take to make a difference in addressing climate change within our buildings and energy systems:

Make your home or business **energy- and water-efficient**.

Simple improvements can make a big difference for energy and water use. Weatherization, equipment upgrades, and basic behavior changes can also make your space more comfortable and lower utility bills.

Explore participation in **renewable energy** programs.

Community solar programs provide opportunities for residents to participate in renewable energy programs without needing to install solar panels on their own roofs. There are increasing options for residents to participate in these programs, including the development of a new statewide community solar program that will soon be available to all Oregon residents.

Think small before you rent or buy.

Consider what size home or business you need, and consider downsizing to avoid having to spend more on energy.

URBAN FORM, LAND USE & TRANSPORTATION

Urban Form, Land Use & Transportation

The movement of goods and services is central to Ashland's economy and community—and one of the largest GHG-emitting sectors. Emissions from the transportation sector made up nearly one-quarter (23%) of the city's total emissions in 2015. Residential on-road vehicle use accounts for nearly three-quarters of the sector's emissions, followed by residential air travel. While emissions from buildings have decreased markedly since 2011, transportation emissions have seen no significant change. This speaks to the challenge of reducing emissions from vehicles, the vast majority of which burn fossil fuels and, unlike buildings, are difficult to retrofit in ways that improve their efficiency or reduce GHG emissions.

While electric vehicles are becoming more available and affordable, near-term progress on reducing Ashland's transportation-related emissions can focus on reducing reliance on personal vehicles by improving public transit access and convenience, and by improving urban design to support higher densities while keeping housing affordable. Also worth noting are potential climate-driven impacts on alternative forms of transportation. With increased temperatures and wildfire-induced smoke, biking and walking may become more hazardous and thus increase reliance on vehicles. Addressing challenges like these is crucial to improving the resilience and reducing the greenhouse gas emissions footprint of Ashland's transportation.

Climate change also puts Ashland's infrastructure at greater risk of damage or destruction. More frequent and severe wildfires and floods may threaten roads, bridges, and real estate, and hotter summers may increase the rate of deterioration of some building materials. Culverts and road crossings may not be sized to withstand increased flooding, and roads bordering rivers and streams may be at risk of inundation. The City, its residents, and private property owners will need to work together to reduce the risks that extreme weather events pose to Ashland's infrastructure.

Progress to Date

Ashland has made strides in incorporating climate and sustainability priorities into its land-use policies. Many of Ashland's existing plans and standards address activities that contribute toward emissions from the transportation sector, including the Transportation System Plan, local land use code, and Comprehensive Plan. Some examples of climate-friendly actions and requirements in these plans are:

- Street standards and street classifications in the **Transportation System Plan** promote shared streets that incorporate infrastructure for people walking, biking, and riding mass transit.
- The City's **Comprehensive Plan** and street standards highlight connectivity as a requirement in new development.
- The City's **land use code** has a "Pedestrian Places" component, which encourages the creation of walkable mixed-use areas that "encourage walking, bicycling, and transit use."

Goals and Indicators

Goals

- Reduce community and City employee vehicle miles traveled and greenhouse gas emissions.
- Improve vehicle efficiency and expand low-carbon transport, including within the City's fleet.
- Support local and regional sustainable growth.
- Protect transportation infrastructure from climate impacts.

Potential Indicators

- Transportation emissions.
- Community vehicle miles traveled.
- Emissions per mile traveled.
- Average city "Walk Score."
- Transit and bicycling ridership.

Strategies and Actions

Strategy ULT-1. Support better public transit and ridesharing.

Rogue Valley Transportation District (RVTD) provides Ashland's primary public transit service for visitors and residents. RVTD provides intercity and regional public transit within Jackson County, serving the city of Ashland as well as Talent, Phoenix, and Medford with fixed-route bus and dial-a-ride paratransit service.

Residents have voiced a desire for expanded public transit options, including more frequent and accessible downtown bus service, cleaner-fueled public transit vehicles (e.g., electric buses), and other public transit systems such as shuttles or trolleys. These options can reduce per-person emissions associated with residential on-road transportation, as well as reduce congestion, save fuel costs, and provide transportation options for those who cannot afford or choose not to own a personal vehicle.

PRIORITY ACTIONS

C
Mi

ULT-1-1. Coordinate with neighboring local governments to promote use of transit, carpooling, and car-sharing.

Ashland is already a member of the Rogue Valley Transportation District (RVTD), which provides shared bus service to cities throughout the greater Jackson County area. Currently, RVTD is examining a Bus Rapid Transit (BRT) line in their 2040 Transit Master Plan. Using RVTD as a model, the City together with nearby jurisdictions, can support, promote, and potentially provide additional service offerings, such as carpooling and car-share programs, that expand transportation options within each community and strengthen important connections to other areas in the Rogue Valley.

C Mi

ULT-1-2. Work with RVTD to implement climate-friendly transit, including continuing to move towards more efficient buses and expanded ridership.

The City and neighboring jurisdictions in the RVTD already have a longstanding and successful partnership that has brought public transit to residents throughout the area. Recently, RVTD introduced the One Bus Away app, allowing riders to view schedule and arrival information in real time. In 2016, RVTD also began piloting an electronic fare called TouchPass that allows riders to purchase card passes that can be reloaded from a computer or mobile device. This action calls on Ashland to use its position as a partner in the RVTD to continue to improve the convenience, sustainability, and accessibility of its services.

C Mi

ULT-1-3. Establish policies to support development near transit hubs without displacing disadvantaged populations.

Transit-oriented development (TOD) increases housing density within walking distance of transit hubs. Creating a TOD zoning overlay or similar policy could reduce car use, but Ashland will need to design any policy carefully to avoid unintended consequences, such as gentrification that threatens housing affordability and could displace vulnerable populations.

M Mi

ULT-1-4. Evaluate the feasibility of expanded local transit options.

Rogue Valley Transportation District currently offers the only bus service in Ashland, and service and routes are limited. This action calls on the City to evaluate options for additional intra-city service to augment existing RVTD service and provide more public transit options to residents. This assessment would involve determining potential transit providers, assessing demand, identifying possible routes, and estimating costs and funding sources for purchasing and operating a transit fleet.

OTHER ACTIONS

- Provide additional park-and-ride lots to promote public transit and reduce downtown congestion.

Strategy ULT-2. Make Ashland more bike- and pedestrian-friendly.

On-road transportation generates nearly one-fifth of Ashland's total emissions. It is difficult to substantially improve the fuel efficiency of existing cars and trucks, so one of the most feasible methods of reducing emissions is to make other forms of transportation more desirable. A city that supports people walking and biking not only reduces the need for residents to drive but also offers the public health co-benefit of encouraging exercise.

PRIORITY ACTIONS

C Mi

ULT-2-1. Implement bicycle- and pedestrian-friendly actions in the City's Transportation System Plan and Downtown Parking Management Plan.

For bicycling to be considered a viable alternative to driving, the City will need to invest in infrastructure to improve its safety and convenience. For example, the City could encourage installing bike lanes at schools and arteries connecting to schools, expand urban trails, or provide dedicated bicycle infrastructure downtown or at area hotels. The City should commit to implementing bicycle-related actions in the Transportation System Plan and Downtown Parking Management Plan, such as 1) installation of bike intersection safety improvements; 2) increased bike lane infrastructure; and 3) expansion of on- and off-street bike racks, shelters, and sharing. The Ashland Trails Master Plan also provides a roadmap for improving urban trail infrastructure.

M Mi

ULT-2-2. Explore opportunities to convert to shared streets where appropriate to provide multimodal connectivity.

Shared streets are popular because they offer improvements for people walking and biking while preserving vehicle access. This action will spur Ashland to assess which streets or corridors may make sense to convert to shared streets due to their current use, potential future use, location, or other considerations.

OTHER ACTIONS

- Provide incentives for employer-sponsored bicycle programs, including for City employees.
- Conduct a community survey to understand barriers to biking.
- Implement projects that reallocate a portion of the right-of-way to spaces that are friendly to people walking, such as installation of parklets where appropriate.
- Further evaluate options for reducing vehicle use downtown in future updates of the transportation system plan.

Strategy ULT-3. Support more-efficient vehicles.

With on-road vehicle use responsible for nearly 20% of Ashland's overall emissions, improving the overall efficiency of the cars and trucks used throughout the city could have a significant impact on meeting greenhouse gas reduction goals. While most vehicles already on the road are likely not cost-effective to retrofit, the City can make progress by focusing on providing education, incentives, and support for hybrids, electric vehicles (EVs), and other cleaner-fueled vehicles.

PRIORITY ACTIONS

C
Mi

ULT-3-1. Implement a local fuel-related tax.

Having a sense of the baseline use of fossil fuels for transportation can help Ashland shape the most effective fuel-switching policies and incentives possible. A local gas tax or a carbon tax on gasoline and diesel would serve as an indicator of fuel demand, while also providing the City with funds that could be used to improve transportation infrastructure, expand public transit options, or invest in other actions. A gas tax would also encourage drivers to change their behavior to reduce their use of fossil fuels.

C
Mi

ULT-3-2. Revise land use codes to require EV charging infrastructure at multifamily and commercial developments.

Lack of charging infrastructure is a barrier to expanded use of electric vehicles. Additionally, residents in multifamily buildings typically have little say in whether their buildings offer the charging equipment necessary to support electric vehicle use. Requiring new multifamily and commercial developments to provide charging stations will make electric vehicle use possible and practical for a larger segment of Ashland's population by giving them the ability to charge their vehicles near where they live, work, and shop.

C
Mi

ULT-3-3. Develop and provide information about electric and hybrid vehicles and incentive programs on the City website.

The technology and market for hybrids and EVs can be difficult for consumers to decipher. Educating the public on these vehicles—and the rebates and incentives available for them—is an easy and low-cost early step that can make the process of choosing and purchasing one of these vehicles more straightforward. The City could also explore opportunities to work with organizations like Drive Oregon to organize promotional events and with dealerships to increase availability of electric vehicles.

OTHER ACTIONS

- Expand and increase enforcement of anti-idling policy.
- Initiate a partnership with Tesla to install a supercharging EV station in Ashland.
- Designate a portion of downtown parking spaces for EVs.
- Promote low-carbon fuels and technologies in taxicabs and for-hire vehicles.

Strategy ULT-4. Support more climate-ready development and land use.

Ashland's population is growing, and with a larger population comes new development. Updating zoning requirements and land-use policies can shape new development to be as climate-resilient as possible.

PRIORITY ACTIONS

C
Ad

ULT-4-1. Regulate new development in the Wildfire Lands Overlay part of the urban growth boundary.

The Wildfire Lands Overlay includes areas where homes and buildings are in close proximity with undeveloped lands. Evidence from other cities indicates that wildfires are most deadly and destructive when they burn into denser neighborhoods on the outskirts of town. Regulating building materials and vegetation management as part of new development in the Wildfire Lands Overlay can reduce the risk of severe damage as the frequency and intensity of wildfires increase.

C
Mi

ULT-4-2. Revise community development plans to favor walkable neighborhoods and infill density.

Ashland has a series of long-range planning documents that guide development across Ashland districts, neighborhoods, and natural areas. Revisiting these plans to ensure that they support climate-ready development needs, such as walking, biking, transit, parking management, and climate adaptation features, will ensure that Ashland development is consistent with the City's climate goals and commitments. It will be important to ensure that these activities do not come at the expense of higher housing costs, which could disadvantage low-income populations.

C
Ad

ULT-4-3. Modify the WUI code to include construction techniques appropriate for wildfire-prone areas.

Ashland's Wildland Urban Interface (WUI) zones are the most wildfire-threatened parts of the city, and the risk of wildfires affecting these areas will only increase as climate change increases the frequency and severity of fires. Modifying the WUI code to require more resilient construction techniques can minimize the risk that new structures built in the WUI are damaged or destroyed by fire.

OTHER ACTIONS

- Require, through a Brush Ordinance, property construction and maintenance for "defensible space."
- Consider regulating further construction or expansion in the WUI part of the urban growth boundary (UGB).
- Evaluate future climate impacts on transportation infrastructure and operations, including critical needs for emergency response, goods and services movement, and community access.
- Change zoning to minimize development in high flood-risk areas.

Strategy ULT-5. Increase the efficiency of City fleet vehicles and employee commuting.

To move Ashland toward a future of low-carbon transportation, the City should lead by example. While the City's own emissions are relatively small compared to personal and commercial vehicle use, there is an opportunity to make internal improvements that demonstrate its commitment to supporting efficient vehicles, alternative fuel sources, and public/shared transportation.

PRIORITY ACTIONS

M
Mi

ULT-5-1. Provide carpool and vanpool parking, charging stations, and parking for EVs for City employees.

Supporting multiple commute options for City employees is an important step on the path to reducing the use of fossil fuels for transportation, one of Ashland's biggest sources of greenhouse gas emissions. Encouraging the use of ridesharing, vanpooling, and alternative fuel vehicle use among City staff will set an example for private citizens and serve as tangible evidence of the City's commitment to sustainability. Furthermore, some of this infrastructure—EV charging stations, for example—can be opened to the public, increasing its positive impact. The City could also pursue new policies and programs for encouraging City employees to drive less for their daily commute.

M
Mi

ULT-5-2. Conduct a city fleet audit and use it to set policy and targets for higher-efficiency vehicles, vehicle-sharing across departments, and out-of-town vehicle use.

Conducting an audit of the City's vehicles is a straightforward and low-cost action that sets the stage for policies to govern the fuel efficiency of the fleet and/or mandate a transition to alternative fuel vehicles over time.

M
Mi

ULT-5-3. Develop policy to require the purchase of verified carbon offsets to offset City staff travel.

Ashland has no control over the policies, fuel sources, and infrastructure of jurisdictions beyond the city limits. Purchasing carbon offsets is a straightforward action that allows the City to extend its commitment to reducing its emissions to staff who travel for work reasons. Furthermore, if the City's offset payments are invested in local projects, they can provide a wide range of co-benefits to the local community.

OTHER ACTIONS

- Improve biking amenities at City facilities such as showers, lockers, and covered/secured bike parking.
- Take advantage of potential opportunities under the new state clean fuels program.
- Increase incentives for sustainable City employee commuting such as through competitions or cost shares.

Rogue Valley Transportation District

The Rogue Valley Transportation District pools resources and shares service across a number of cities in the greater Jackson County area, while keeping costs down by taking advantage of economies of scale. The RVTD currently operates seven routes that provide vital intercity public transit connections that enable car-free travel throughout the Rogue Valley, reducing the need for Ashland residents to own cars and providing greater mobility for children, students, the elderly, and others who may not be able to or want to drive.

In addition to providing standard bus service, the RVTD operates a paratransit service that is available to senior citizens, people with disabilities, or others who are unable to use the standard bus service. In 2016, Jackson County voters approved a levy that restored Saturday and evening services, as well as expanded service to southwest Medford, Rogue Regional Medical Center, and the Rogue Community College Table Rock Campus.

The Role of the Community

Here are some actions that everyday Ashland residents and organizations can take to make a difference in addressing climate change.

Take a **walk**, ride a **bike,** or take **public transit**.

Leaving your personal vehicle behind when commuting or running errands can make a big difference for your carbon footprint and can also be a healthy and enjoyable alternative to driving.

Purchase a **fuel-efficient** vehicle.

When purchasing your next personal vehicle, consider more efficient alternatives such as hybrid or electric vehicles.

CONSUMPTION & MATERIALS MANAGEMENT

Consumption & Materials Management

Upstream emissions from the production and transportation of food and goods account for 48% of Ashland's total emissions—more than any other sector.

A large portion of food emissions are from the production of meat, and household goods emissions are largely from home construction, furniture, clothing, and vehicle purchases. Because Ashland's industrial sector is small and there is no significant agriculture within city limits, the Ashland community relies almost entirely on imported goods, food, and energy products to meet its needs. Encouraging greater local food production would have emissions reduction benefits while simultaneously improving food security and availability for Ashland's residents. Climate change may disrupt global supply chains and thereby affect the cost of household goods and services that local residents and businesses rely on.

In some cases, buying "local" can reduce the lifecycle greenhouse gas emissions associated with the goods and services we buy--but not always. A peer-reviewed study found that the production of food accounts for 83% of the average American food-related greenhouse gas footprint, while the transport of food only represents 11% of lifecycle emissions.[6] A reduction in red meat consumption can therefore be a more effective means to reduce a household's food-related climate footprint than "buying local." The strategies in this plan address both the production and transportation emissions associated with consumption of food and goods.

While emissions from consumption are large, they are "indirect" emissions that are not under the same level of community control as the local, sector-based emissions. While Ashland might change local development codes to address building energy, there is no similar ability to influence production efficiencies for imported goods and services. Therefore, Ashland's potential actions related to consumption and materials management mostly center on influencing consumption behavior and supporting a variety of local and/or more sustainable purchasing options for its residents.

Climate change is also expected to increase stressors such as pests, disease, and drought on the region's small local agriculture sector, potentially reducing the availability of local food. Global climate change could also disrupt global markets and supply chains, potentially resulting in global price increases and resource scarcities.

[6] Source: Weber and Matthews (2007).

Progress to Date

Ashland exemplifies its commitment to reduced waste and local sourcing through a variety of programs, ordinances, and offerings, such as the following:

- **Bans on plastic bags and polystyrene containers:** In 2014, the City approved an ordinance to substantially reduce consumption of single-use plastic carryout bags. The City also bans polystyrene foam food packaging at local restaurants, retail food vendors, and nonprofit food providers.
- **Community garden programs, farmers' markets, and co-ops:** Ashland enjoys a number of venues for growing and purchasing locally produced food, including at four City-sponsored community gardens, the Rogue Valley Growers and Crafters Market, and at retailers like the Ashland Food Co-op.
- **Residential curbside recycling programs and outreach:** Recology provides curbside recycling service to Ashland residents, as well as education and outreach programs on backyard composting and reduce/reuse best practices. Recology also provides a drop-off recycling center for some hard-to-recycle materials.

Goals and Indicators

Goals

- Reduce solid waste and wastewater greenhouse gas emissions.
- Increase waste diversion through waste prevention, recycling, and composting.
- Reduce consumption of climate-intensive food, products, and services.
- Support locally-produced products.

Potential Indicators

- Solid waste and wastewater greenhouse gas emissions.
- Waste diverted from landfill to recycling and composting.
- Consumption-related emissions.
- Number of community gardens and farmers markets.

Strategies and Actions

Strategy CM-1. Reduce consumption of carbon-intensive goods and services.

Because the City cannot directly influence how goods are produced outside its jurisdiction, its main feasible option is to reduce the use of targeted carbon-intensive goods and services by encouraging residents to change their consumer habits, such as by supporting shared use programs that reduce the need to own products.

PRIORITY ACTIONS

C Mi

CM-1-1. Implement an education campaign for waste and consumption reduction strategies.

Private consumption of food and goods is the largest single source of Ashland's greenhouse gas emissions. While the City does not have the ability to directly control or reduce these emissions, it can encourage sustainable habits and purchasing decisions that target common sources of waste and carbon-intensive consumption. For example, the City could continue to include tips and instructions for energy-saving opportunities within City bills and newsletters, or provide additional information and outreach for replacing inefficient appliances, opting-out of junk mail, and exploring available reuse stores.

C Mi

CM-1-2. Support "collaborative consumption" community projects.

Collaborative consumption reduces demand for new products by facilitating the sharing and/or repair of existing products in the community. Tool libraries, for example, allow community members to avoid purchasing new tools by instead borrowing from a communal pool of donated tools. The City can explore how best to encourage sustainable consumption and sharing activities like tool libraries and repair cafes, such as through mini-grant programs.

C Mi

CM-1-3. Determine and implement effective ways to reduce and track consumption based emissions.

Current approaches for tracking and mitigating consumption-based emissions are coarse and relatively undefined. The City should continue to evaluate new approaches and tools for more accurately and effectively addressing this important emissions source.

ASHLAND CLIMATE & ENERGY ACTION PLAN

Strategy CM-2. Support sustainable and accessible local production and consumption.

Supporting environmentally responsible production of goods and food locally—in or around Ashland—is beneficial because it eliminates the emissions associated with shipping goods to the city and gives the City greater influence over sustainable production practices.

PRIORITY ACTIONS

C
Mi

CM-2-1. Partner with nonprofit organizations to promote the purchase of local food and products.

One way the City can support sustainable local food production is to work with independent organizations to showcase and support climate-friendly retailers and products. The City could work with systems such as the Ashland School District, Southern Oregon University, and Asante Ashland Community Hospital to incorporate "climate-friendly first" food purchasing.

C
Mi
Ad

CM-2-2. Expand community gardening and urban agriculture opportunities.

Increasing the land and resources available for local agriculture can help satisfy a portion of the city's demand for food, reducing the quantity of food that must be imported from outside the region. "Greening" public spaces can have numerous co-benefits, too, including offsetting the urban heat island effect and providing garden space to those who do not have yards. The City could work to expand existing local food programs at community gardens, schools, parks, and rooftops, such as by encouraging farms to work directly with organizations such as churches or schools to provide community-supported agriculture (CSA) programs.

OTHER ACTIONS

- Consider climate change-related risks to local supply chains in implementation of the economic development strategy.
- Work with nonprofits and universities to create outreach and training materials about agricultural practices that reduce greenhouse gas emissions and increase diversity and drought resistance.

Strategy CM-3. Expand community recycling and composting.

Diverting more waste away from the landfill is one of the most direct strategies Ashland can focus on to reduce the environmental impacts of the city's consumption. While the City cannot influence upstream production methods at factories and farms beyond its city limits, minimizing downstream waste has a clear and measurable positive impact that will help Ashland move toward its sustainability goals.

PRIORITY ACTIONS

C Mi

CM-3-1. Improve recycling programs, implement new education and outreach, and expand public space recycling.

Making recycling a convenient and straightforward process is crucial to helping Ashlanders to reduce waste disposal and increase diversion from the landfill. Education and outreach, better signage, and placing more bins in public areas are some of the potential ways to improve recycling in Ashland.

C Mi

CM-3-2. Update the multi-family recycling ordinance to encourage more diversion.

Historically, increasing diversion rates from multi-family residential waste streams has been challenging. The City should update and expand recycling standards and requirements for existing and future multifamily housing to increase recycling diversion rates consistent with the Council approved recycling program updates. These actions should be implemented in accordance with recommendations provided by the ad-hoc Recycle Center Committee.

C Mi

CM-3-3. Strengthen the Demolition Debris and Diversion ordinance to enhance enforcement and increase diversion and reuse.

Due in large part to the sheer quantity of material involved, home demolition has an outsized impact on Ashland's materials management strategy. Targeting buildings for reuse and salvage not only reduces the quantity of material being sent to the landfill, but also creates a local market of recovered building materials that can be used again in new construction projects, remodels, and landscaping. This actions calls for enhancing Ashland's current Demolition Debris and Diversion ordinance so that it is more strictly enforced and encourages further diversion and reuse of building materials. The City could explore the introduction of mandates for a greater percentage of deconstruction over time and also consider efforts to promote reuse of those materials in new construction projects.

OTHER ACTIONS

- Implement an education campaign for waste and consumption reduction strategies such as replacing inefficient appliances, opting-out of junk mail, and reuse stores.
- Examine options for expanding commercial and residential composting; assess the feasibility of establishing a permitted facility to compost or anaerobically digest organic materials and food waste.
- Improve City facilities to encourage waste reduction, such as by installing water bottle-filling stations.

Strategy CM-4. Reduce food waste.

Production of food is a large emissions source, and, unfortunately, a significant portion of the food that makes it into Ashland's homes and businesses spoils or is otherwise wasted. Reducing this waste—and using the remaining food waste productively—will ensure that Ashland gets the most benefit possible out of its food. In addition to reducing the GHG emissions associated with wasted food, edible food that would have gone to waste can be donated to residents who might otherwise struggle to afford groceries.

PRIORITY ACTIONS

C
Mi Ad

CM-4-1. Support edible food donation through coordination with the food bank and donations from City and community partner events.

The environmental benefits of reducing food waste means there is more food to share with those in need. This action calls on the City and community to work with the food bank to make sure edible leftover food at public events ends up on dining tables, not in the landfill.

C
Mi Ad

CM-4-2. Provide a kitchen best practices guide to help households and businesses reduce food waste and consumption.

Educating residents and businesses on how to reduce food waste is a low-cost option to reduce wasted food, a preventable source of greenhouse gas emissions.

C
Mi Ad

CM-4-3. Evaluate opportunities for recycling of commercial food waste.

While reducing food waste by addressing its root causes is the best option, some food waste will always remain. The City can serve a central role in taking advantage of this waste stream by arranging for discarded food to be used for energy production, including the use of cooking oil for biodiesel and biofuels. The City could also consider working with Recology to provide organic waste pickup services.

OTHER ACTIONS

- Seek grant funds to launch a food waste reduction campaign for residents, such as the U.S. Environmental Protection Agency's Food: Too Good to Waste program.

Strategy CM-5. Improve sustainability of City operations and purchases.

City operations account for a relatively small portion of Ashland's emissions, they are a relatively easy target for sustainability improvements because the City has direct control over them.

PRIORITY ACTIONS

M
Mi

CM-5-1. Introduce environmentally preferable purchasing (EPP) guidelines for City procurement.

Creating an EPP policy is a low-cost action that would guide City staff to choose more sustainable products and services by modifying the procurement process. While the complexity of Ashland's existing procurement process may make this action more difficult to implement, it is worth considering because a wide range of cities similar to Ashland have successfully implemented EPP policies of their own. For example, the City could require evaluation of electronic equipment using the Electronic Product Environmental Assessment Tool (EPEAT).

M
Mi

CM-5-2. Assess the feasibility of co-digesting food waste and biosolids to generate electricity at the wastewater treatment facility.

Generating electricity from the gases captured from decomposing organic matter is a win-win strategy: it prevents harmful GHGs from entering the atmosphere, and it creates electricity that can offset the wastewater treatment facility's energy use or be fed back onto the power grid.

OTHER ACTIONS

- Promote online citizen services (such as permitting and bill payment) to reduce paper use and car trips.
- Evaluate the use of low-carbon concrete and/or recycled asphalt shingles on City buildings.
- Evaluate feasibility of increased use of recycled aggregate in residential street construction and sidewalks.

Rogue Valley Farm to School

The Rogue Valley Farm to School (RVF2S) program's mission is to educate children about our food system through hands-on programs, and bring healthy, local foods to their school cafeterias. RVF2S has relationships with five local farms in the valley, including The Farm at SOU. The organization facilitates the purchase of locally grown produce by schools, assists food service staff with estimating annual produce needs, and helps farmers use this information to plan their seasonal planting. It also facilitates field trips to farms and the creation of sustainable on-site gardens at schools.

The Role of the Community

Here are some actions that everyday Ashland residents and organizations can take to make a difference in addressing climate change.

Eat carbon-friendly.

Animal products are extremely GHG-intensive to produce compared to plants. Eating less meat and dairy can make a big cut in food consumption emissions. Eating regionally-grown food that is suitable for the southern Oregon climate can also make a difference through reduced transportation-related emissions.

Plan, prepare, and store food carefully to **waste less food**.

Studies show that in America, approximately 40% of food never makes it to our dining tables—meaning the water, fertilizer, farm equipment, and transportation involved in producing this food and getting it to your refrigerator is wasted. Planning carefully when you shop and storing food properly can go a long way toward reducing food waste, and save you money, too.

Buy less new stuff.

The purchase of manufactured goods is one of the largest contributors to Ashland's GHG emissions. Consider buying reused or borrowing items you only use infrequently to help reduce these emissions.

Buy things that last.

The fewer items you purchase, the better for the environment. Investing in quality items that last longer often also makes sense for your wallet, since you don't have to keep replacing items when they break.

NATURAL SYSTEMS

Natural Systems

Although not formally accounted for in Ashland's greenhouse gas emissions inventory, natural ecosystems such as forests and wetlands capture and store carbon, acting as a greenhouse gas "sink."Proper ecosystem management optimizes this process of carbon sequestration and minimizes the potential risk of greenhouse gas emissions from wildfires.

The 2016 Ashland Forest Plan puts forth forest management objectives that take into account the important role of forests in a changing climate. Some relevant objectives from the plan include:

- Reducing the likelihood of high-severity fire through strategically placed fuels treatments and subsequent implementation of prescribed underburning to maintain reduced fuels and less fire-prone conditions;
- Managing for both growth and maintenance of older forests that may sequester and retain large amounts of carbon over time;
- Focusing on protection and restoration of diverse forest structures, plant communities and associated genetic resources which are important mechanisms of resilience;
- Emphasizing multiple tree species management including species well selected to thrive in future warmer and drier conditions such as pines, hardwoods and shrub species (within prescribed spatial considerations for their potential to aggravate fire potential and hazard); and
- Monitoring and control of invasive plant species that are prone to establishment and/or expansion in changing climates.

Many of Ashland's natural systems and surrounding natural areas will be harmed by climate change, threatening the ecosystem services they provide such as water filtration, flood abatement, pollination, recreation, and fire protection. Importantly, the effects of climate change on natural systems are interrelated and may compound each other; for example, more frequent and severe droughts will increase the risk of wildfires. Changes in temperature, snowpack, and the abundance of diseases and pests will stress sensitive and high-elevation plants, wildlife, and ecosystems such as the northern spotted owl, anadromous fish populations, and mid-elevation coniferous forests.[1] Other stressors, such as habitat loss and pollution, exacerbate this risk by minimizing habitat connectivity and aggravating existing sensitivities.

Climate change may also benefit some species and ecosystems. For example, a species whose pathogens are sensitive to drought may experience reduced pathogen risk. However, these rarer cases are not are not the focus of this plan.

[7] Source: Geos Institute (2016).

Progress to Date

The City of Ashland works within its city limits and with partners outside its limits to promote sustainable management and conservation of its natural ecosystems. Here are some ways the City is currently taking action:

- The **Ashland Forest Resiliency Project** has produced planning documents that consider optimized forest fuel management and wildfire planning in the face of climate change.
- A new city **Water Master Plan** will incorporate future climate risks to water supply and quality into future service planning and activities.
- The City promotes **drought-tolerant landscaping** through education, outreach, and technical assistance.
- The City water utility has a **tiered rate structure** to provide incentives for conservation among the largest water uses.
- The **2016 Ashland Forest Plan** calls for over 500 acres of wildfire hazard reduction in and around the City, over 150 acres of commercial thinning, and the establishment of a controlled underburning program to continually reintroduce the natural role of fire in our fire-dependent ecosystem.

Goals and Indicators

Goals

- Enhance ecosystem health and resilience.
- Ensure sustained access to clean air and drinking water.

Potential Indicators

- Acres of protected and restored habitat.
- Acres of forest maintained.
- Stream water quality.
- Water supply and consumption.

Strategies and Actions

Strategy NS-1. Promote ecosystem resilience.

Climate change has the potential to significantly disrupt local ecosystems by altering precipitation patterns, increasing average temperatures, and making extreme weather events more frequent and severe. These changes can affect a wide range of ecosystem features and functions, from causing fish die-offs to disrupting pollinators. Local government policies and actions will play a key role in protecting ecosystem elements from climate-related threats.

PRIORITY ACTIONS

C
Ad

NS-1-1. Manage forests to retain biodiversity, resilience, and ecosystem function and services in the face of climate change. Use best available science to inform fire management and planning to manage ecosystem health, community safety, and carbon storage.

Responsible management of existing natural areas within and surrounding Ashland will bolster ecosystem health and prevent the breakdown of important ecosystem functions. The 2016 Ashland Forest Plan discusses these critical needs and considerations for City-owned forests in the context of a changing climate, and presents management approaches for balancing forest resilience, climate mitigation, and other priorities. The Ashland Forest Resiliency Stewardship Project addresses forest resilience beyond City-owned properties through a plan that includes thinning smaller trees, reducing flammable fuels, and conducting controlled burns. Through these activities and close monitoring, adaptive management, and incorporation of future climate change projections into forest management and planning, the City will address climate change threats ecosystem stability and public health and safety.

C
Ad

NS-1-2. Use green infrastructure such as bioswales, permeable pavement, other pervious surfaces to reduce flood risk and minimize sediment entry into creeks from trails and roads.

Runoff from rainwater and snowmelt can carry pollutants and sediment into ecologically sensitive waterways. Pollution due to runoff and flooding in urban areas will likely become a more common—and more serious—problem for Ashland as climate change alters precipitation patterns and increases the frequency of severe rainstorms. Green infrastructure allows water to infiltrate into the soil, reducing the amount of polluted runoff that flows into sensitive creeks, wetlands, and other waterways. The City should continue to promote green infrastructure where possible and consider green infrastructure as a default option for on-site stormwater management.

C
Ad

NS-1-3. Undertake restoration efforts to retain and restore native fish and riparian species, including enhancement of fish-friendly operations and habitat at Reeder Reservoir and in Ashland and Bear Creeks.

The fish and riparian species that call southern Oregon home will likely be increasingly stressed by water scarcity and other climate-driven impacts on the health of local waterways. Undertaking habitat restoration and protection efforts not only supports healthy stocks of these species, but can provide co-benefits to residents and visitors by creating beautiful natural environments for visitors to enjoy and educational opportunities for residents to understand and appreciate native ecosystems and species. The City delineates Riparian Management Areas (RMAs), and the City's Stream and Wetland Enhancement Guide provides a resource for learning to control erosion, manage invasive plants, and cultivate a healthy, native landscape. The 2016 Ashland Forest Plan lays out ecosystem service-driven management priorities within the over 5 miles of stream and 96 acres of riparian areas, as well as calls out specific opportunities for fisheries enhancement along Bear and Ashland Creek.

C
Mi/Ad

NS-1-4. Map and protect areas that provide ecosystem services, such as remnant spring, wetland, and late successional forest habitats, through improved public lands management/ownership and promotion of conservation easements and private open spaces.

This action focuses on identifying and prioritizing the protection of the most important elements of the local ecosystem through public ownership and conservation easements. The 2016 Ashland Forest Plan provides a variety of maps that could be used to begin prioritizing areas for protection.

OTHER ACTIONS

- Update the City's approved street tree guide and landscape design standards for new development for tree species appropriate for a future local climate.
- Assess the deployment of ecosystem market approaches as a means to protect and restore ecosystems efficiently and effectively, such as by paying upstream landowners for water-friendly management of their lands.
- Complete a carbon inventory/assessment of the watershed area to support decision making on forest management.

Strategy NS-2. Manage and conserve community water resources.

While minimizing the City's water use internally is important, conserving water in the community can have a greater impact due to its scale. Water conservation can have double benefits in the face of a changing climate: it can help the community be more prepared for drought, and also reduce stress to aquatic ecosystems and thereby enhance the resiliency of those ecosystems to a variety of climate and non-climate stressors. Through education, policy, and incentives the City can encourage the community to make meaningful water use reductions.

PRIORITY ACTIONS

C
Mi Ad

NS-2-1. Evaluate incentives for practices that reduce use of potable water for nonpotable purposes and recharge groundwater.

Incentives can be a valuable tool to reduce water use and encourage the installation of rainwater collection and water reuse systems. As a bonus, these systems offer stormwater prevention co-benefits. Similar incentives have been used successfully in a number of other cities. The viability and benefits of these practices are currently being examined as part of Ashland's Comprehensive Water Master Plan update, including exploration of options to promote and install graywater reuse at community gardens and other local urban agricultural areas, or better understand the relationship and tradeoffs between tree density and water availability.

C
Mi Ad

NS-2-2. Explore water-efficient technologies on irrigation systems and consider requiring them during the permitting process.

Landscaping irrigation uses large quantities of water. Requiring advanced irrigation systems, especially for large commercial or multifamily properties, could have a significant impact on the city's water use. This action could also involve promotion of water-efficient landscape design and maintenance through revision of Site Design and Use Standards in the land use code.

C
Mi Ad

NS-2-3. Expand water conservation outreach and incentive programs for residents and businesses.

Providing additional education and support to residents and businesses can help reduce water use by identifying easy, cost-effective ways to reduce water use; for example, by installing low-flow fixtures and faucet aerators. The City may consider providing additional financial incentives to encourage widespread adoption of these upgrades or to make more costly water-saving upgrades financially feasible all households, including lower-income families. This action could involve facilitating sustainability certifications, such as under the Salmon Safe certification program, at local businesses.

OTHER ACTIONS

- Introduce a system whereby when a new building is permitted, a conversation is triggered around the introduction of feasible new technologies that reduce water and wastewater.
- Manage upstream flows to minimize downstream flood risk, such as through habitat protection, restoration, or adjusted reservoir management.
- Explore new technologies for treating wastewater for use.

Strategy NS-3. Conserve water use within City operations.

While the City's internal operations account for a relatively small portion of Ashland's overall emissions, conserving resources sets a visible example that residents and businesses in the community can follow. Water use, in particular, will be important to minimize in the future: with more frequent and severe droughts due to climate-driven changes in precipitation and snowpack, Ashland and the surrounding area will have to manage its water resources to minimize the impacts of increasing water scarcity.

PRIORITY ACTIONS

M Mi/Ad

NS-3-1. Evaluate the potential for installation of rainwater collection systems at City facilities for graywater uses, and investigate opportunities for graywater reuse at existing and new City facilities and properties.

This action aims to reduce the quantity of filtered, potable water used at City facilities by using rainwater for nonpotable uses, such as toilet-flushing and irrigation. Graywater recycling could further reduce the quantity of fresh, clean water used by the City for nonpotable purposes.

M Mi/Ad

NS-3-2. Implement efficiency recommendations from the City facilities water audit.

The City is currently in the process of conducting an audit of water use at its facilities. The audit will help the City identify opportunities to reduce waste and improve the water efficiency of its operations.

OTHER ACTIONS

- Update City landscaping standards for reducing water consumption and chemical use.

The Ashland Forest Resiliency Project

The Ashland Forest Resiliency Project (AFR) is a ten-year stewardship project in the City's municipal watershed that aims to reduce wildfire risk and promote ecosystem resiliency on approximately 7,600 acres of land. The project is a collaborative effort between the Rogue River-Siskiyou National Forest, the City of Ashland, The Nature Conservancy, and the Lomakatsi Restoration Project. AFR focuses on restoring open forest conditions and reintroducing beneficial low-intensity fire to prevent damaging summer wildfires while saving large, old trees and preserving key habitat elements and ecosystem processes. In addition to implementing ecological forestry with workforce training and adaptive monitoring elements, the project includes an education component that has delivered presentations, tours, and field activities to more than 2,500 local students and citizens. AFR has recently expanded its reach to private and municipal lands over a broader 58,000 acre landscape to promote restorative work in ecologically important settings that also increase community wildfire safety.

The Role of the Community

Here are some actions that everyday Ashland residents and organizations can take to make a difference in addressing climate change.

Install **rain gardens**, **rain barrels**, or **cisterns** on your property.

Work with the City to learn about options for reducing stormwater runoff and increasing water storage and reuse at your home or business.

Be waterwise in your daily household water consumption.

Install water-efficient fixtures, take shorter showers, irrigate at night, and otherwise reduce water use.

Support **habitat protection** and **restoration**.

Volunteer at a habitat restoration event, donate to land conservancy or education organizations, and get outside!

PUBLIC HEALTH, SAFETY & WELL-BEING

Public Health, Safety & Well-being

Climate change may seem removed from issues of health, safety, and security, its effects may have significant impacts on Ashland's population. Increased heat waves, flooding, and wildfires threaten the health and safety of all residents, and Ashland's outdoor industry workers, the elderly and very young, and low-income populations are especially vulnerable.

Rafting, skiing, and other outdoor recreation industries may suffer from reduced snowpack and reduced summer flows, affecting workers throughout the local tourist industry. Increased wildfire risk will stress emergency services and increase the number of homes within wildfire risk areas. While many of the strategies and actions in other sections of this report have positive direct impacts or co-benefits on public health and safety, these issues are important enough to merit specific discussion. Without healthy, happy, and secure citizens, Ashland will not thrive.

Note: Emissions associated with public health, safety, and well-being are encapsulated in other sectors of the greenhouse gas inventory and therefore cannot be independently evaluated.

Progress to Date

Although the City of Ashland has limited influence over the health and social security of its residents, the City has made great strides in supporting the local economy and preparing for emergency events:

- **Firewise Ashland** provides residents of the wildland urban interface with the knowledge and skills necessary to prepare for wildfires.
- The **Social Service Grant and Community Development Block Grant** programs support disadvantaged and at-risk populations.
- The annual **Ashland is Ready** workshop provides emergency planning assistance and information for residents.

Goals and Indicators

Goals

- Protect public health from air pollution and climate impacts.
- Improve community capacity to understand, prepare for, and respond to climate change security risks.

Indicators

- Air quality
- Number of people that can be accommodated by available cooling centers.
- Tree canopy cover.
- Homes within the WUI.
- Percent of Ashland residents experiencing health issues such as asthma.

Strategies and Actions

Strategy PHSW-1. Manage ecosystems and landscapes to minimize climate-related health impacts.

With average temperatures on the rise and extreme weather events predicted to become more common due to climate change, Ashland will need to consider adapting its management of the cityscape and ecosystems to protect its residents' quality of life.

PRIORITY ACTIONS

C
Ad

PHSW-1-1. Promote the expansion of tree canopy in urban heat islands or areas that need air conditioning such as schools.

The urban heat island effect can have serious impacts on public health and quality of life, including causing heat-related fatalities among elderly or otherwise vulnerable people. The City can reduce this effect by increasing tree canopy cover in targeted areas that do not currently have adequate shade or air conditioning, as well as promote and educate citizens about the benefits of shading with trees and building features.

OTHER ACTIONS

- Evaluate and implement slash removal methods that minimize smoke production, such as air curtain burners.
- Develop an incentive program to convert fuel-burning lawn equipment such as gas-powered lawn mowers and blowers to electric.
- Evaluate opportunities to plant additional trees near city facilities to reduce heat island.

Strategy PHSW-2. Promote a sustainable local economy that minimizes emissions and vulnerability.

Becoming more sustainable and preparing for the effects of climate change will require more than government action; the private sector also plays a central role. The City can serve as a thought leader, facilitator, and central coordinator to spur climate action by a wide variety of independent businesses.

PRIORITY ACTIONS

C
Mi
Ad

PHSW-2-1. Engage leading employers in a dialogue on climate action, for example, by organizing and facilitating roundtables.

This action involves bringing local employers together with City staff and independent experts to discuss how climate change will affect their businesses, how to minimize those risks, and how to effectively incorporate climate and sustainability concerns into their businesses.

C
Ad

PHSW-2-2. Support organizations, such as SOU, in evaluating risks to local food sources under climate change.

As discussed in Strategy CW-2, local food production minimizes greenhouse gas emissions associated with food transport, supports the local economy, and brings other sustainability benefits. As part of the City's work to support and expand local agriculture, it can consider supporting the work of other organizations to evaluate how local food sources may be stressed or affected by climate change, and how best to navigate the challenges to ensure that local farms remain viable and productive. This work would include researching new crops, technologies, and innovative approaches, and working with farmers to adapt to climate change.

OTHER ACTIONS

- Work with businesses to assess their climate change vulnerability and plan for the future.

Strategy PHSW-3. Minimize public health impacts.

Many of the facilities and services provided by the City can also serve as important venues for adapting to climate change. This strategy identifies ways that the City can work with the community to minimize public health impacts from climate change, such as heat, respiratory, and pathogen-related illnesses. This strategy also includes opportunities for the City to adjust or repurpose its current activities and facilities to help minimize public health threats, such as its libraries, parks, and emergency management services.

PRIORITY ACTIONS

C Ad

PHSW-3-1. Work with vulnerable populations to create specific adaptation strategies to address public health risks.

Some populations and areas of the city will be more vulnerable to climate impacts than others. The City can work to minimize the impacts on its most at-risk populations and areas by working with residents and local organizations to identify and implement customized solutions. For example, outlying areas exposed to wildfires or low-lying homes and businesses in flood zones could receive tailored trainings to ensure readiness for the risks of their location. The City could work with at-risk populations such as the elderly or disabled to identify specific challenges in the face of a changing climate and customized solutions such as accessible cooling centers or additional health services.

C Ad

PHSW-3-2. Identify and minimize potential urban heat impacts.

Climate change is expected to increase the number and severity of heat waves in Ashland, putting vulnerable people at greater risk of heat-related health complications and reducing the quality of life for all Ashland residents. The City can take steps to minimize the risks presented by heat waves by identifying where heat-related impacts will be most pronounced and working to encourage and/or directly implement strategies for offsetting these impacts, such as by designating cooling centers through the city, improving cooling systems in schools and senior centers, and incentivizing cooling strategies such as cool roofs/pavements and expanded tree canopy.

C Ad

PHSW-3-3. Develop or enhance heat-warning systems for employees and the public.

Heat-warning systems help minimize the health dangers associated with extreme heat by giving the public a chance to plan ahead to avoid being outside or take refuge at a designated cooling center during the hottest periods.

OTHER ACTIONS

- Educate public and public health professionals about health risks posed by climate change, including potential changes in air quality and impacts on mental health.
- Adjust City-sponsored outdoor activity schedules and plan for indoor alternatives to accommodate longer and hotter summer seasons.

Strategy PHSW-4. Minimize public safety impacts.

Climate stress adds additional burdens to City safety services. This strategy involves taking measures within City operations and current services to protect the public from injuries caused by extreme events like wildfires and flooding.

PRIORITY ACTIONS

C Ad

PHSS-4-1. Update the City's emergency response plan and ensure that preparation and updates recognize and address likely climate change impacts.

From wildfires to floods, the emergencies that Ashland faces will increasingly be linked to climate change. The City can protect its citizens from these emergencies by incorporating climate projections and likely impacts into its existing emergency response plan.

C Ad

PHSS-4-2. Identify and address populations and essential City services that are within the 100-year flood zone.

Climate-driven changes in precipitation and snowmelt patterns will likely increase the frequency and severity of flooding in the city. One way Ashland can mitigate the damage of severe floods is by identifying populations and essential services in flood-prone areas and working to relocate or protect them. This action could include examining adjustments to the Water Resources Ordinance chapter of the land use code, which stipulates setback requirements for properties located within at-risk areas.

OTHER ACTIONS

- Expand and publicize the Ready, Set, Go! Evacuation program.
- Utilize federal and state reporting and monitoring assets, such as the National Oceanic and Atmospheric Administration's Hazard Mapping System, to prepare for smoke and wildfire impacts.

The Role of the Community

Here are some actions that everyday Ashland residents and organizations can take to make a difference in addressing climate change.

Assemble an **emergency kit**.

Jackson County offers tips and checklists to help residents create emergency kits for their homes and cars. Visit the Jackson County Emergency Management website or contact Jackson County for more information.

Stay informed.

Sign up for Citizen Alert!, a free program from Jackson County that sends community alerts to your phone and email when you register online.

Prepare your home for the extremes.

Understand the risk of flooding or wildfire to your home, and take action to safeguard your home. Ashland provides free Firewise assessments for properties at potential risk of wildfire. Find more information at the City's Ready, Set, Go! evacuation website.

Understand the risks and how to mitigate them.

Injuries from heat exhaustion and wildfire smoke can be exacerbated by conditions such as dehydration, diabetes, heart conditions, and obesity. Staying healthy, avoiding harmful activities, and taking proper precaution can make sure you and your family are safe from deadly heat- and smoke-related illnesses.

Firewise Ashland

Ashland is part of Firewise Communities/USA, a national program that empowers neighbors to work together to reduce the wildfire risk around homes. The City received its first Firewise Communities/USA recognition award in 2011, and now the program recognizes twenty-five different Ashland neighborhoods with 4 in the process. The program provides a framework for residents living within the wildland/urban interface (WUI) for proactive mitigation efforts like addressing home construction and fire-resistant landscaping. These actions are designed to help houses withstand wildland fire without intervention like fire-fighting services. For more information or to become a Firewise neighborhood, visit ashlandfirewise.org or call Ashland Fire and Rescue.

CROSS-CUTTING STRATEGIES

Cross-Cutting Strategies

Progress to Date

Addressing climate change requires working across sectors to incorporate climate change considerations into all that we do. Only through a coordinated and multifaceted effort can significant progress be made. The City of Ashland has demonstrated a commitment to comprehensive climate action through development of this Climate and Energy Action Plan. Prior to the plan, the City also completed its first citywide greenhouse gas inventory, which served as an essential benchmark for understanding and taking action against the community's greatest GHG emission sources. The City has also hosted a number of public outreach and engagement events around climate change and sustainability, including the Ashland Climate Challenge in 2015.

Goals and Indicators

Goals

- Increase awareness of city climate goals and needs.
- Integrate climate change considerations into day-to-day City operations, planning, and decisionmaking.

Potential Indicators

- Public and City staff knowledge and understanding of climate change issues and actions.
- Number of City plans or activities that incorporate climate change considerations.

Strategies and Actions

Strategy CC-1. Educate and empower the public.

Addressing community-wide emissions starts with ensuring that the public understands climate change and what they can do to address the challenge. This strategy involves not just enhancing public knowledge, but also continuing to learn and understand the needs and challenges the public faces in taking action. It focuses on finding ways to address the public's needs and challenges through incentives, education, and behavior change programs.

PRIORITY ACTIONS

C Mi Ad

CC-1-1. Create a formal public outreach and education plan to inform the community about climate actions and progress.

An informed community is critical to empowering and inspiring climate action. The outreach and education plan will inform residents about climate actions, what they accomplish, how they can be accessed or used, and how the community is progressing toward its targets.

C Mi Ad

CC-1-2. Support capacity of neighborhood and community groups to implement climate mitigation and adaptation initiatives.

Every community is different in how it affects and is affected by climate change. To accommodate these differences and to empower communities to take action, the City should provide resources and support for neighborhoods that wish to tackle climate change directly. Options could include providing resource guides or checklists, venues for community meetings, or mini-grant programs for specific adaptation actions. This action could include plans to conduct outreach specifically to schools and other important institutions and organizations in the city.

C Mi Ad

CC-1-3. Assess the feasibility of a City-sponsored carbon offset program.

In cases in which additional local, on-site emission reductions are not possible, the purchase of offsets can help the community attain additional emission reductions needed to meet the city's climate mitigation goals. The City should explore options for facilitating purchase of offsets by Ashland community members, such as through development of an online tool or interface.

OTHER ACTIONS

- Develop a climate-ready recognition program.

Strategy CC-2. Educate and empower City staff.

Tasked with implementing the Climate and Energy Action Plan, City staff and leadership must understand threats and issues related to climate change and the actions needed to address it. This strategy deals with ensuring that all City departments inform their staff members about the Climate and Energy Action Plan and clarify their roles and expectations for its implementation.

M
Mi Ad

CC-2-1. Ensure all City departments educate their staff members about the Climate and Energy Action Plan.

This action includes identifying the expectations, roles, and responsibility of each department in meeting specific community and City operations actions within the Climate and Energy Action Plan.

Strategy CC-3. Mainstream and integrate climate considerations.

As a cross-cutting issue, climate change should be integrated into all other City activities and processes, as relevant. This means that any decision that could affect or be affected by climate change should explicitly address that connection and ensure coherence with the city's climate action goals. For example, climate change should be considered in all City Council policy, budgetary, or legislative decisions, and as part of regular City Council communications.

M
Mi Ad

CC-3-1. Consider climate change in all City Council policy, budgetary, or legislative decisions and as part of the Council Communication document template.

Council decisions present key points in the policy-setting process for incorporating and considering City priorities. Analyzing how policy, budgetary, and legislative decisions may affect or be affected by climate change during these key decision points will provide further assurance that no new policy or decisions hinder progress toward reaching Ashland's climate goals.

M
Mi Ad

CC-3-2. Incorporate CEAP goals and actions in future updates of city plans.

To enhance integration of climate change across City activities, climate mitigation and resiliency goals set forth in this plan should be promulgated through future updates of related City plans. Example plans to which this action would apply include the City Comprehensive Plan, Water Master Plan, Transportation System Plan, Neighborhood Master Plans, Forest Plan, and Emergency Management Plans.

M
Mi Ad

CC-3-3. Include consideration and perpetuation of climate action goals within the scope of every appropriate City Advisory Commission.

There are a variety of existing City Commissions that focus on topics related to climate change. This action involves making an explicit connection to the role of climate change in the purview of these Commissions, and formalizing the inclusion of climate considerations and goals into the activities and objectives of those Commissions.

Strategy CC-4. Engage with other governments and organizations around regional, statewide, national, and international climate policy and action.

The City of Ashland can learn from the experience of others, and a larger, unified coalition can be more powerful. This strategy involves coordinating with other local governments that have set ambitious climate targets, such as Eugene, Portland, Seattle, and Fort Collins, to learn from their experiences, share best practices, and together advocate for broader regional, state, and national action and leadership.

M
Mi Ad

CC-4-1. Engage with other governments and organizations around regional, statewide, national, and international climate policy and action.

Ashland should continue to collaborate with neighboring cities to share information and foster coordinated and unified action. The City should lead and pursue a partnership model, such as the King County-Cities Climate Collaboration in Washington State, to coordinate and enhance the effectiveness of local government climate and sustainability action within its region.

NEXT STEPS

The goals, strategies, and actions presented in this plan signify an ambitious step forward for the Ashland community.

Although sustainable living, operations, and management is not new to Ashland, this plan pulls together the strong momentum and action that already exists in the city and provides a coordinated and intentional strategy going forward. Making progress on these goals will require Ashland's government and community to work together and commit dedicated time and resources.

This Climate and Energy Action Plan is only the beginning of an ongoing process. The accompanying Implementation Plan provides a framework for launching the implementation phase of the plan. This phase will require the City and community to take priority actions--outlining specific plans of action and resource needs among responsible parties--and monitoring and benchmarking progress along the way.

As details are outlined, more specific quantitative goals and milestones can be created, driving the pace of strategy implementation. The Implementation Plan also details the proposed structure for ongoing plan implementation, monitoring, evaluation, and adaptive management, as well as a list of key actions to be taken in the first year of implementation. It concludes with a discussion of how the goals and strategies of this plan fit with a potential ordinance establishing binding greenhouse gas emission reduction targets.

Through careful and committed action by all Ashlanders, and with this plan as a basis, the city can achieve its vision of becoming a resilient community that has zero-net greenhouse gas emissions, embraces equity, protects healthy ecosystems, and creates opportunities for future generations.

Implementation Plan

This implementation plan sets forth a proposed structure and schedule for implementation of the Climate and Energy Action Plan (CEAP). It contains the following sections:

- **Year 1 Implementation Summary:** A summary of key tasks to be accomplished in Year 1 of CEAP implementation, described in more detail in the following sections.
- **Oversight:** An ongoing structure for ongoing citizen oversight and involvement in CEAP implementation and long-term plan updates.
- **Accountability and Enforcement:** Potential policy mechanisms for ensuring that the CEAP is implemented to its full potential.
- **City Staffing and Leadership:** A structure for ongoing City staff resources and leadership for ensuring implementation of the CEAP and its ongoing success.
- **Funding:** Potential funding mechanisms and opportunities for financing specific CEAP actions.
- **Monitoring and Evaluation:** A mechanism and set of metrics for monitoring and evaluating CEAP progress and updating the plan as necessary.
- **Equity:** Guidance for ensuring that equity is considered in CEAP implementation.
- **Near-term Actions:** CEAP actions to be implemented by 2020.
- **Implementation Schedule:** Implementation detail for each priority CEAP action, including relative measures of action cost and effectiveness; accompanying co-benefits; timeframes for implementation; and responsible departments.

Year 1 Implementation Summary

The focus in 2017 will be on establishing the institutional foundation for plan implementation and taking initial steps on key priority actions. Table 1 provides a schedule and key milestones for Year 1. Key activities to undertake are:

- **Formalize the city's commitment** to CEAP actions and goals (e.g., ordinance).
- **Create and hire a full-time , permanent City CEAP staff position** that also includes clear high level management oversight and direction.
- **Form and convene a permanent City Advisory Commission** to provide guidance and oversight of plan implementation and future plan updates as described in the plan.
- **Create an internal City Climate Action Team** for City operations actions and to assist in coordinating the implementation of community actions that span multiple City departments.
- **Designate potential funding sources** for individual actions and identify additional funding needs and opportunities for ongoing plan implementation.
- **Establish CEAP progress indicators** and corresponding baselines and targets (including equity indicators).
- Determine and formalize Ashland's approach to incorporating **equity considerations** into plan implementation.
- Commence priority **near-term CEAP actions.**

Oversight

A Citizen Advisory Commission is recommended to oversee implementation of the CEAP. The Commission will be composed of stakeholders who represent Ashland residents, have interest, experience or expertise on climate-relevant topics or related policy work, and/or represent key community or civic organizations that may play a role in implementation.

Roles of the advisory committee could include:

- Monitoring and tracking progress towards meeting CEAP goals.
- Providing recommendations to the Climate and Energy Coordinator regarding CEAP progress and implementation.
- Ensuring that the CEAP stays up-to-date over time, with a focus on the three-year plan update cycle
- Reviewing and making recommendations as part of the three-year greenhouse gas (GHG) inventory update process

It is expected that the Commission will meet at least quarterly, and likely more often in the early stages of implementation.

Accountability and Enforcement

Adoption of this Climate and Energy Action Plan will demonstrate the City of Ashland's commitment to addressing the challenge of climate change in the Ashland community. Establishing a more formal City commitment to CEAP goals, such as through an ordinance, would be seen by many as reinforcing the importance of this plan and could help ensure implementation of CEAP actions and measurable progress toward meeting CEAP goals over time. A formal commitment can also be a considerable asset in the pursuit of grant funds and other funding sources to assist in the implementation of the plan.

Table 1. Schedule and key milestone for Year 1 CEAP implementation.

Item	FY17 Q1	FY17 Q2	FY17 Q3	FY17 Q4
Citizen Advisory Commission				
Ordinance				
City Staffing and Leadership				
Internal City Climate Action Team				
Identification of Specific Funding Sources				
Progress Indicators				
Equity Considerations				
Priority Near-Term Actions				

City Staffing and Leadership

The plan calls for the creation and hiring of a new, full-time City Climate and Energy staff position dedicated to and charged with coordinating both internal and external implementation of the CEAP.

Job responsibilities of the position include the following:

- Provide lead staff support to the CEAP Advisory Commission.
- Work with City departments to facilitate, design, and track strategy and action implementation.
- Develop and lead outreach efforts with external stakeholders, including public, to encourage taking actions identified in the CEAP.
- Provide leadership and direction to the City's internal advisory team on implementation activities, tracking, progress updates and developing advisory team recommendations to relevant internal and external implementing parties.
- Lead development and presentation of annual CEAP progress reports, as well as plan updates.
- Develop and implement a system to systematically review, adjust, and update plan strategies and actions as needed.
- Develop and lead the planned three year update cycle for the community and city greenhouse gas inventory
- Implement and maintain a dashboard or other interactive and publicly accessible platform for tracking and communicating progress to internal and external stakeholders.

The Climate and Energy staff position will have the following qualifications:

- Familiarity and working experience with both climate mitigation and adaptation, including greenhouse gas accounting methodologies and climate change projections and anticipated impacts.
- Experience managing climate-related programs that involve both internal and external stakeholders.
- Experience with public outreach and citizen engagement, preferably at the local municipal level.
- Experience managing climate-related programs that involve both internal and external stakeholders.

It is anticipated that an internal Climate Action Team will be formed within the City to coordinate and implement CEAP actions. The following departments should be represented as part of the Climate Action Team:

- Community Development (including Building Division and Planning Division)
- Ashland Municipal Utility (Electric)
- Administration
- Parks and Recreation
- Conservation
- Public Works
- Fire

Funding

Funding for near-term actions of the CEAP will come from a variety of sources within the City budget depending on the type of action, the responsible department, and the legal and operational limitations of the particular funding source. Additionally, some of the actions recommended in the plan are expansion of existing City programs or efforts and therefore already have funding sources. However, incremental funding increases may be needed to meet the higher level of action called for in the plan.

Current and potential funding sources include:

- City general fund
- Electric Utility revenues
- Stormwater Utility revenues
- Water Utility revenues
- Bonneville Power Administration
- Federal and state grants
- Revolving loan funds
- Newly identified funding sources

As the implementation commences in earnest, City staff and the proposed CEAP advisory committee should pay particular attention to additional funding sources. This examination should include exploration of specific grant opportunities targeted at individual plan actions, potential new local revenue streams such as from a carbon/fuel tax, and multi-jurisdiction or public/private partnerships to provide the resources needed for City and community goal achievement.

OFFSETS

Every time Ashland completes its greenhouse gas inventory, the City and community can evaluate the need to purchase carbon offsets to help meet emission reduction goals. Offsets provide a pathway for achieving emission reductions beyond what can be achieved internally.

Purchasing offsets means counting emission reductions achieved by another party and often in another geographic area. For example, Ashland could purchase offsets from Bonneville Environmental Foundation, which offers emissions reduction credits from regional and global renewable energy projects, forest enhancement projects, and waste methane and heat capture projects.

When an entity sells their carbon offsets, those emission reductions cannot be counted by anyone except the party that purchased the offsets, thereby minimizing the risk of double counting.

Monitoring and Evaluation

Progress toward meeting CEAP targets and goals will be evaluated and tracked on an action-by-action basis with an overall progress report for all actions and activities provided on at least an annual basis. If possible, qualitative updates will be available on a quarterly basis.

The plan will be evaluated and updated on a three-year cycle to ensure that plan strategies and actions reflect the latest knowledge and best practices around climate mitigation and adaptation. The plan will also be reevaluated to assess whether actions are sufficient to meet emission reduction goals and, if not, to add new or expanded actions to the plan. To facilitate the three-year update, the Ashland community and City greenhouse gas inventories will also be updated on recurring cycle, one year in advance of the plan update process. This cycle will provide City staff and the proposed commission with concrete measurement results to inform plan evaluation and updates.

At a minimum, the following indicators will be tracked and reported on at least an annual basis. Due to data availability limitations, some of these indicators will require establishment of baseline and target values for meeting CEAP goals—to be developed in Year 1 of implementation. Additionally, it is expected that some methodologies for measuring some indicators, such as consumption-based greenhouse gas emissions, will evolve and improve over time.

Further development and build-out of the monitoring and evaluation indicators likely form a significant opportunity for the proposed new commission to work on as an early oversight activity.

Equity indicators will also be monitored, as available (see “Equity” section on page 113.

Potential Progress Indicators

CEAP Goal	Primary Goal	Indicator	Target	2015 Baseline
Overarching Goal 1: Reduce GHG Emissions				
	Mi	Community GHG emissions ($mtCO_2e$)	8% reduction per year	342,480
	Mi	City GHG emissions ($mtCO_2e$)	0 by 2030	10,757
	Mi	Fossil fuel consumption (MMBTU)	50% reduction by 2030; 100% reduction by 2050	Unknown
Overarching Goal 2: Prepare for Climate Impacts				
	Ad	N/A (see individual focus areas)	N/A	N/A
Buildings and Energy				
Reduce building GHG emissions.	Mi	Building GHG emissions ($mtCO_2e$)	8% reduction per year	82,426
Increase energy and water efficiency in City and private buildings.	Mi	Energy & water use per square foot (MMBTU/sf & CCF/sf)	TBD	Unknown
Protect Ashland's building stock and energy supply from climate impacts.	Ad	Proportion of buildings that use heat-resistant materials, passive heating/ cooling, and/or white roofs (%) Local renewable energy production (%)	TBD	Unknown
Urban Form, Land Use & Transportation				
Reduce transportation GHG emissions.	Mi	Transportation GHG emissions ($mtCO_2e$)	8% reduction per year	79,000
Reduce community & City employee vehicle miles traveled.	Mi	Vehicle miles traveled (miles)	TBD	Unknown
Improve vehicle efficiency and expand low-carbon transport, including within City's fleet.	Mi	Emissions per mile traveled ($mtCO_2e$/ mile) Transit ridership (passenger miles) and bicycling	TBD	Unknown
Support local and regional sustainable growth.	Mi/Ad	Average city "Walk Score"	TBD	53[a]
Protect transportation infrastructure from climate impacts.	Ad	TBD	TBD	TBD
Consumption & Materials Management				
Reduce solid waste & wastewater GHG emissions.	Mi	Solid waste & wastewater GHG emissions ($mtCO_2e$)	% reduction per year	6,923
Increase waste diversion through waste prevention, recycling, and composting.	Mi	Waste diverted from landfill to recycling and composting (%)	TBD	Unknown

Potential Progress Indicators, Continued

CEAP Goal	Primary Goal	Indicator	Target	2015 Baseline
Reduce consumption of climate-intensive food, products, and services.	Mi	Consumption-related emissions ($mtCO_2e$)	8% reduction per year	166,731
Support locally-produced products.	Mi/Ad	Community gardens (#) Farmers markets (#)	TBD	4 gardens; 1 farmers market
Natural Systems				
Enhance ecosystem health and resilience.	Mi/Ad	Water quality (EPA score out of 100) Acres of forest maintained Acres of protected and restored habitat	TBD	Water quality = 60/100[b] Over 2,000 acres of forests maintained[c]
Ensure sustained access to clean air and drinking water.	Ad	Water consumption (avg MGD)	TBD	4.5 MGD[d]
Public Health, Safety & Security				
Protect public health from air pollution and climate impacts.	Ad	Air quality (EPA score out of 100) Cooling center capacity (# people) Tree canopy cover (%)	TBD	Air quality = 70/100[b]
Improve community capacity to understand, prepare for, and respond to climate change security risks.	Ad	# homes in the wildland urban interface (WUI)	TBD	1,400 homes[e]
Cross-Cutting Strategies				
Increase awareness of city climate goals and needs.	Mi/Ad	Public and staff knowledge and understanding of climate change issues and actions (e.g., # students engaged in AFR project)	TBD	(e.g., over 2,000 students[f])
Integrate climate considerations into City operations, planning, and decision-making.	Mi/Ad	Number of other City plans or activities that incorporate climate change considerations	TBD	2 (Water Master Plan Update; 2016 Ashland Forest Plan)

[a] Source: https://www.walkscore.com/OR/

[b] Source: http://www.bestplaces.net/health/city/oregon/ashland

[c] Source: http://www.ashland.or.us/Files/Fall_2016Flyer_Updated_9272016_Final%20Draft.pdf

[d] Source: http://www.ashland.or.us/Page.asp?NavID=17045

[d] Source: http://www.ashland.or.us/Page.asp?NavID=13511

[f] Engaged in AFR project from 2010 to 2014 (Source: 2016 Ashland Forest Plan)

Equity

Each action of the CEAP should be implemented in an equitable manner that addresses Ashland's unique equity issues and concerns. The sections below provide suggestions for ensuring equitable implementation of the CEAP. It is expected that specific criteria and indicators will be determined and formalized in Year 1 of CEAP implementation.

Equity Considerations

When planning for implementation, the City should consider equity impacts and potential benefits. For example, the City of Portland put forth the following equity considerations in implementation of their Climate Action Plan:

explicitly integrated into the cross-cutting strategy CC 3 1 "Consider climate change in all City Council policy, budgetary, or legislative decisions. Incorporate climate action considerations/relationship as part of the Council Communication (staff report) document template." The inclusion of equity considerations as part of the standard formal communication template for City Council deliberation and decision making ensures that equity related impacts of City Council decisions are by default considered in the deliberation and able to be understood and commented on by the public.

EQUITY CONSIDERATIONS	
Disproportionate impacts	Does the proposed action generate burdens (including costs), either directly or indirectly, to communities of color or low-income populations? If yes, are there opportunities to mitigate these impacts?
Shared benefits	Can the benefits of the proposed action be targeted in progressive ways to reduce historical or current disparities?
Accessibility	Are the benefits of the proposed action broadly accessible to households and businesses throughout the community — particularly communities of color, low-income populations, and minority, women and emerging small businesses?
Engagement	Does the proposed action engage and empower communities of color and low-income populations in a meaningful, authentic and culturally appropriate manner?
Capacity building	Does the proposed action help build community capacity through funding, an expanded knowledge base or other resources?
Alignment and partnership	Does the proposed action align with and support existing communities of color and low-income population priorities, creating an opportunity to leverage resources and build collaborative partnerships?
Relationship building	Does the proposed action help foster the building of effective, long-term relationships and trust between diverse communities and local government?
Economic opportunity and staff diversity	Does the proposed action support communities of color and low income populations through workforce development, contracting opportunities or the increased diversity of city and county staff?
Accountability	Does the proposed action have appropriate accountability mechanisms to ensure that communities of color, low-income populations, or other vulnerable communities will equitably benefit and not be disproportionately harmed?

Equity Indicators

Progress toward advancing equity through implementation of the CEAP will also be assessed as part of the monitoring and evaluation process. Identification and baseline assessment of relevant indicators will be an important part of Year 1 implementation. Potential process and outcome indicators related to climate resilience implementation identified by the National Association for the Advancement of Colored People (NAACP), for example, including the following:

EXAMPLE CLIMATE RESILIENCE PROCESS / OUTCOME INDICATORS

Infrastructure	Solar and wind installation – community level, home, commercial/business (mapping/ distribution)
Economic Development and Jobs	New, local jobs created
Food Security	Businesses temporarily or permanently closed (net new businesses)
Housing	Community Workforce Agreements for redevelopment projects
Healthcare Services	Households identified as food insecure
Emergency Management	Property values increased or reduced
Planning and Decision Making	Health care and mental health facilities

Phase I Actions

The following twenty actions were identified as Phase I priority actions. Actions were identified as Phase I that meet one or more of the following criteria:

- **Easy, early wins** – relatively straightforward actions that demonstrate climate action and help the City hit the ground running on making progress toward climate goals.
- **Foundational steps** – actions that set the stage or guide direction for other actions.
- **Complex, but important initiatives** – actions that will make a big difference but may be challenging or resource-intensive to implement, so getting started as early as possible will be important.
- **Windows of opportunity** – actions align with or could synergize with other City plans, projects, or initiatives, and so should be implemented concurrently.

	Scope	Type	Criterion
Buildings and Energy			
BE-1-1. Develop a comprehensive plan for the Municipal Electric Utility. Initiate planning process in 2017.	C	Mi	Foundational step
BE-1-2. Promote switching to low- and non-carbon fuels. Integrate as part of planning in BE-1-1.	C	Mi	Complex, but important
BE-1-3. Facilitate and encourage solar energy production. Begin exploring increased local solar energy production as part of the 10-by-20 ordinance implementation.	C	Mi/Ad	Window of opportunity
BE-1-4. Enhance production of on-site solar energy from City facilities. Prioritize and development implementation plan and funding for recently completed City facility solar audit.	M	Mi/Ad	Window of opportunity
BE-2-1. Increase outreach efforts to expand participation in energy efficiency programs and promote climate-friendly building and construction. Update the land use code for conservation housing density bonus, expand participation in City's Smartbuild program, and expand zero-interest loan program opportunities.	C	Mi	Easy, early win
BE-3-1. Use results from City Facilities Energy Audit to prioritize City Facilities Capital Improvement Plans (CIPs) and maintenance improvements. Budget funds are secured to begin this action immediately.	M	Mi	Easy, early win
Urban Form, Land Use & Transportation			
ULT-1-2. Work with RVTD to implement climate-friendly transit. Begin conversations with RVTD to begin transitioning to lower emission buses and exploring ways to expand access and ridership.	C	Mi	Complex, but important
ULT-2-1. Implement bicycle- and pedestrian-friendly actions in the City's Transportation System Plan and Downtown Parking Management Plan. Begin implementing capital improvement plans as part of TSP implementation.	C	Mi	Window of opportunity
ULT-2-2. Explore additional opportunities to convert to shared streets where appropriate to provide multimodal connectivity. Pursue East Main St super-sharrow concept through Transportation Commission.	M	Mi	Window of opportunity
ULT-3-2. Revise land use codes to require EV charging infrastructure at multifamily and commercial developments. Draft revised code.	C	Mi	Complex, but important
ULT-3-3. Provide information about electric and hybrid vehicles and incentive programs on the City website.	C	Mi	Easy, early win
ULT-4-1. Regulate new development in the Wildfire Lands Overlay part of the urban growth boundary. Explore available policy instruments or incentives for regulating building materials and vegetation management for new development.	C	Ad	Complex, but important

	Scope	Type	Criterion
Consumption and Materials Management			
CM-2-1. Partner with nonprofit organizations to promote the purchase of climate-friendly food and products. Implement as part of Economic Development Strategy 1.3: local import substitution.	C	Mi	Easy, early win
CM-2-2. Expand community gardening and urban agriculture. Offer additional trainings, programs, and gardening areas.	C	Mi/Ad	Easy, early win
Natural Systems			
NS-1-1. Manage forests to retain biodiversity, resilience, and ecosystem function and services in the face of climate change. Use best available science to inform fire management and planning. Continue efforts as part of the Ashland Forest Resiliency Project, and implement actions in the 2016 Ashland Forest Plan.	C	Ad	Window of opportunity
NS-1-3. Undertake restoration efforts to retain and restore native fish and riparian species. Identify and create new restoration sites, and continue maintaining existing sites.	C	Ad	Easy, early win
NS-2-2. Explore water-efficient technologies on irrigation systems and consider requiring them during permitting.	C	Mi/Ad	Complex, but important
Public Health, Safety and Well-being			
PHSW-2-1. Engage leading employers in a dialogue on climate action. Convene ongoing, organized meetings in partnership with the Chamber of Commerce.	C	Mi/Ad	Foundational step
PHSW-3-1. Work with vulnerable populations to create specific adaptation strategies that address public health.	C	Ad	Foundational step
Cross-Cutting Strategies			
CC-1-1. Create a formal public outreach and education plan to inform the community about climate actions.	C	Mi/Ad	Foundational step
CC-1-2. Support capacity of neighborhood and community groups to implement climate mitigation and adaptation initiatives. Begin identifying and engaging in a dialogue with community groups and populations.	C	Mi/Ad	Foundational step
CC-1-3. Assess the feasibility of a City-sponsored carbon offset program. Begin evaluating options and associated costs and benefits.	C	Mi	Foundational step
CC-2-1. Ensure all City departments educate their staff members about the Climate and Energy Action Plan. City CEAP Coordinator can engage with each department.	M	Mi/Ad	Foundational step
CC-3-1. Consider climate change in all City Council policy, budgetary, or legislative decisions and as part of the Council Communication document template.	M	Mi/Ad	Complex, but important
CC-3-2. Incorporate CEAP goals and actions in future updates of city plans.	M	Mi/Ad	Window of opportunity
CC-3-3. Include consideration and perpetuation of climate action goals within the scope of every appropriate City Advisory Commission.	M	Mi/Ad	Foundational step
CC-4-1. Engage with other governments and organizations around climate policy and action. Join a formal organization such as ICLEI to explore best practices and establish relationships with peer communities.	M	Mi/Ad	Foundational step

Phase II Actions

The following forty actions were identified as Phase II priority actions. Priority actions that were not identified as Phase I were assigned as Phase II.

	Scope	Type
Buildings and Energy		
Strategy BE-2. Encourage increased building energy efficiency and conservation.		
BE-2-2. Require building energy scores to identify and incentivize cost-effective energy efficiency improvements.	C	Mi/Ad
BE-2-3. Identify and adopt strategies to reduce energy efficiency barriers in rent/lease properties.	C	Mi/Ad
BE-2-4. Establish minimum energy efficiency standards for the affordable housing program.	C	Mi/Ad
Strategy BE-4. Improve demand management.		
BE-4-1. Expand the current net meter resolution to include and incorporate virtual net metering.	C	Mi
BE-4-2. Implement utility-level smart grid technologies to facilitate efficiency and distributed energy solutions.	C	Mi
Strategy BE-5. Prepare and adapt buildings for a changing climate.		
BE-5-1. Encourage heat-tolerant building approaches such as cool roofs and passive cooling.	C	Ad
Urban Form, Land Use & Transportation		
Strategy ULT-1. Support better public transit and ridesharing.		
ULT-1-1. Coordinate with neighboring local governments to promote use of transit, carpooling, and car-sharing.	C	Mi
ULT-1-3. Establish policies to support development near transit hubs without displacing disadvantaged populations.	C	Mi
ULT-1-4. Evaluate the feasibility of expanded local transit options.	M	Mi
Strategy ULT-3. Support more-efficient vehicles.		
ULT-3-1. Implement a local fuel-related tax.	C	Mi
Strategy ULT-4. Support more climate-ready development and land use.		
ULT-4-2. Further revise community development plans to favor walkable neighborhoods and infill density.	C	Mi
ULT-4-3. Modify the WUI code to include construction techniques appropriate for wildfire-prone areas.	C	Ad
Strategy ULT-5. Increase the efficiency of City fleet vehicles and employee commuting.		
ULT-5-1. Provide carpool and vanpool parking, charging stations, and parking for EVs for City employees.	M	Mi
ULT-5-2. Conduct a city fleet audit and use it to set policy and targets.	M	Mi
ULT-5-3. Develop policy to require the purchase of verified carbon offsets to offset City staff travel.	M	Mi
Consumption and Materials Management		
Strategy CM-1. Reduce consumption of carbon-intensive goods and services.		
CM-1-1. Implement an education campaign for waste and consumption reduction strategies.	C	Mi
CM-1-2. Support “collaborative consumption” community projects.	C	Mi
CM-1-3. Determine and implement effective ways to reduce and track consumption based emissions.	C	Mi

	Scope	Type
Strategy CM-3. Expand community recycling and composting.		
CM-3-1. Improve recycling programs to make them easier to use and implement new education and outreach to increase recycling in all sectors; expand public space recycling.	C	Mi
CM-3-2. Update the multi-family recycling ordinance to encourage more diversion.	C	Mi/Ad
Strategy CM-4. Reduce food waste.		
CM-4-1. Support edible food donation.	C	Mi/Ad
CM-4-2. Provide a kitchen best practices guide to help households and businesses reduce food waste and consumption.	C	Mi/Ad
CM-4-3. Facilitate recycling of commercial food waste.	C	Mi/Ad
Strategy CM-5. Improve sustainability of City operations and purchases.		
CM-5-1. Introduce environmentally preferable purchasing (EPP) guidelines for City procurement.	M	Mi
CM-5-2. Assess the feasibility of co-digesting food waste and biosolids to generate electricity at the wastewater treatment facility.	M	Mi
Natural Systems		
Strategy NS-1. Promote ecosystem resilience.		
NS-1-2. Expand use of green infrastructure such as bioswales, permeable pavement, other pervious surfaces to reduce flood risk and minimize sediment entry into creeks from trails and roads.	C	Ad
NS-1-4. Map and protect areas that provide ecosystem services.	C	Ad
Strategy NS-2. Manage and conserve community water resources.		
NS-2-1. Evaluate the value and potential for incentives for practices that reduce use of potable water for nonpotable purposes and recharge ground water.	C	Mi/Ad
NS-2-3. Expand water conservation outreach and incentive programs for residents and businesses.	C	Mi/Ad
Strategy NS-3. Conserve water use within City operations.		
NS-3-1. Evaluate the potential for installation of rainwater collection systems at City facilities for graywater uses, and investigate opportunities for graywater reuse at existing and new City facilities and properties.	M	Mi/Ad
NS-3-2. Implement efficiency recommendations from the City facilities water audit.	M	Mi/Ad
Public Health, Safety, and Well-being		
Strategy PHSW-1. Manage ecosystems and landscapes to minimize climate-related health impacts.		
PHSW-1-1. Promote the expansion of tree canopy in urban heat islands or areas that need air conditioning such as schools.	C	Ad
Strategy PHSW-2. Promote a sustainable local economy that minimizes emissions and vulnerability.		
PHSW-2-2. Support organizations, such as SOU, in evaluating risks to local food sources under climate change.	C	Ad
Strategy PHSW-3. Optimize City services to minimize public health impacts.		
PHSW-3-2. Identify and minimize potential urban heat impacts.	C	Ad
PHSW-3-3. Develop or enhance heat-warning systems for employees and the public.	C	Ad
Strategy PHSW-4. Optimize City services to minimize public safety impacts.		
PHSW-4-1. Update the City's emergency response plan and ensure that preparation and updates recognize and address likely climate change impacts.	C	Ad

Implementation Schedule

The table starting on the following page details when, why, and by whom all priority actions in the CEAP will be implemented. The list includes additional information on each action, including co-benefits and relative, qualitative estimates of implementation costs and effectiveness in meeting CEAP goals. The CEAP also includes additional actions that were not listed as "priority"—these actions will be implemented on an opportunistic and as-needed basis.

Phases

Phases for CEAP priority actions are designated by budget biennials and represent the relative sequence of actions in the CEAP. All actions are slated for near -term commencement; it is expected that longer-term actions will be identified during the three-year plan update process. Actions identified as Phase II could be initiated in Phase I, but not at the expense of completing Phase I actions.

- Phase I: Complete by 2020
- Phase II: Complete by 2025

Departments

Actions are labeled by the primary department responsible for implementation. It is expected that many of these primary departments will need to work with other supporting departments and/or external stakeholders to fully and successfully implement the action:

- Community Development (including Building Division and Planning Division)
- Ashland Municipal Utility (Electric)
- Administration
- Parks and Recreation
- Conservation Division
- Public Works
- Police / Fire

Co-benefits


Benefits low-income or disadvantaged communities


Benefits local habitats, recreation, or natural aesthetic


Benefits households, local economy, City operations budget, or jobs


Benefits public health (e.g. by enhancing local air quality)

Relative Rankings

$	Lower relative implementation cost
$$	Moderate relative implementation cost
$$$	Higher relative implementation cost


Effective in meeting CEAP goals

More effective in meeting CEAP goals

Most effective in meeting CEAP goals

	Scope	Type	Cost	Effectiveness	Co-benefits	Phase	Responsible Department
Buildings and Energy							
Strategy BE-1. Support cleaner energy sources.							
BE-1-1. Develop a comprehensive plan for the Municipal Electric Utility.	C	Mi	$$$	⚡⚡⚡		I	Electric/Conservation
BE-1-2. Promote switching to lower-carbon fuels	C	Mi	$$	⚡⚡		I	Electric/Conservation
BE-1-3. Facilitate and encourage solar energy production.	C	Mi/Ad	$ $	⚡⚡		I	Electric/Conservation
BE-1-4. Enhance production of on-site solar energy from City facilities.	C	Mi/Ad	$ $	⚡		I	Public Works
Strategy BE-2. Encourage increased building energy efficiency and conservation.							
BE-2-1. Increase outreach efforts to expand participation in energy efficiency programs and promote climate-friendly building and construction.	C	Mi	$ $	⚡⚡	⚖	I	Conservation
BE-2-2. Require building energy scores to identify and incentivize cost-effective energy efficiency improvements.	C	Mi/Ad	$ $	⚡⚡		II	Community Development
BE-2-3. Identify and adopt strategies to reduce energy efficiency barriers in rent/lease properties.	C	Mi/Ad	$	⚡⚡⚡	⚖	II	Conservation
BE-2-4. Establish minimum energy efficiency standards for the affordable housing program.	C	Mi/Ad	$	⚡	⚖	II	Community Development
Strategy BE-3. Maximize efficiency of City facilities, equipment & operations.							
BE-3-1. Use results from City Facilities Energy Audit to prioritize City Facilities Capital Improvement Plans (CIPs) and maintenance improvements.	M	Mi	$	⚡		I	Public Works
Strategy BE-4. Improve demand management.							
BE-4-1. Expand the current net meter resolution to include and incorporate virtual net metering.	C	Mi	$ $	⚡⚡		II	Electric
BE-4-2. Implement utility-level smart grid technologies to facilitate efficiency and distributed energy solutions.	C	Mi	$ $ $	⚡⚡⚡	$	II	Electric
Strategy BE-5. Prepare and adapt buildings for a changing climate.							
BE-5-1. Encourage heat-tolerant building approaches such as cool roofs and passive cooling.	C	Ad	$	⚡⚡	$	II	Community Development
Urban Form, Land Use & Transportation							
Strategy ULT-1. Support better public transit and ridesharing.							
ULT-1-1. Coordinate with neighboring local governments to promote use of transit, carpooling, and car-sharing.	C	Mi	$	⚡⚡		II	Public Works
ULT-1-2. Work with RVTD to implement climate-friendly transit.	C	Mi	$	⚡⚡	✚	I	Public Works
ULT-1-3. Establish policies to support development near transit hubs without displacing disadvantaged populations.	C	Mi	$	⚡⚡	⚖	II	Community Development
ULT-1-4. Evaluate the feasibility of expanded local transit options.	M	Mi	$ $ $	⚡⚡	✚	II	Public Works
Strategy ULT-2. Make Ashland more bike- and pedestrian-friendly.							
ULT-2-1. Implement bicycle- and pedestrian-friendly actions in the City's Transportation System Plan and Downtown Parking Management Plan.	C	Mi	$ $ $	⚡⚡⚡	✚	I	Public Works
ULT-2-2. Explore opportunities to convert to shared streets where appropriate to provide multimodal connectivity.	M	Mi	$ $ $	⚡⚡⚡	✚	I	Public Works

	Scope	Type	Cost	Effectiveness	Co-benefits	Phase	Responsible Department
Strategy ULT-3. Support more-efficient vehicles.							
ULT-3-1. Implement a local fuel-related tax.	C	Mi	$	ϟϟϟ		II	Administration/Legal
ULT-3-2. Revise land use codes to require EV charging infrastructure at multifamily and commercial developments.	C	Mi	$	ϟϟϟ		I	Community Development
ULT-3-3. Provide information about electric and hybrid vehicles and rebates on the City's website.	C	Mi	$	ϟϟ		I	Conservation
Strategy ULT-4. Support more climate-ready development and land use.							
ULT-4-1. Regulate new development in the Wildfire Lands Overlay part of the urban growth boundary.	C	Ad	$	ϟϟϟ		I	Community Development/Fire
ULT-4-2. Further revise community development plans to favor walkable neighborhoods and infill density.	C	Mi	$	ϟϟϟ		II	Community Development
ULT-4-3. Modify the WUI code to include construction techniques appropriate for wildfire-prone areas.	C	Ad	$	ϟϟ		II	Community Development
Strategy ULT-5. Increase the efficiency of City fleet vehicles and employee commuting.							
ULT-5-1. Provide carpool and vanpool parking, charging stations, and parking for EVs for City employees.	M	Mi	$$	ϟ		II	Public Works
ULT-5-2. Conduct a city fleet audit and use it to set policy and targets.	M	Mi	$	ϟ		II	Public Works
ULT-5-3. Develop policy to require the purchase of verified carbon offsets to offset City staff travel.	M	Mi	$	ϟ		II	Administration
Consumption and Materials Management							
Strategy CM-1. Reduce consumption of carbon-intensive goods and services.							
CM-1-1. Implement an education campaign for waste and consumption reduction strategies.	C	Mi	$	ϟϟ		II	Administration
CM-1-2. Support "collaborative consumption" community projects.	C	Mi	$	ϟϟ		II	Administration
CM-1-3. Determine and implement effective ways to reduce and track consumption based emissions.	C	Mi	$	ϟϟ		II	Administration
Strategy CM-2. Support sustainable and accessible local production and consumption.							
CM-2-1. Partner with nonprofit organizations to promote the purchase of climate-friendly food and products.	C	Mi	$	ϟϟ		I	Administration
CM-2-2. Expand community gardening and urban agriculture opportunities.	C		$$	ϟϟ		I	Administration/Parks
Strategy CM-3. Expand community recycling and composting.							
CM-3-1. Improve recycling programs to make them easier to use and implement new education and outreach to increase recycling in all sectors; expand public space recycling.	C	Mi	$$	ϟ		II	Conservation
CM-3-2. Update the multi-family recycling ordinance to encourage more diversion.	C	Mi	$	ϟ		II	Conservation
CM-3-3. Strengthen the Demolition Debris and Diversion ordinance to enhance enforcement and increase diversion and reuse.	C	Mi	$$	ϟϟ		II	Conservation
Strategy CM-4. Reduce food waste.							
CM-4-1. Support edible food donation.	C	Mi/Ad	$	ϟ		II	Conservation
CM-4-2. Provide a kitchen best practices guide to help households and businesses reduce food waste and consumption.	C	Mi/Ad	$	ϟϟ		II	Conservation

	Scope	Type	Cost	Effectiveness	Co-benefits	Phase	Responsible Department
CM-4-3. Evaluate opportunities for recycling of commercial food waste.	C	Mi/Ad	$ $	ϟ ϟ		II	Conservation
Strategy CM-5. Improve sustainability of City operations and purchases.							
CM-5-1. Introduce environmentally preferable purchasing (EPP) guidelines for City procurement.	M	Mi	$	ϟ		II	Administrative Services
CM-5-2. Assess the feasibility of co-digesting food waste and biosolids to generate electricity at the wastewater treatment facility.	M	Mi	$ $ $	ϟ ϟ		II	Public Works
Natural Systems							
Strategy NS-1. Promote ecosystem resilience.							
NS-1-1. Manage forests to retain biodiversity, resilience, and ecosystem function and services in the face of climate change. Use best available science to inform fire management and planning to manage ecosystem health, community safety, and carbon storage.	C	Ad	$	ϟ ϟ ϟ	🌲	I	Fire
NS-1-2. Use green infrastructure such as bioswales, permeable pavement, other pervious surfaces to reduce flood risk and minimize sediment entry into creeks from trails and roads.	C	Ad	$	ϟ ϟ	🌲	II	Community Development
NS-1-3. Undertake restoration efforts to retain and restore native fish and riparian species.	C	Ad	$ $	ϟ ϟ	🌲	I	Parks & Recreation
NS-1-4. Map and protect areas that provide ecosystem services.	C	Ad	$ $	ϟ ϟ	🌲	II	Parks & Recreation
Strategy NS-2. Manage and conserve community water resources.							
NS-2-1. Evaluate the value and potential for incentives for practices that reduce use of potable water for nonpotable purposes and recharge ground water.	C	Mi/Ad	$ $	ϟ ϟ ϟ	🌲	II	Conservation
NS-2-2. Explore water-efficient technologies on irrigation systems and consider requiring them during the permitting process.	C	Mi/Ad	$ $	ϟ ϟ ϟ		I	Conservation
NS-2-3. Expand water conservation outreach and incentive programs for residents and businesses.	C	Mi/Ad	$ $	ϟ	$	II	Conservation
Strategy NS-3. Conserve water use within City operations.							
NS-3-1. Evaluate the potential for installation of rainwater collection systems at City facilities for graywater uses, and investigate opportunities for graywater reuse at existing and new City facilities and properties.	M	Mi/Ad	$ $	ϟ		II	Public Works
NS-3-2. Implement efficiency recommendations from the City facilities water audit.	M	Mi/Ad	$ $	ϟ		II	Public Works
Public Health, Safety, and Well-being							
Strategy PHSW-1. Manage ecosystems and landscapes to minimize climate-related health impacts.							
PHSW-1-1. Promote the expansion of tree canopy in urban heat islands or areas that need air conditioning such as schools.	C	Ad	$	ϟ ϟ	🌲	II	Parks & Recreation/ Community Development
Strategy PHSW-2. Promote a sustainable local economy that minimizes emissions and vulnerability.							
PHSW-2-1. Engage leading employers in a dialogue on climate action, for example, by organizing and facilitating roundtables.	C	Mi/Ad	$	ϟ ϟ	$	I	Conversation
PHSW-2-2. Support organizations, such as SOU, in evaluating risks to local food sources under climate change.	C	Ad	$	ϟ	$	II	Administration
Strategy PHSW-3. Optimize City services to minimize public health impacts.							
PHSW-3-1. Work with vulnerable populations to create specific adaptation strategies to address public health risks.	C	Ad	$	ϟ ϟ	⚖	I	Administration/Fire

	Scope	Type	Cost	Effectiveness	Co-benefits	Phase	Responsible Department
PHSW-3-2. Identify and minimize potential urban heat impacts.	C	Ad	$ $	⚡	⚖ ✚	II	Parks & Recreation/Fire
PHSW-3-3. Develop or enhance heat-warning systems for employees and the public.	C	Ad	$	⚡	✚	II	Fire
Strategy PHSW-4. Optimize City services to minimize public safety impacts.							
PHSW-4-1. Update the City's emergency response plan and ensure that preparation and updates recognize and address likely climate change impacts.	C	Ad	$	⚡⚡⚡		II	Fire
PHSW-4-1. Identify and address populations and essential City services that are within the 100-year flood zone.	C	Ad	$ $	⚡⚡		II	Public Works
Cross-Cutting Strategies							
Strategy CC-1. Educate and empower the public.							
CC-1-1. Create a formal public outreach and education plan to inform the community about climate actions and progress.	C	Mi/Ad	$	⚡⚡		I	Administration
CC-1-2. Support capacity of neighborhood and community groups to implement climate mitigation and adaptation initiatives.	C	Mi/Ad	$	⚡⚡	⚖	I	Administration
CC-1-3. Assess the feasibility of a City-sponsored carbon offset program.	C	Mi/Ad	$	⚡⚡		I	Administration
Strategy CC-2. Educate and empower City staff.							
CC-2-1. Ensure all City departments educate their staff members about the Climate and Energy Action Plan.	M	Mi/Ad	$	⚡		I	Administration
Strategy CC-3. Mainstream and integrate climate considerations.							
CC-3-1. Consider climate change in all City Council policy, budgetary, or legislative decisions and as part of the Council Communication document template.	M	Mi/Ad	$	⚡⚡⚡		I	Administration
CC-3-2. Incorporate CEAP goals and actions in future updates of city plans.	M	Mi/Ad	$	⚡⚡⚡		I	Administration
CC-3-3 Include consideration and perpetuation of climate action goals within the scope of every appropriate City Advisory Commission.	M	Mi/Ad	$	⚡⚡		I	Administration
Strategy CC-4. Engage with other governments and organizations around regional, statewide, national, and international climate policy and action.							
CC-4-1. Engage with other governments and organizations around regional, statewide, national, and international climate policy and action.	M	Mi/Ad	$	⚡		I	Administration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sh & Wildlife
pring Chinook
conservation plan has been adopted to
uide management of Rogue River spring

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Appendices

CLIMATE TRENDS SUMMARY

This summary provides more information on projected climate change impacts and trends in Ashland, including changes in temperature, precipitation, and natural hazard risk.

PUBLIC ENGAGEMENT PROCESS OVERVIEW

The public provided valuable input that helped shape the plan. See when and how the public was consulted, and how public input was used in the plan.

EMISSIONS MODELING AND TARGET-SETTING METHODOLOGY

Take a behind-the-scenes look at the process used to model Ashland's greenhouse gas footprint and set emissions-reduction targets.

ASHLAND GREENHOUSE GAS INVENTORY

This document summarizes the city's emissions by sector and activity type from 2011 through 2015, and set the emissions baseline used to identify goals and prioritize strategies and actions throughout this plan.


CSC Youth House Gardens

APPENDIX A. CLIMATE TRENDS SUMMARY

CITY OF ASHLAND, OREGON

Climate Trends & Projections

FINAL REPORT

AUGUST 22, 2016

Prepared by:

Meghan M. Dalton
Oregon Climate Change Research Institute

Contents

This report presents future climate projections for Ashland for the 2050s and 2080s compared to the 1950-2005 average historical baseline. The projections were analyzed for a low greenhouse gas emissions scenario as well as a high greenhouse gas emissions scenario, using multiple models. This summary lists only the mean projections for the 2050s and 2080s under the high emissions scenario. Projections for both time periods and both emissions scenarios are listed in Table 2 of the report.

Summary of Key Findings

Temperature. Ashland has experienced significant warming over the last 120 years. Going forward, the temperature is projected to increase by 5°F on average by the 2050s and 8°F by the 2080s under the high emissions scenario. Warming may be more pronounced in the summer.

Extreme Heat. The hottest day of the year in Ashland is projected to increase by about 7°F by the 2050s and 12°F by the 2080s under the high emissions scenario. Warm spells are projected to comprise about 40 more days of the year by the 2050s and 90 more days of the year by the 2080s compared to the historical baseline. The number of daytime high temperatures reaching 100°F or more is projected to increase by 11 days by the 2050s and 27 days by the 2080s. The number of nighttime low temperatures staying above 60°F is projected to increase by 15 days by the 2050s and by 38 days by the 2080s.

Cold Extremes. The coldest night of the year in Ashland is projected to increase by about 5°F by the 2050s and by about 8°F by the 2080s under the high emissions scenario. The number of days in which the temperature drops below freezing are projected to decline by about 50 days by the 2050s and by about 80 days by the 2080s compared to the historical baseline.

Degree Days. Degree days measure how much heating or air conditioning is required for buildings to maintain a comfortable temperature. With projected increasing temperatures, the need for heating will decrease, with projected declines in heating degree days of about 1240 °F-days by the 2050s and about 2,000 °F-days by the 2080s under the high emissions scenario. Meanwhile, the need for air conditioning will increase, with projected increases in cooling degree days of about 530 °F-days by the 2050s and about 1,000 °F-days by the 2080s.

Precipitation. There was no significant change in total precipitation in Ashland over the last 120 years. Future projections are split: some models project an increase in total annual precipitation and others project decreases. Cool season precipitation may increase and warm season precipitation may decrease in the future. Changes in precipitation have been and will continue to be dominated by natural variability, rather than climate change.

Extreme Precipitation. It is generally expected that heavy precipitation events will become more common. Under the high emissions scenario, the number of days with more than 20 mm of precipitation is projected to increase by 0.3 days by the 2050s and 0.7 days by the 2080s. Meanwhile, the total amount of rainfall during the year that falls during the heaviest 5% of days is projected to increase by more than half an inch by the 2050s and more than an inch by the 2080s for the multi-model mean. In addition, the longest dry spell in a year is projected to increase by 5 days on average by the 2050s and by 6 days by the 2080s. While the majority of models project increases in these extreme precipitation measures, some project decreases.

Snowpack. With warmer temperatures, precipitation is more likely to fall as rain rather than snow at mid-elevations. April 1 snow water equivalent (SWE) on the western flank of the Cascades in the Rogue Basin has mostly declined over the past 50 years. By the 2050s under the high emissions scenario, April 1 SWE in the Middle Rogue basin is projected to decline by 66%. By the 2080s, April 1 SWE is projected to decline by 86% compared to the historical baseline.

Streamflow. As expected with future warming and declining snowpack, monthly total runoff averaged over the Middle Rogue basin is projected to shift toward earlier spring melt, higher winter flows, and lower summer flows.

Wildfire. Over the past century, warmer and drier conditions contributed to more frequent large fires, which in turn resulted in increased burned acreage across the western U.S. Such trends are expected to continue under future climate change.

Introduction

The global climate is warming primarily due to the accumulation of greenhouse gases in the atmosphere from human activities like burning fossil fuels. Future climate conditions will depend on the amount of future greenhouse gas emissions and how sensitive the climate is to those emissions (IPCC, 2013).

To support the development of the City of Ashland's Climate and Energy Action Plan, this document presents historical trends in Ashland's temperature and precipitation alongside future projections related to both average and extreme temperature and precipitation. Later sections analyze historical trends in Rogue Basin snowpack and future projections in snowpack and streamflow, as well as historical trends and future projections of wildfire in the western U.S.

Data & Methods

This section summarizes data sources and methods of analysis used in this project. A detailed description of the data and methods is included at the end of the document.

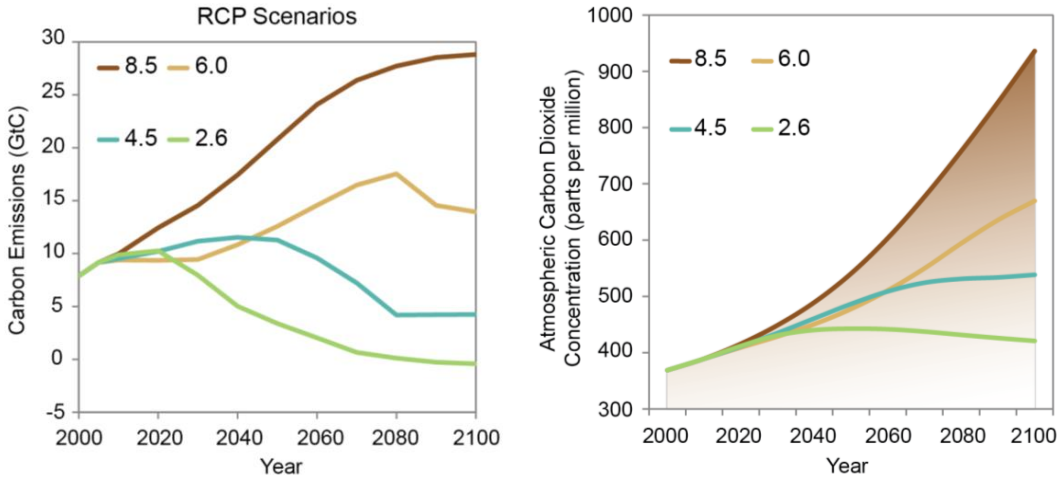
Historical Trends

The Oregon Climate Change Research Institute analyzed observed trends in annual and seasonal temperature and precipitation from 1893 to 2014 using Ashland data from version 2.5 of the United States Historical Climate Network (Menne, Williams, & Vose, 2009). The team analyzed observed trends in April 1 snow water equivalent (SWE) from 1960 to 2014 using SNOTEL and Snow Course data in the Rogue Basin collected by the Natural Resources Conservation Service. Trends were estimated using standard least squares linear regression.

Future Projections

The future climate projections for Ashland are based on the latest generation of global climate models (GCMs) from the Coupled Model Intercomparison Project phase 5 (CMIP5) (Taylor, Stouffer, & Meehl, 2012) that were used in the fifth assessment report of the Intergovernmental Panel on Climate Change (IPCC, 2013). CMIP5 simulations of the 21st century were driven by representative concentration pathways (RCPs) that define concentrations of greenhouse gases, aerosols, and chemically active gases leading to a set amount of radiative forcing—or extra energy trapped in the earth-atmosphere system—by the year 2100 (van Vuuren et al., 2011). This project considers two of the four RCPs: RCP4.5 ("low") representing moderate efforts to mitigate emissions, and RCP8.5 ("high") representing a business as usual scenario (see Figure 1). It is important to note that RCP2.6, which attains negative greenhouse gas emissions by 2100, is the only RCP scenario to keep global temperature likely below 2°C (IPCC, 2013). Inherent in GCM projections is uncertainty due to emissions scenario, internal variability, and modeling physics and resolution, which combined yield a range of plausible future climate projections rather than a single precise prediction.

Figure 1. *Carbon emissions and atmospheric carbon dioxide concentrations for RCP scenarios* (Walsh et al., 2014a).



In a project called "Integrated Scenarios of the Future Northwest Environment," the coarse resolution (100-300 km) of the CMIP5 GCM output was statistically downscaled to a resolution of about 6 km, which was then used as an input to hydrology and vegetation models. Modeled historical and future climate data was analyzed for the 6-km grid cell containing the city of Ashland from 1950 to 2099 for 18 CMIP5 GCMs as well as RCP4.5 and RCP8.5. Historical and future April 1 SWE and total runoff data from the hydrology model were averaged over the Middle Rogue basin.

Overview

Temperature in Ashland increased significantly over the historical period while trends in precipitation were less clear. All models agree that temperature will continue to increase in the future. However, future projections of annual precipitation have less confidence: some models project increases while other models project decreases. Because precipitation is highly variable from year to year, the future direction of change in precipitation and precipitation-derived metrics is less certain than for temperature metrics.

Measures of extreme precipitation and extreme temperature were also analyzed. In general, warm temperature extremes are projected to increase. Extreme cold measures are projected to change in a manner consistent with overall warming: increases in the coldest night of the year and decreases in the number of days below freezing. In terms of possible increases or decreases in precipitation extremes, the sign of change depended on the model.

Snow water equivalent (SWE) in the Rogue Basin—a metric that indicates the amount of water contained within the snowpack—decreased over the historical period. SWE is influenced by both temperature and precipitation changes, but the influence of temperature dominates in future projections. All models agree that SWE will decrease in the future.

Table 1 lists all of the variables that are reported in this document.

Table 1. *Description of variables.*

Variable	Description
Average Temperature	Daily mean temperature averaged over the year
Hottest Day of Year	Yearly maximum of daily maximum temperature
Warm Spell Duration Index	Number of days in the year in which maximum temperature is of the highest 10% for that day in the historical baseline
Days above 100°F	Number of days in the year with maximum temperature equal to or greater than 100°F
Days above 110°F	Number of days in the year with maximum temperature equal to or greater than 110°F
Nights above 60°F	Number of days in the year with minimum temperature equal to or greater than 60°F
Heating Degree Days	Annual accumulation of days and degrees below 65°F
Cooling Degree Days	Annual accumulation of days and degrees above 65°F
Coldest Night of Year	Yearly minimum of daily minimum temperature
Frost Days	Number of days in a year with minimum temperature below 32°F
Precipitation	Total water year precipitation
Extreme Precipitation Frequency	Number of days in the year with precipitation equal to or greater than 20 mm (~3/4")
Consecutive Dry Days	Maximum run in a year of consecutive days with less than 1 mm precipitation
Extreme Precipitation Amount	Total annual precipitation on days with greater than 95th percentile precipitation
Snow Water Equivalent	The amount of water contained within the snowpack

Table 2 presents the multi-model mean change and the range of changes across all models for each metric considered in Table 1 for the 2050s (2040-2069 average) and 2080s (2070-2099 average) under the low

(RCP4.5) and high (RCP8.5) emissions scenarios. Projections for each metric are discussed further in the following sections with a focus on the high emissions scenario for the 2080s. Future projections for streamflow and wildfire are also discussed.

Table 2. Future projected changes from the historical baseline (1950-2005) for mid- and late- 21st century under low and high future emissions scenarios in the City of Ashland. Given are the mean differences and range across an ensemble of 18 downscaled global climate models.

	2050s		2080s	
	RCP4.5 (low)	RCP8.5 (high)	RCP4.5 (low)	RCP8.5 (high)
Average Temperature (°F)	4 (2, 5)	5 (3, 6)	5 (3, 7)	8 (6, 11)
Hottest Day of Year (°F)	6 (4, 8)	7 (4, 10)	7 (5, 9)	12 (8, 14)
Warm Spell Duration Index (Days)	27 (11, 42)	39 (11, 66)	39 (18, 66)	89 (36, 136)
Days above 100°F	6 (3, 10)	11 (3, 19)	10 (5, 16)	27 (13, 40)
Days above 110°F	0 (0, 1)	0 (0, 1)	0 (0, 1)	3 (0, 6)
Nights above 60°F	8 (2, 15)	15 (5, 27)	13 (3, 24)	38 (11, 68)
Heating Degree Days (°F-Days)	-976 (-473, -1256)	-1240 (-717, -1600)	-1256 (-641, -1649)	-2008 (-1319, -2455)
Cooling Degree Days (°F-Days)	368 (200, 541)	526 (279, 762)	506 (279, 753)	994 (634, 1455)
Coldest Night of Year (°F)	3 (1, 7)	5 (2, 8)	4 (0, 8)	8 (4, 11)
Frost Days (Days)	-41 (-19, -54)	-52 (-30, -68)	-53 (-25, -72)	-80 (-52, -99)
Precipitation (Inches)	-0.2 (-2.2, 2.4)	-0.2 (-2.4, 2.3)	0.0 (-1.8, 2.2)	0.4 (-2.7, 3.9)
Extreme Precipitation Frequency (Days)	0.2 (-0.4, 0.8)	0.3 (-0.3, 1.1)	0.4 (-0.4, 1.2)	0.7 (-0.5, 2.2)
Extreme Precipitation Amount (Inches)	0.5 (-0.5, 1.4)	0.6 (-0.4, 2.1)	0.8 (-0.2, 2.0)	1.3 (-0.2, 3.4)
Consecutive Dry Days (Days)	5 (-2, 17)	5 (-2, 13)	4 (-2, 10)	6 (-8, 21)
Snow water equivalent (%)	-60 (-69, -41)	-66 (-83, -47)	-71 (-81, -58)	-86 (-93, -70)

Implications

Human Health: Increases in temperatures and extreme heat elevates the risk of heat-related illnesses (Crimmins et al., 2016). Increasing wildfire occurrence leading to elevated particulate matter exacerbate respiratory and cardiovascular illnesses (Crimmins et al., 2016). Vector-borne diseases, such as Lyme disease, may emerge earlier in the season and expand in range with warmer temperatures (Crimmins et al., 2016). Rising temperatures also increase the risk of exposure to food-related infections such as Salmonella (Crimmins et al., 2016). Certain segments of the populations may be more vulnerable to climate impacts, such as heat extremes. These include: people with low income, immigrants, limited English proficiency

groups, indigenous peoples, children and pregnant women, older adults, outdoor workers, persons with disabilities, and persons with chronic medical conditions (Crimmins et al., 2016).

Built Infrastructure: Urban infrastructure and transportation systems will be increasingly compromised by climate change impacts (Cutter et al., 2014; Schwartz et al., 2014). Infrastructure that is past its design age and interdependent on other systems is particularly vulnerable to climate extreme events (Cutter et al., 2014). A warming climate can accelerate asphalt deterioration, cause pavement and rail line buckling, and stress expansion joints on bridges and highways (Schwartz et al., 2014).

Forest Ecosystems: The combined impact of increasing wildfire, insect outbreaks, and tree diseases are already causing widespread tree die-off and are likely to cause additional forest mortality and long-term transformation of the forest landscape (Mote et al., 2014). Forest vegetation changes, such as a shift from conifer to mixed forests (Sheehan et al., 2015), could affect the local timber economy (Mote et al., 2014).

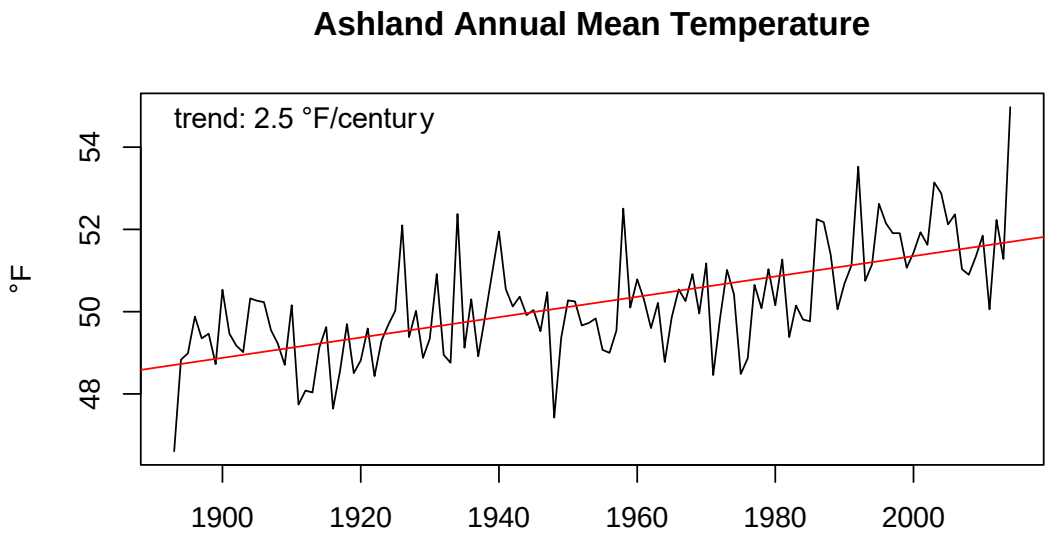
Water-Related Challenges: Changes in streamflow timing and amount related to changing snowmelt will reduce the supply of water for many competing demands, such as irrigation, municipal and industrial use, hydropower production, and aquatic habitat preservation, potentially causing ecological and socioeconomic consequences such as water shortages, complex tradeoffs in water allocations, and threatening of salmon and other freshwater species (Mote et al., 2014). In addition, warming, increasing winter precipitation, and more extreme precipitation will likely increase flood risk (Mote et al., 2014).

Average Temperature

Historical Trends

The annual mean temperature in Ashland warmed at a rate of 2.5°F per century between 1893 and 2014 (see Figure 2). This local warming is greater than the observed warming averaged over the Pacific Northwest (PNW), which was about 1.0°F to 1.4°F per century over the period 1901-2012 (Abatzoglou, Rupp, & Mote, 2014). It has been shown that the rise in greenhouse gases was largely responsible for this PNW temperature trend (Abatzoglou et al., 2014). Globally, the Earth's surface warmed about 1.5°F between 1880 and 2012 (IPCC, 2013).

Figure 2. *Annual mean temperature in Ashland has increased from 1893 to 2014 at a rate of 2.5°F per century.*



In Ashland, the mean, minimum, and maximum temperature increased year-round with significant (>95%) trends, except for the maximum temperature trend in spring (see Table 3). Minimum temperatures in Ashland have increased faster than maximum temperatures, as was the case for most stations in the PNW. Warming was most pronounced in Ashland during winter, with a 3.9°F per century rate of increase in minimum temperature. Average PNW warming was also largest in winter (Abatzoglou et al., 2014).

Table 3. *Annual and seasonal trends in maximum, minimum, and mean temperature and precipitation from 1893 to 2014 for Ashland. An asterisk denotes a statistically significant trend at the 95% level.*

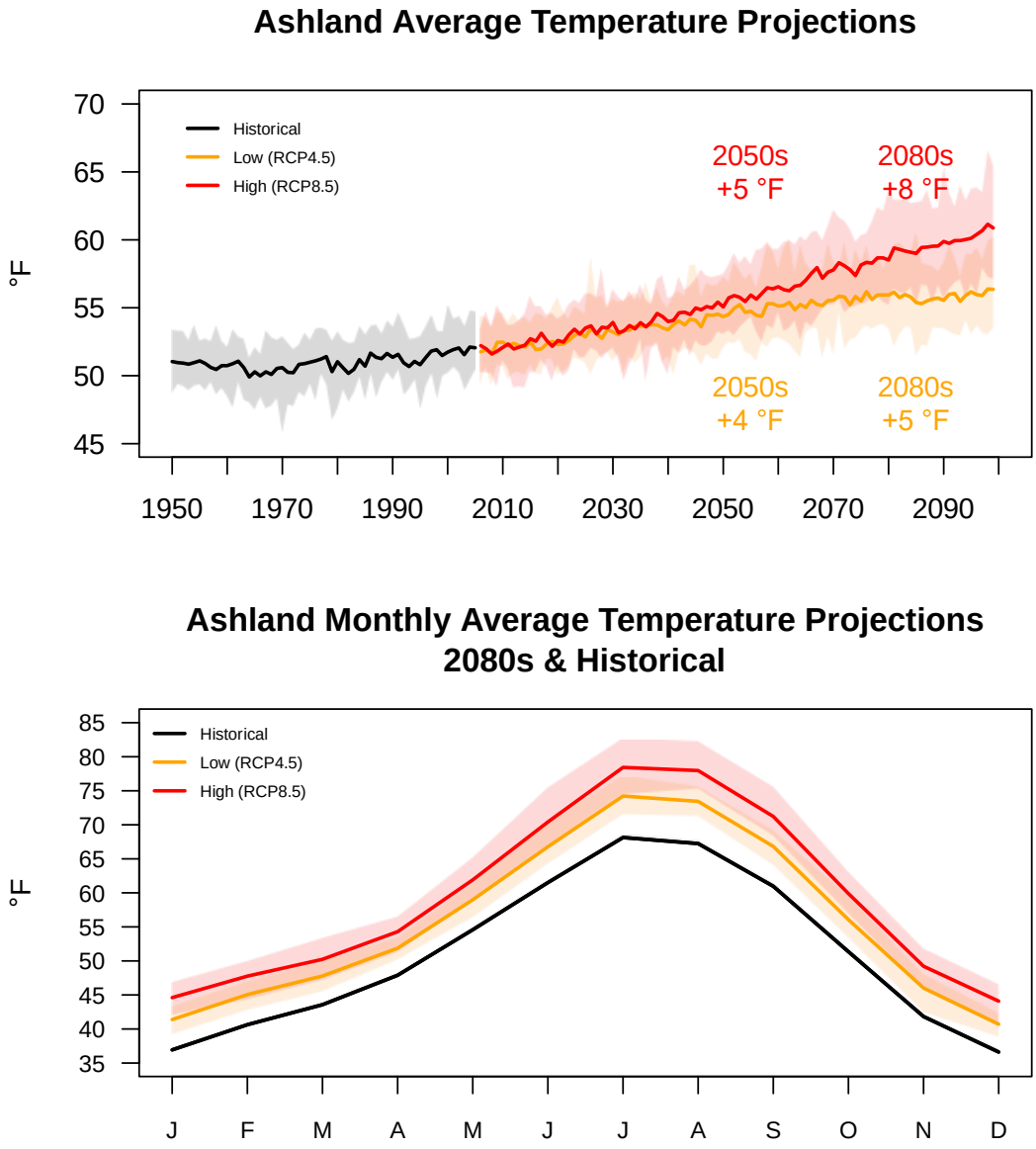
	Maximum Temperature (°F per century)	Minimum Temperature (°F per century)	Mean Temperature (°F per century)	Precipitation (Inches per century)
Annual	1.4*	3.6*	2.5*	-0.9
Winter	2.1*	3.9*	3.0*	-0.9
Spring	0.7	3.5*	2.1*	0.5
Summer	1.3*	3.9*	2.6*	0.03
Fall	1.1*	3.0*	2.1*	-0.4

Future Projections

The range of future changes in annual average temperature in Ashland is 2°F to 6°F for the 2050s and 3°F to 11°F for the 2080s, using all models and both emissions scenarios (see Table 2). The multi-model mean projects an increase of about 8°F by the 2080s under the high emissions scenario compared to the historic baseline (1950-2005) (see Figure 3). Warming occurs year round and is more pronounced during the summer months of July, August, and September (Figure 3).

Globally, the Earth's climate will continue to warm with continued greenhouse gas emissions. By the end of the 21st century relative to the 1850-1900 average, it is likely that global warming will exceed 2.7°F under RCP4.5 and exceed 3.6°F under RCP8.5. By mid-century (2046-2065 relative to 1986-2005) global warming is "likely" to be in the range of 1.6°F to 3.6°F for RCP4.5 and 2.5°F to 4.7°F for RCP8.5 (IPCC, 2013). It is important to note that the IPCC's "likely" range does not include the full range of models shown for the Ashland projections.

Figure 3. *Annual average temperature (top) and monthly average temperature (bottom) projections for Ashland as simulated by 18 downscaled global climate models under a low (RCP4.5) and high (RCP8.5) greenhouse gas emissions scenario. Solid line and shading depicts the 18-model mean and range, respectively. The multi-model mean differences for the 2050s (2040-2069 average) and 2080s (2070-2099 average) compared to the historical baseline (1950-2005) are displayed on the top plot.*



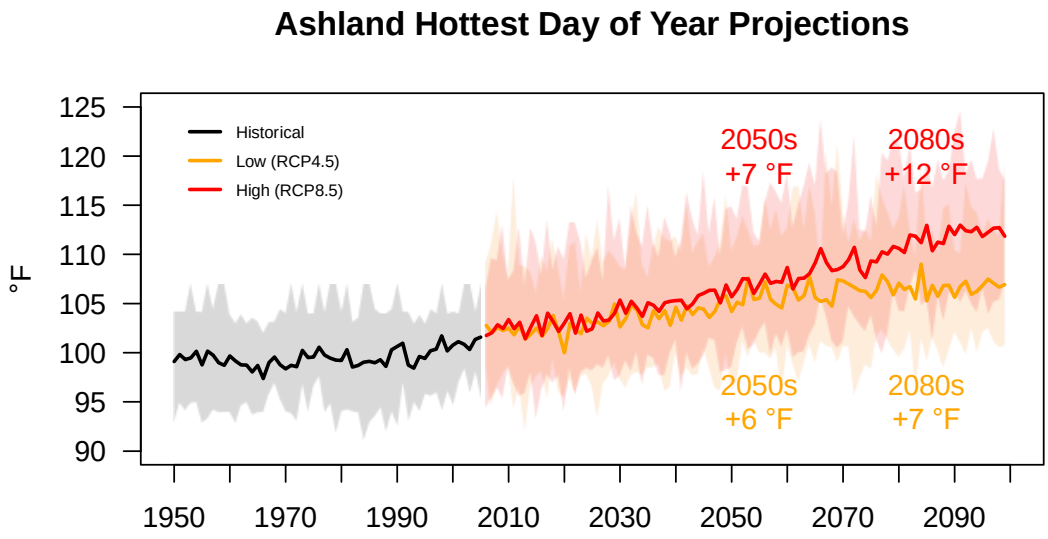
Extreme Warm Temperature

Extreme warm temperature projections are examined using the hottest day of the year, the warm spell duration index, number of days above 100°F, number of days above 110°F, and number of nights above 60°F.

Hottest Day of Year

The range of future changes in the temperature of the hottest day of the year in Ashland is 4°F to 10°F for the 2050s and 5°F to 14°F for the 2080s (see Table 2); this is the range across all models and both emissions scenarios. The multi-model mean projects an increase of about 12°F by the 2080s under the high emissions scenario compared to the historic baseline (1950-2005) (see Figure 4).

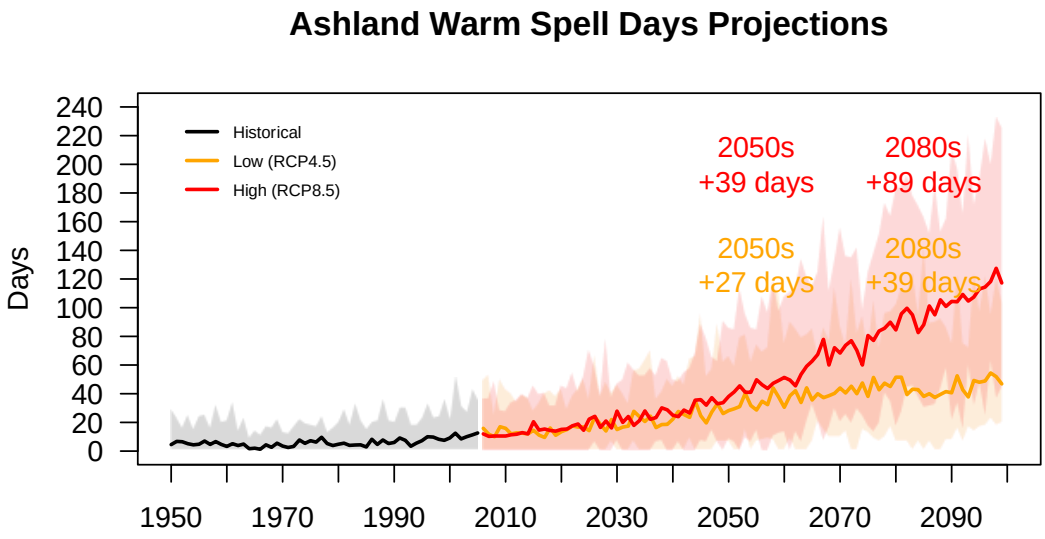
Figure 4. *Temperature of the hottest day of year projections for Ashland as simulated by 18 downscaled global climate models for the historical period (1950-2005) and future (2006-2099) under a low (RCP4.5) and high (RCP8.5) greenhouse gas emissions scenario. Solid line and shading depicts the 18-model mean and range, respectively. The multi-model mean differences for the 2050s (2040-2069 average) and 2080s (2070-2099 average) compared to the historical baseline (1950-2005) are displayed.*



Warm Spell Duration Index

A warm spell is defined as at least six consecutive days where each day is above the 90th percentile of temperature for that calendar date in the historical baseline (1950-2005 average). Future warm spells are still determined using the 90th percentile temperature threshold from the historical baseline. The warm spell duration index counts the number of days per year that occur within such warm spells. Projections indicate the number of warm spell days per year in Ashland is likely to increase by between 11 to 66 days by the 2050s and 18 to 136 days by the 2080s (refer back to Table 2); this is the range of future changes across all models and both emissions scenarios. The multi-model mean projects 89 more warm spell days by the 2080s under the high emissions scenario compared to the historic baseline (1950-2005) (see Figure 5).

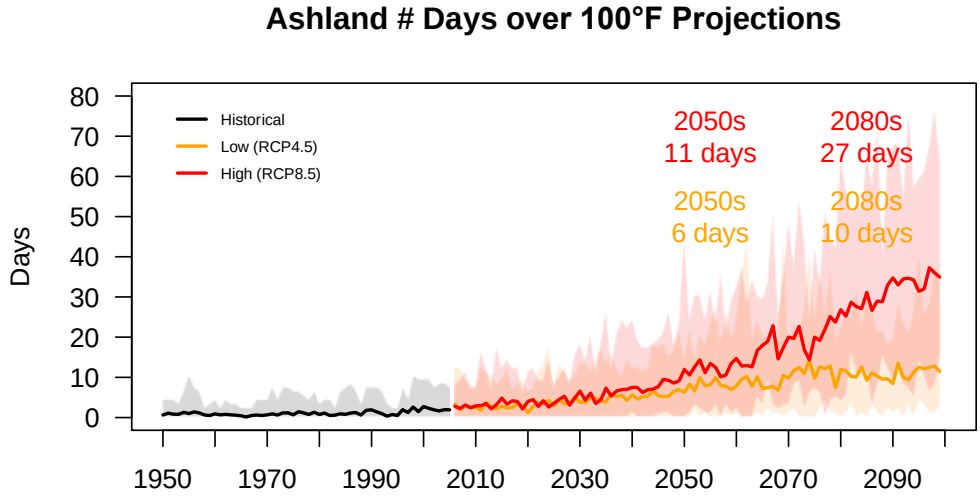
Figure 5. *Projections of number of days within a warm spell for Ashland as simulated by 18 downscaled global climate models for the historical period (1950-2005) and future (2006-2099) under a low (RCP4.5) and high (RCP8.5) greenhouse gas emissions scenario. Solid line and shading depicts the 18-model mean and range, respectively. The multi-model mean differences for the 2050s (2040-2069 average) and 2080s (2070-2099 average) compared to the historical baseline (1950-2005) are displayed.*

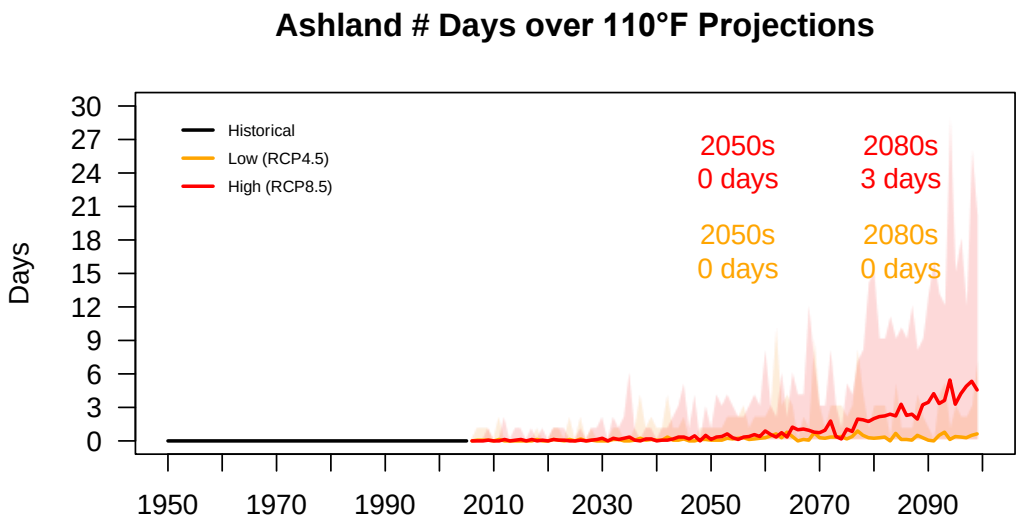


Days above 100°F and 110°F

The range of future changes in the number of days at or above 100°F in Ashland is 3 to 19 for the 2050s and 5 to 40 for the 2080s (see Table 2); this is the range across all models and both emissions scenarios. The multi-model mean projects an increase of 27 days by the 2080s under the high emissions scenario compared to the historic baseline (1950-2005) (see Figure 4). The multi-model mean projects an increase of 3 days at or above 110°F for the 2080s under the high emissions scenario with a range of 0 to 6 days.

Figure 6. *Projections of number of days over 100°F (top) and 110°F (bottom) for Ashland as simulated by 18 downscaled global climate models for the historical period (1950-2005) and future (2006-2099) under a low (RCP4.5) and high (RCP8.5) greenhouse gas emissions scenario. Solid line and shading depicts the 18-model mean and range, respectively. The multi-model mean differences for the 2050s (2040-2069 average) and 2080s (2070-2099 average) compared to the historical baseline (1950-2005) are displayed.*

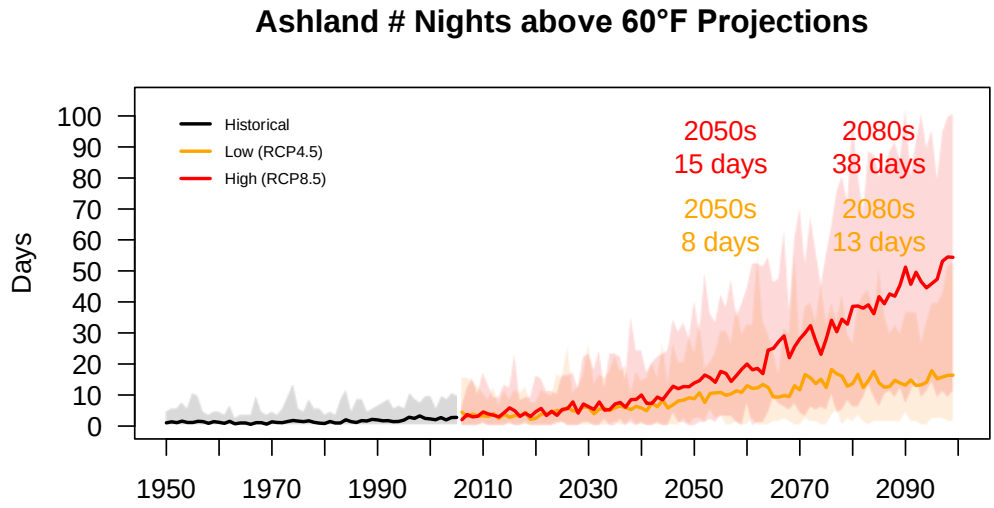




Nights above 60°F

The range of future changes in the number of nights remaining at or above 60°F in Ashland is 2 to 27 for the 2050s and 3 to 68 for the 2080s (see Table 2); this is the range across all models and both emissions scenarios. The multi-model mean projects an increase of 38 days by the 2080s under the high emissions scenario compared to the historic baseline (1950-2005) (see Figure 4).

Figure 7. *Projections of number of nights over 60°F for Ashland as simulated by 18 downscaled global climate models for the historical period (1950-2005) and future (2006-2099) under a low (RCP4.5) and high (RCP8.5) greenhouse gas emissions scenario. Solid line and shading depicts the 18-model mean and range, respectively. The multi-model mean differences for the 2050s (2040-2069 average) and 2080s (2070-2099 average) compared to the historical baseline (1950-2005) are displayed.*



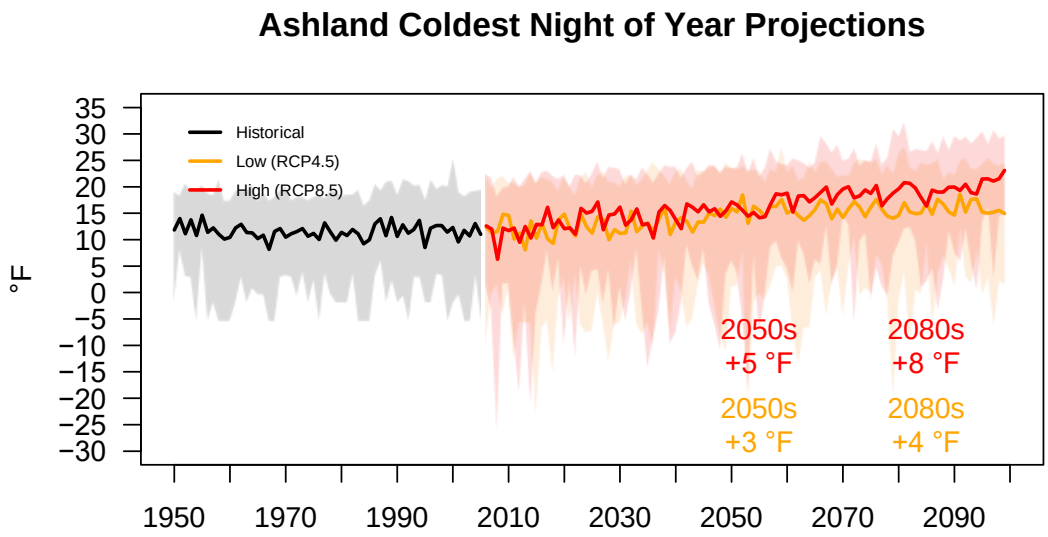
Extreme Cold Temperature

Extreme cold temperature projections are examined using two standard metrics: 1) the coldest night of the year, and 2) number of frost days per year.

Coldest Night of Year

The range of future changes in the temperature of the coldest night of the year in Ashland is 1°F to 8°F for the 2050s and 0°F to 11°F for the 2080s compared to the historical period (see Table 2); this is the range across all models and both emissions scenarios. The multi-model mean projects an increase of about 8°F by the 2080s under the high emissions scenario compared to the historic baseline (1950-2005) (see Figure 4). Projected increases in the coldest night of the year are smaller than projected increases in the hottest day of the year.

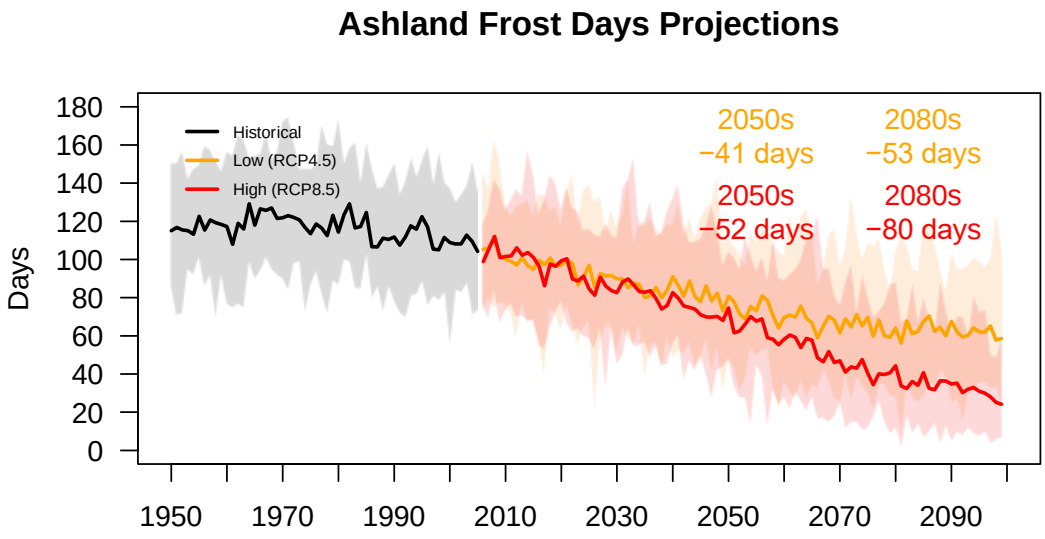
Figure 8. *Temperature of the coldest night of year projections for Ashland as simulated by 18 downscaled global climate models for the historical period (1950-2005) and future (2006-2099) under a low (RCP4.5) and high (RCP8.5) greenhouse gas emissions scenario. Solid line and shading depicts the 18-model mean and range, respectively. The multi-model mean differences for the 2050s (2040-2069 average) and 2080s (2070-2099 average) compared to the historical baseline (1950-2005) are displayed.*



Frost Days

A frost day is counted when the minimum temperature drops below 32°F. Projections indicate the number of frost days per year in Ashland is likely to decrease by between 19 to 68 days by the 2050s and 25 to 99 days by the 2080s (refer back to Table 2); this is the range of future changes across all models and both emissions scenarios. The multi-model mean projects 80 fewer frost days by the 2080s under the high emissions scenario compared to the historic baseline (1950-2005) (see Figure 5).

Figure 9. *Projections of frost days for Ashland as simulated by 18 downscaled global climate models for the historical period (1950-2005) and future (2006-2099) under a low (RCP4.5) and high (RCP8.5) greenhouse gas emissions scenario. Solid line and shading depicts the 18-model mean and range, respectively. The multi-model mean differences for the 2050s (2040-2069 average) and 2080s (2070-2099 average) compared to the historical baseline (1950-2005) are displayed.*

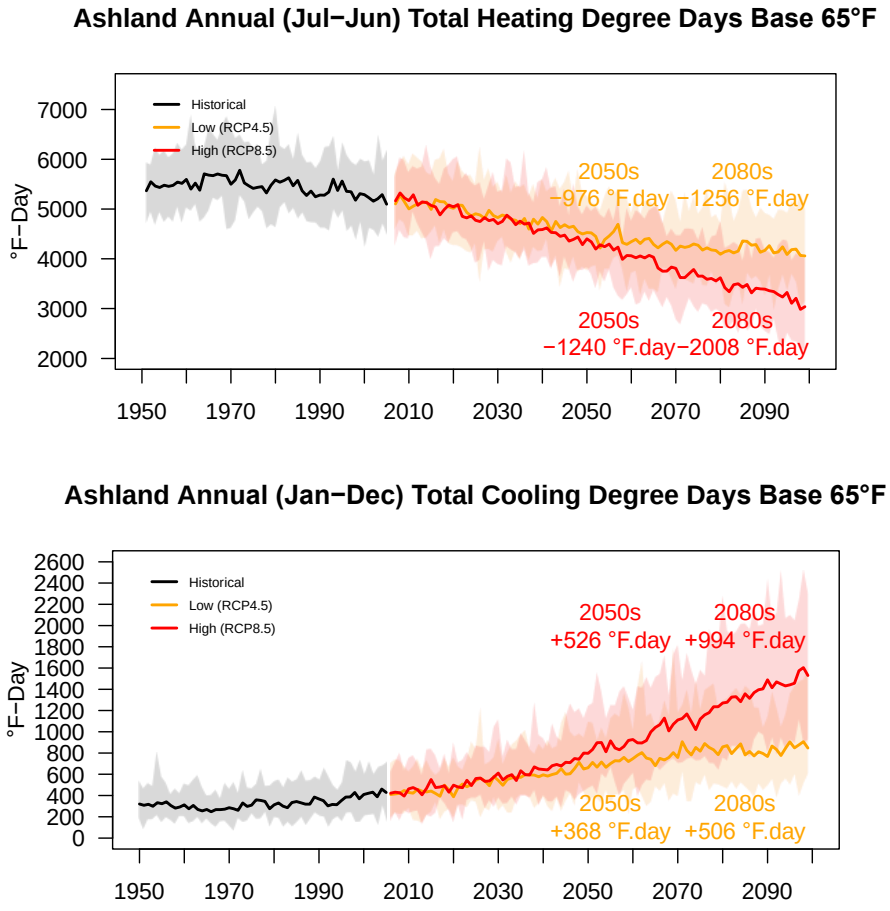


Heating & Cooling Degree Days

The amount of heating or cooling required in buildings is partially determined by how much the air temperature is below or above 65°F, and for how long, defined as heating or cooling degree-days. For example, one day with an average temperature of 64°F counts as one heating degree-day. With projected warming temperatures, the need for heating as expressed by the number of heating degree-days is projected to decline while the need for cooling as expressed by the number of cooling degree-days is projected to increase (see Figure 10).

The range across all models and both emissions scenarios of future changes in heating degree-days in Ashland is -473 to -1600 °F-days for the 2050s and -641 to -2455 °F-days for the 2080s (Table 2). For future changes in cooling degree-days in Ashland, the range across all models and both emissions scenarios of future changes is +200 to +762 for the 2050s and +279 to +1455 °F-days for the 2080s (refer to Table 2). The multi-model mean projects a decrease of 2008 heating degree-days, a 37% decrease, and an increase of 994 cooling degree-days, a 303% increase, by the 2080s under the high emissions scenario compared to the historic baseline (1950-2005). Thus, as the climate changes, less heating will be required to heat buildings, but much more air conditioning will be required to cool buildings.

Figure 10. *Projections of heating degree days (top) and cooling degree days (bottom) with a base of 65°F for average temperature for Ashland as simulated by 18 downscaled global climate models for the historical period (1950-2005) and future (2006-2099) under a low (RCP4.5) and high (RCP8.5) greenhouse gas emissions scenario. Solid line and shading depicts the 18-model mean and range, respectively. The multi-model mean differences for the 2050s (2040-2069 average) and 2080s (2070-2099 average) compared to the historical baseline (1950-2005) are displayed.*



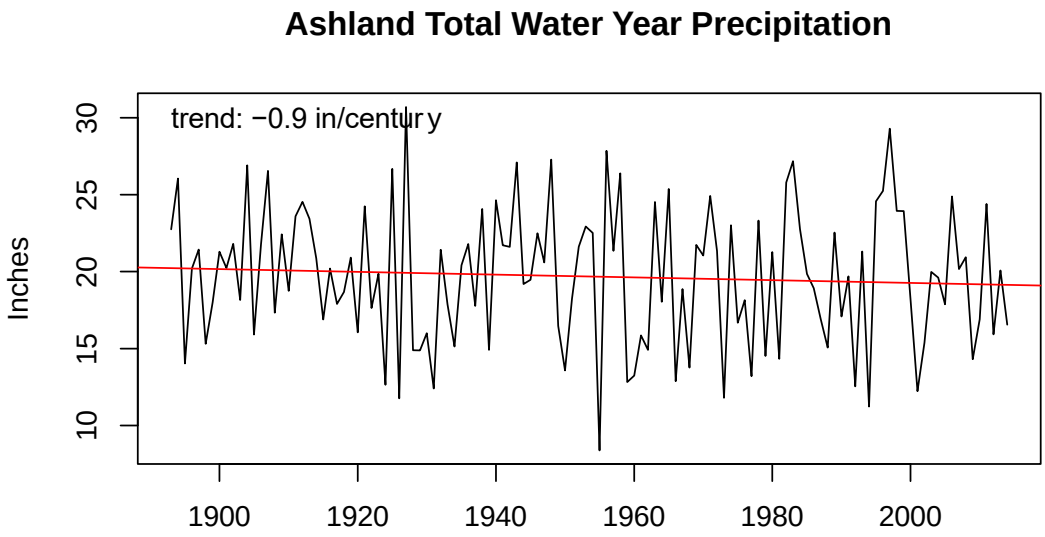
Total Precipitation

Historical Trends

Total water year (October-September) precipitation in Ashland decreased at a rate of 0.9 inches per century over the period 1893-2014, but the trend is not significantly different from there being no trend at all (see Figure 11). Likewise, there were no significant trends in precipitation for any season in Ashland (Table 3).

Like Ashland, water year precipitation at the majority of stations in the PNW and averaged over the PNW exhibits considerable variability from year to year and decade to decade with no significant trends from 1901 to 2012 (Abatzoglou et al., 2014). Unlike for temperature trends, increasing greenhouse gases did not contribute significantly to the observed PNW precipitation trends in any season, suggesting that natural variability is larger than any climate change signal over this period (Abatzoglou et al., 2014).

Figure 11. *Total water year precipitation in Ashland exhibits large variability and a decreasing trend that is not significantly different from zero during the period 1893-2014.*



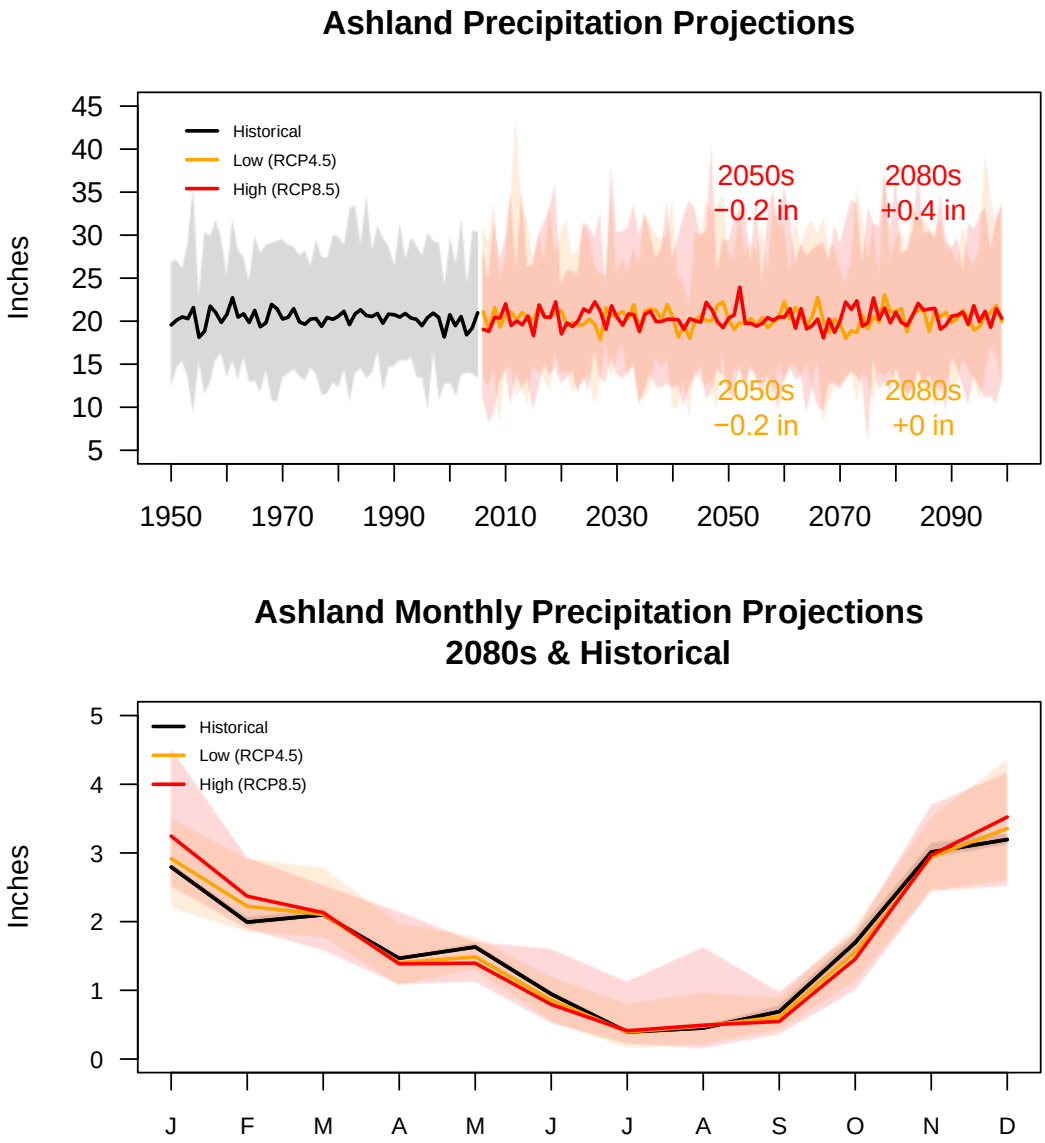
Future Projections

The range of future changes in total precipitation amount in Ashland is -2.4 to +2.4 inches for the 2050s and -2.7 to +3.9 inches for the 2080s across all models and both emissions scenarios (Table 2). The multi-model mean projects an increase of about 0.4 inches by the 2080s under the high emissions scenario compared to the historic baseline (1950-2005) (see Figure 12). In other words, climate models do not agree on whether annual total precipitation will increase or decrease. Seasonally, precipitation is projected to increase during the winter months and remain about the same or decrease at other times of the year. However, in every season, some climate models project increases and others project decreases (Figure 12). Natural variability will continue to play a dominant role in future precipitation through the end of the 21st century.

From a global perspective, changes in precipitation in response to warming will manifest as a larger contrast between wet and dry regions and seasons, although there may be regional exceptions. In the near term, precipitation changes will largely reflect natural internal variability. By the end of the 21st century under the highest emissions scenario (RCP8.5), high latitudes and the equatorial Pacific Ocean are likely to experience an increase in annual mean precipitation. Mean precipitation is likely to decrease in many dry regions in the subtropics and mid-latitudes and increase in many mid-latitude wet regions (IPCC 2013). Where exactly that

boundary between mid-latitude increases and decreases in precipitation is a little different for each model, which results in some models projecting increases and other decreases in the Pacific Northwest (Mote et al., 2013).

Figure 12. *Total annual precipitation projections (top) and monthly total precipitation projections (bottom) for Ashland as simulated by 18 downscaled global climate models under a low (RCP4.5) and high (RCP8.5) greenhouse gas emissions scenario. Solid line and shading depicts the 18-model mean and range, respectively. The multi-model mean differences for the 2050s (2040-2069 average) and 2080s (2070-2099 average) compared to the historical baseline (1950-2005) are displayed on the top plot.*



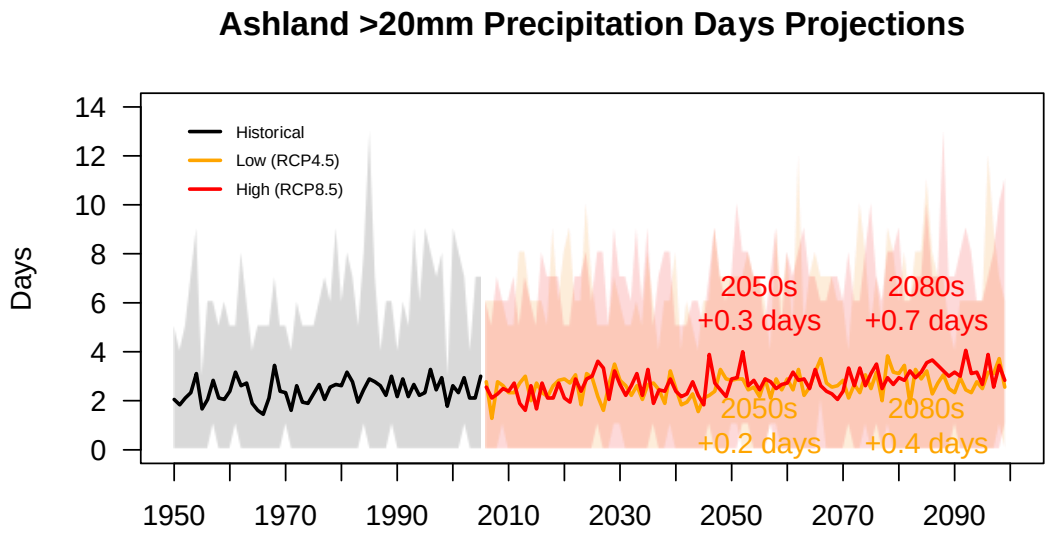
Extreme Precipitation

Extreme precipitation projections are examined using three standard metrics: 1) extreme precipitation frequency, as represented by the number of days with more than 20 mm of precipitation, 2) extreme precipitation amount, as represented by the total amount of precipitation falling on days with precipitation above the 95th percentile, and 3) maximum length of consecutive dry days, or the longest dry spell.

Extreme Precipitation Frequency

Projections of extreme precipitation frequency are presented as the change in the number of days with more than 20 mm of precipitation (Figure 13). The range of future changes in the number of days with more than 20 mm of precipitation in Ashland is -0.4 to +1.1 days for the 2050s and -0.5 to +2.2 days for the 2080s, using all models and both emissions scenarios (refer to Table 2). The multi-model mean projects that the number of extreme precipitation days will increase by 0.7 days by the 2080s under the high emissions scenario compared to the historic baseline (1950-2005). It is important to note that some models project decreases in extreme precipitation.

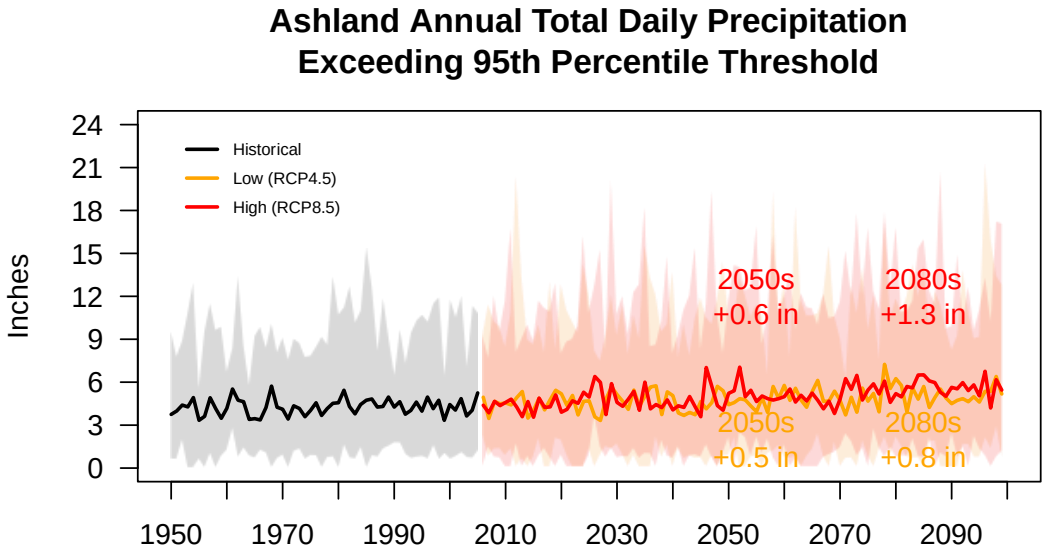
Figure 13. *Extreme (>20mm) precipitation days projections for Ashland as simulated by 18 downscaled global climate models for the historical period (1950-2005) and future (2006-2099) under a low (RCP4.5) and high (RCP8.5) greenhouse gas emissions scenario. Solid line and shading depicts the 18-model mean and range, respectively. The multi-model mean differences for the 2050s (2040-2069 average) and 2080s (2070-2099 average) compared to the historical baseline (1950-2005) are displayed.*



Extreme Precipitation Amount

Extreme precipitation is considered to have occurred on days exceeding the 95th percentile of daily precipitation amounts. The total amount of precipitation during the year that falls during such days is projected to increase in Ashland by 1.3 inches for the multi-model average by the 2080s under the high emissions scenario compared to the historic baseline (1950-2005) (see Figure 14). However, some models project decreases in the total amount of precipitation falling on extreme precipitation days. The range across all models and both emissions scenarios of future changes in the amount of precipitation falling on extreme days is -0.5 to +2.1 inches for the 2050s and -0.2 to +3.4 inches for the 2080s (Table 2).

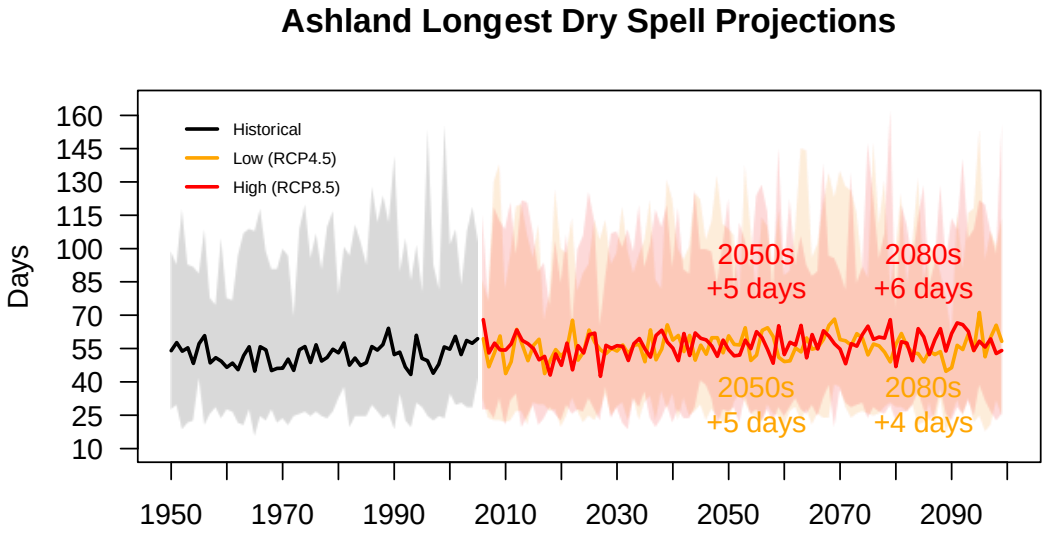
Figure 14. *Projections of annual total daily precipitation exceeding the 95th percentile for Ashland as simulated by 18 downscaled global climate models for the historical period (1950-2005) and future (2006-2099) under a low (RCP4.5) and high (RCP8.5) greenhouse gas emissions scenario. Solid line and shading depicts the 18-model mean and range, respectively. The multi-model mean differences for the 2050s (2040-2069 average) and 2080s (2070-2099 average) compared to the historical baseline (1950-2005) are displayed.*



Consecutive Dry Days

The annual maximum run of consecutive days without precipitation in Ashland—or longest annual dry spell—is projected to increase by 6 days for the multi-model mean by the 2080s under the high emissions scenario compared to the historic baseline (1950-2005) (Figure 15). The range of future changes in the longest dry spell is -2 to +17 days for the 2050s and -8 to +21 days for the 2080s across all models and both emissions scenarios of future changes (Table 2). It is important to note that some models project a shortening of the longest annual dry spell.

Figure 15. *Longest dry spell projections for Ashland as simulated by 18 downscaled global climate models for the historical period (1950-2005) and future (2006-2099) under a low (RCP4.5) and high (RCP8.5) greenhouse gas emissions scenario. Solid line and shading depicts the 18-model mean and range, respectively. The multi-model mean differences for the 2050s (2040-2069 average) and 2080s (2070-2099 average) compared to the historical baseline (1950-2005) are displayed.*



Snowpack & Streamflow

In the Pacific Northwest, mountain snowpack serves as a natural water reservoir feeding many rivers and streams during the dry season (April-September). Historical trends and future projections are presented for April 1 snow water equivalent (SWE), a standard measure of snowpack. Future projections in the monthly hydrograph of total runoff are also presented.

Historical Trends

Across the western U.S., snowpack declined at about three-fourths of the more than 700 SNOTEL/Snow Course stations. Only about a quarter of all stations exhibited statistically significant trends in April 1 SWE, most being decreases (Mote & Sharp, 2014). The largest decreases in April 1 SWE occurred in Washington, Oregon, and the Northern Rockies; in contrast, the southern Sierra Nevada in California exhibited increases in snowpack. Averaged over all sites, the average change in April 1 SWE over the period 1955-2013 was a 14% decline (Mote & Sharp, 2014).

In the Rogue Basin, almost all stations exhibited decreasing trends in April 1 SWE from 1960 to 2014. The trend was statistically significant at only one site: the Diamond Lake SNOTEL site at an elevation of about 5,300 feet at the northern end of the Upper Rogue sub-basin had a significant trend in which April 1 SWE declined by 59% (see Figure 16). Trends at all other stations, except the Siskiyou Summit Snow Course in the Middle Rogue, were negative, ranging from a decrease of 3% to a decrease of 60% (see Table 4). Siskiyou Summit had a positive, though not significant, trend in April 1 SWE amounting to a 100% increase over the period of record; however, the mean SWE is so small (4 inches) at that location that a small absolute increase resulted in a large relative change.

Figure 16. *Trends (cm/year) in April 1 snow water equivalent from 1960 to 2014 at SNOTEL/Snow Course sites in the Upper and Middle Rogue and Applegate sub-basins. The large circle in the northeast corner denotes a statistically significant trend.*

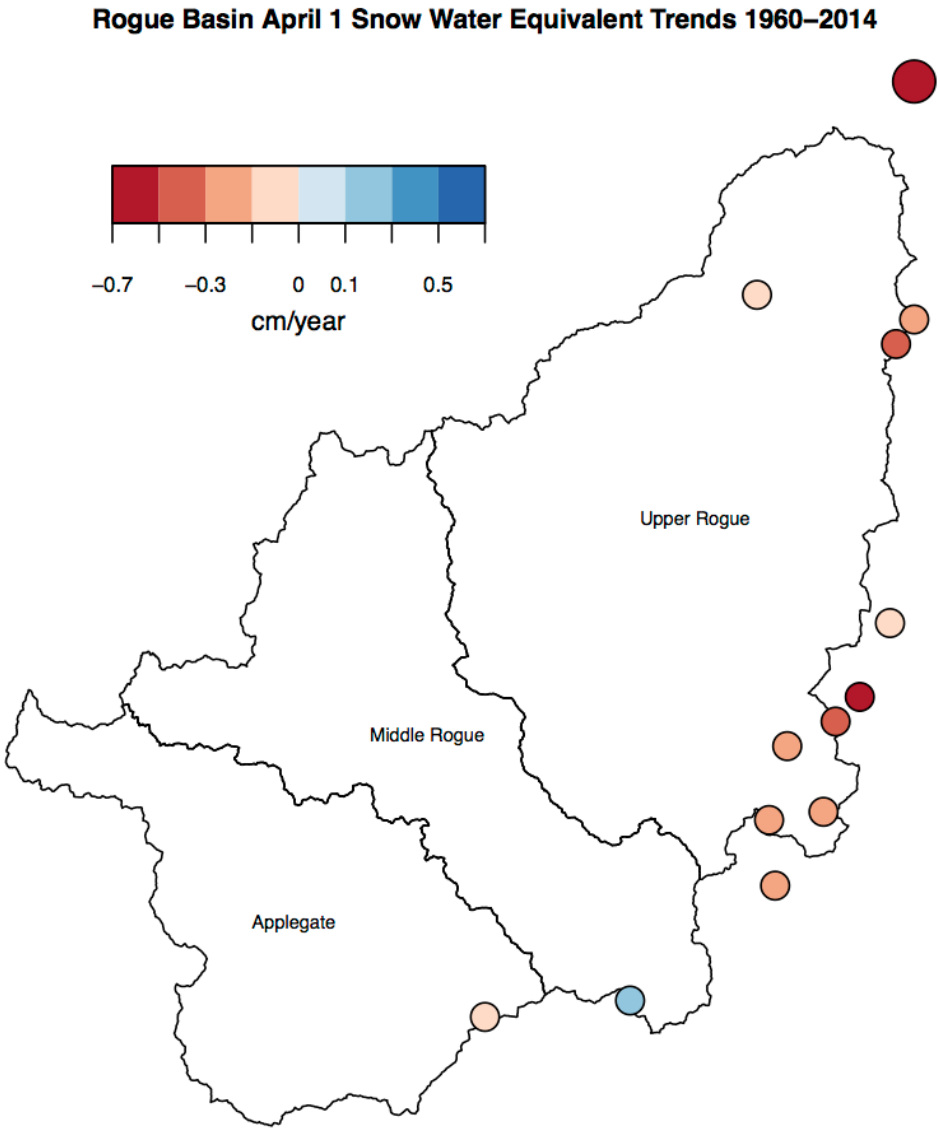


Table 4. *SNOTEL (ST) and Snow Course (SC) stations with data beginning at least by 1960 in the Rogue Basin ordered greatest to least percent decline. An asterisk denotes a statistically significant trend at the 95% level.*

Station Name	Elevation (Feet)	% Change	Trend (cm/yr)	MeanSWE (inches)
DeadwoodJunction_SC	4660	-60.0	-0.2	5.2
DiamondLake_ST	5280	-58.5	-0.6*	15.1
HowardPrairie_SC	4580	-38.9	-0.1	5.7
FishLk._ST	4660	-32.9	-0.2	8.9
FourmileLake_ST	5970	-31.2	-0.5	28.7
BillieCreekDivide_ST	5280	-25.4	-0.3	21.0
SilverBurn_SC	3680	-20.4	-0.1	8.9
BeaverDamCreek_SC	5120	-20.3	-0.1	10.1
AnnieSprings_ST	6010	-19.7	-0.4	41.8
ColdSpringsCamp_ST	5940	-7.1	-0.1	27.2
ParkH.q.Rev_SC	6570	-5.1	-0.1	58.7
BigRedMountain_ST	6050	-2.6	0.0	27.4
SiskiyouSummit_SC	4560	100.8	0.1	4.0

Future Projections

Basins in the Pacific Northwest have been classified into three categories based on the ratio of spring snow water equivalent to wet season (October-March) precipitation (see Figure 17) (Hamlet et al., 2013). Rain-dominant watersheds, like the Middle and Lower Rogue sub-basins, receive most of their precipitation as rainfall during the winter months and thus have streamflow peaks in winter and low flows in summer. Mixed rain-snow watersheds, like the Upper Rogue sub-basin, tend to have mean temperatures near freezing and therefore receive both rain and snow; this produces a hydrograph with two peak flows, one in winter and one in late spring associated with spring snowmelt. Snow-dominant watersheds receive most of their precipitation as snowfall and thus have their peak streamflow during the late spring (Raymondi et al., 2013). As temperatures warm in the future, precipitation is more likely to fall as rain than as snow, particularly at elevations in which winter temperatures hover near freezing. This will reduce the water supply stored in mountain snowpack (Raymondi et al., 2013).

Widespread declines in April 1 SWE are projected throughout the Columbia River Basin under future climate change (Hamlet et al., 2013). Averaged over the Middle Rogue sub-basin, April 1 SWE is projected to decrease by 86% for the multi-model mean by the 2080s under the high emissions scenario compared to the historical baseline (1950-2005) (see Figure 18). The range across all models and both emissions scenarios of future changes in SWE is -41% to -83% for the 2050s and -58% to -93% for the 2080s (refer back to Table 2).

Across the Pacific Northwest, some of the highest elevation snow-dominant watersheds are likely to remain, but many are likely to trend gradually toward mixed rain-snow watersheds characteristics (see Figure 17). Mixed rain-snow watersheds are likely to trend gradually toward rain-dominant watershed characteristics including earlier spring melt, reduced spring peak flows, increased winter flows, and reduced summer flows (Raymondi et al., 2013). Averaged over the Middle Rogue sub-basin, monthly total runoff is projected to shift toward earlier spring melt, higher winter flows, and lower summer flows (see Figure 19).

Figure 17. *The classification of Pacific Northwest watersheds into rain-dominant, mixed rain-snow, and snowmelt-dominant and how these watersheds are expected to changes as a result of climate warming based on a medium emissions scenario (Hamlet et al., 2013; Raymondi et al., 2013).*

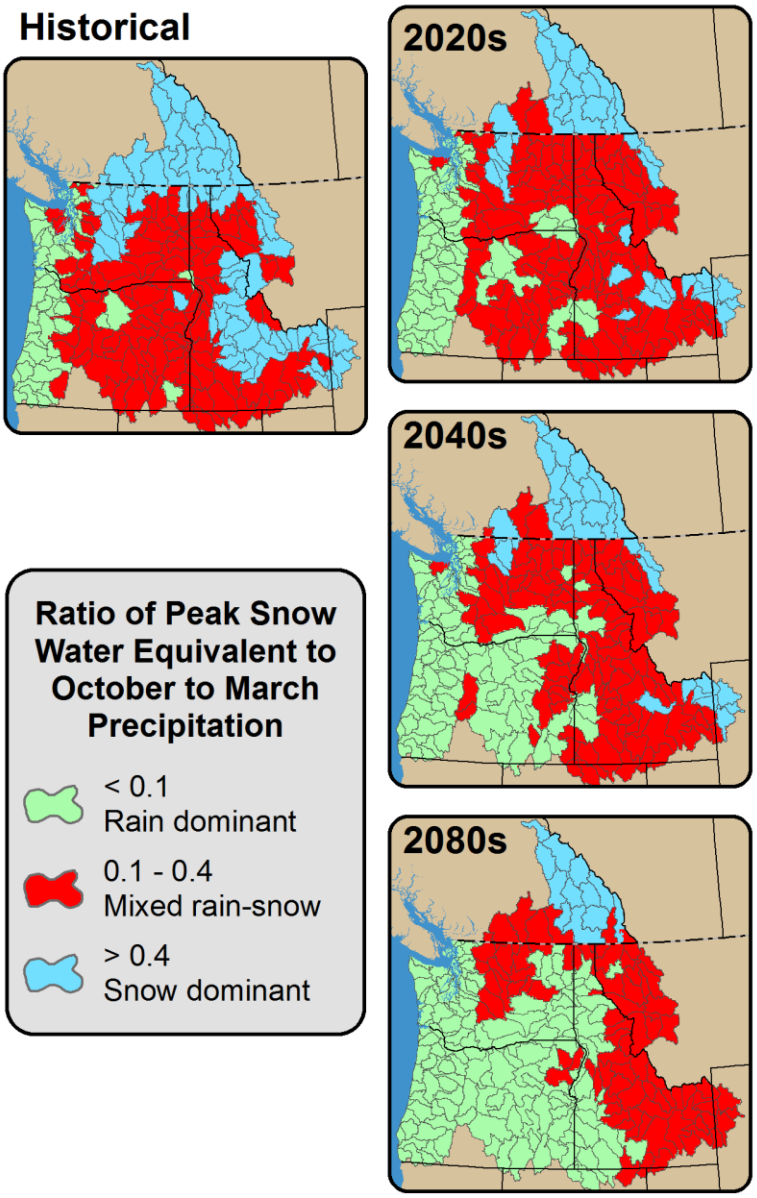


Figure 18. *April 1 snow water equivalent projections averaged for the Middle Rogue (USGS17100308) as simulated by 10 downscaled global climate models under a low (RCP4.5) and high (RCP8.5) greenhouse gas emissions scenario. Solid line and shading depict the 10-model mean and range, respectively. The multi-model mean differences for the 2050s (2040-2069 average) and 2080s (2070-2099 average) compared to the historical baseline (1950-2005) are also displayed.*

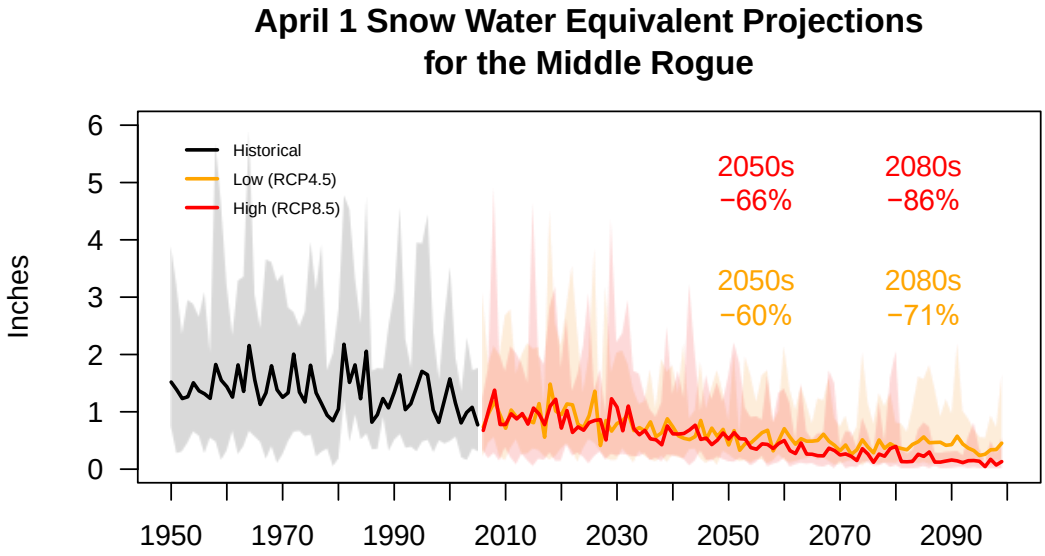
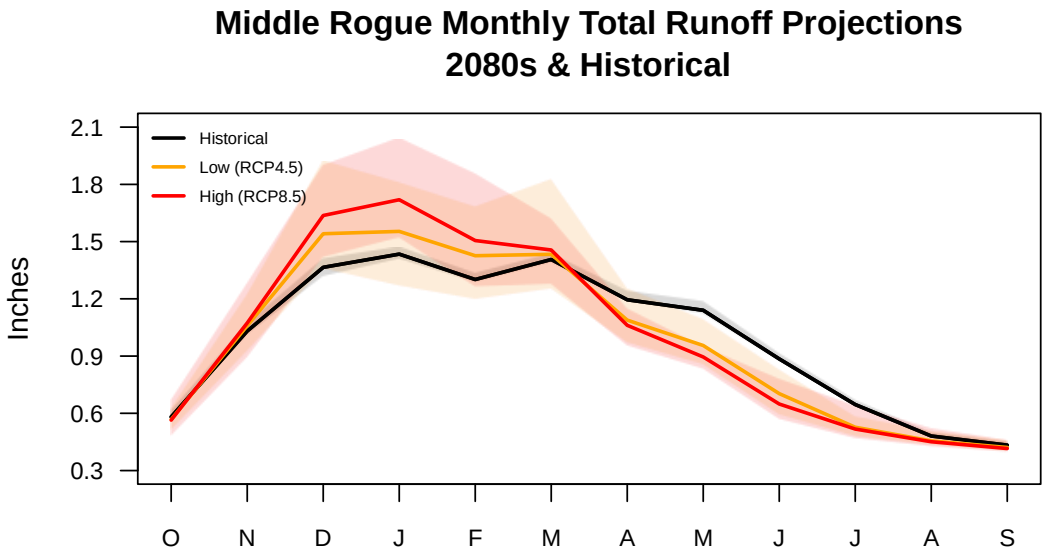


Figure 19. *Monthly total runoff projections averaged over the Middle Rogue as simulated by 10 downscaled global climate models and a hydrological model for the historical period (1950-2005) and 2080s (2070-2099) under a low (RCP4.5) and high (RCP8.5) greenhouse gas emissions scenario. Solid line and shading depict the 10-model mean and range, respectively.*

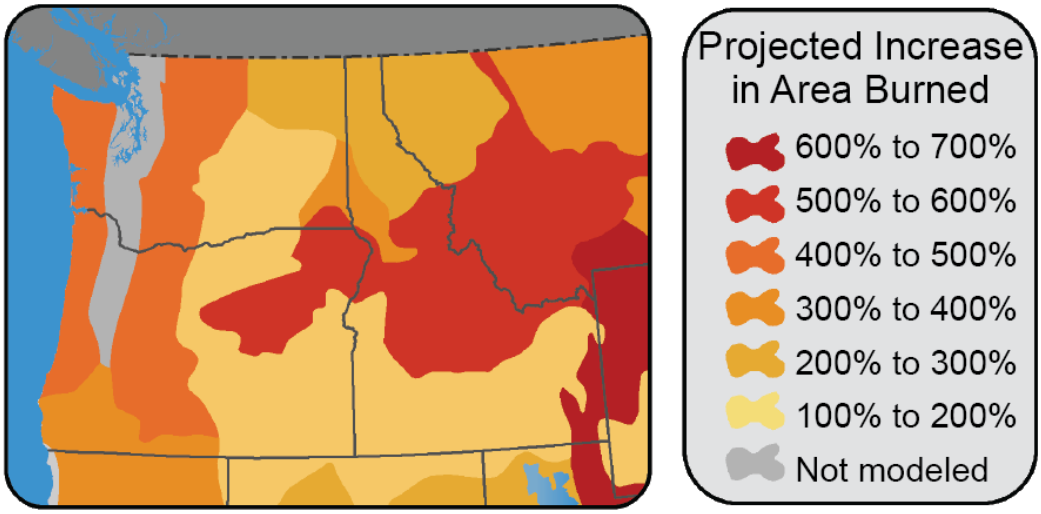


Wildfire

Warmer and drier conditions have resulted in more frequent large fires and an increase in the total area burned across the western U.S. during the last 30 years (Dennison, Brewer, Arnold, & Moritz, 2014) and over the past century (Littell, McKenzie, Peterson, & Westerling, 2009). The length of the fire season in the western U.S. has also increased due to warmer temperatures and earlier snowmelt (Westerling et al. 2006, Jolly et al., 2015). In the ecoregion encompassing the Cascade, Sierra, and Klamath Mountain ranges, the number of large fires increased at a rate of 0.6 per year and the beginning of the fire season was 1 day earlier per year over the period 1984-2011 (Dennison et al., 2014).

Such trends are expected to continue under future climate change (Figure 20). The probability of very large wildfires is projected to increase by at least 30% by the end of the century in the western U.S. (Stavros, Abatzoglou, Larkin, McKenzie, & Steel, 2014). One study estimated that the Pacific Northwest regional area burned per year would increase by roughly 900 square miles by the 2040s (Littell et al., 2013). In the region west of the Cascades, including the Klamath Mountains, the fire return interval, or average number of years between fires, is projected to decrease by about half from about 80 years in the 20th century to about 40 years in the 21st century assuming a fire suppression management regime (Sheehan, Bachelet, & Ferschweiler, 2015).

Figure 20. *Increases in area burned that would result from the regional temperature and precipitation changes associated with a 2.2°F global warming across areas that share broad climatic and vegetation characteristics. Local impacts will vary greatly within these broad areas with sensitivity of fuels to climate (Mote et al., 2014).*



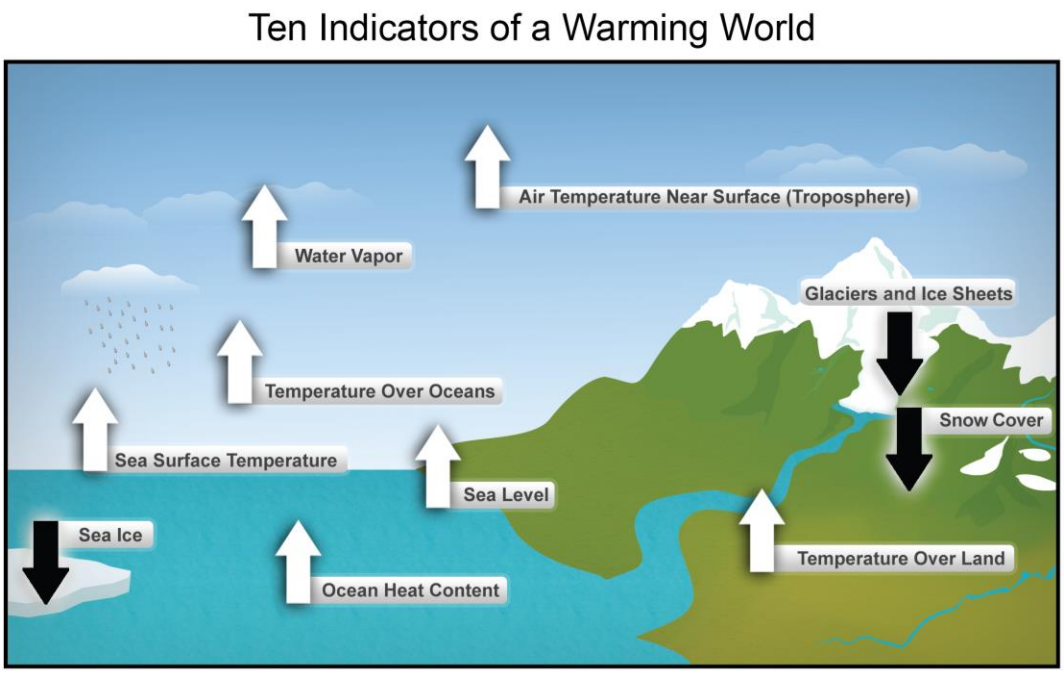
Climate Science Overview

Climate is changing across the globe. This is evident from many different observations. Human activities that release heat-trapping greenhouse gases into the atmosphere are primarily responsible for the past half-century of global warming. Global climate will continue warming throughout the 21st century and beyond. How much the Earth's climate will warm in the future depends on the amount of global greenhouse gas emissions, and the sensitivity of the climate to those emissions (NCA, 2014). This section provides additional background on some of these key climate science concepts.

How do we know the Earth is warming?

Multiple independent observations from weather stations, weather balloons, and satellites concur that the Earth has warmed for the last 150 years. This warming has set into motion many other well-documented changes to the Earth's climate such as melting glaciers and sea ice and increased atmospheric water vapor (see Figure 21). The coherency of changes in all these indicators supports the conclusion that warming of our planet is unequivocal (Walsh et al., 2014b).

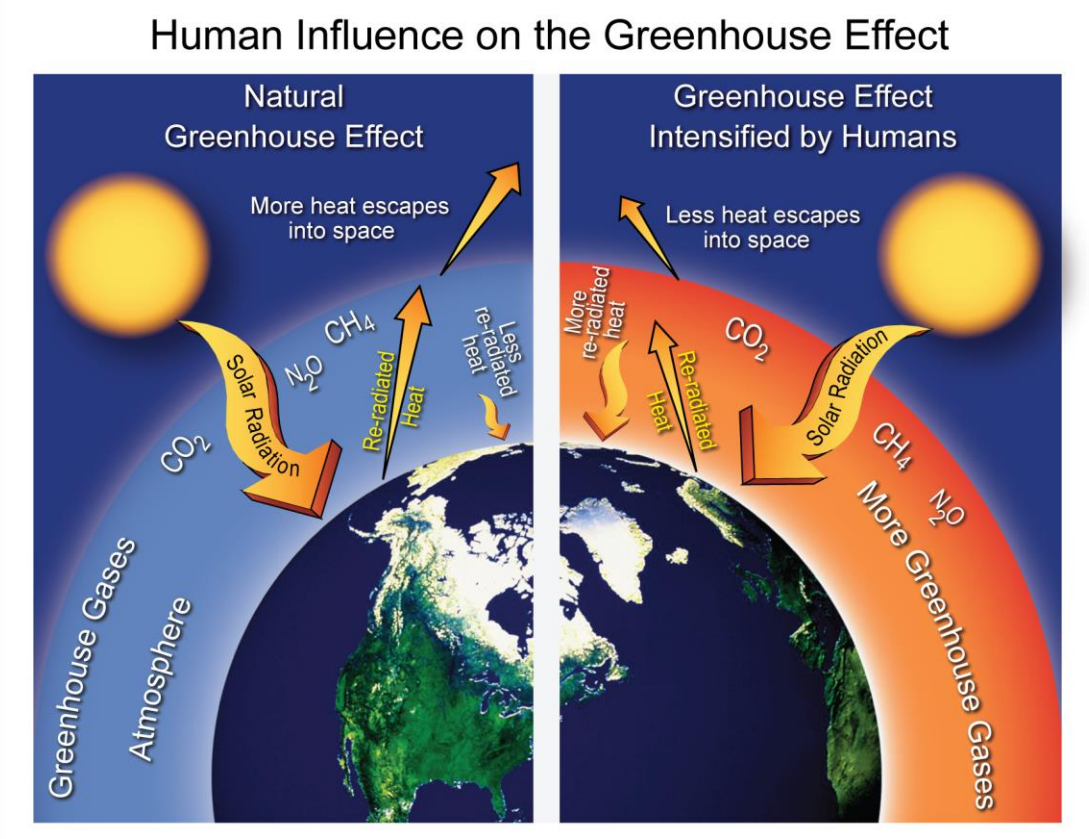
Figure 21. *Some of the many long-term global indicators that demonstrate that the Earth's climate is warming (Walsh et al., 2014b).*



What causes the Earth's climate to change?

Natural external forcings such as cyclical variations in solar output, episodic volcanic eruptions, and slow changes in the Earth's orbit all affect the Earth's climate to some degree. While natural forcings still affect climate today, the primary cause of the current warming is the accumulation of carbon dioxide and other heat-trapping greenhouse gases in the atmosphere due to human activities. According to Walsh et al. 2014a, "as the sun shines on the Earth, the Earth heats up. The Earth then re-radiates this heat back to space. Some gases, including water vapor (H_2O), carbon dioxide (CO_2), ozone (O_3), methane (CH_4), and nitrous oxide (N_2O), absorb some of the heat given off by the Earth's surface and lower atmosphere. These heat-trapping gases then radiate energy back toward the surface, effectively trapping some of the heat inside the climate system." Human activities are artificially intensifying this natural greenhouse effect, thereby increasing the amount of heat trapped in the Earth's climate system (see Figure 22).

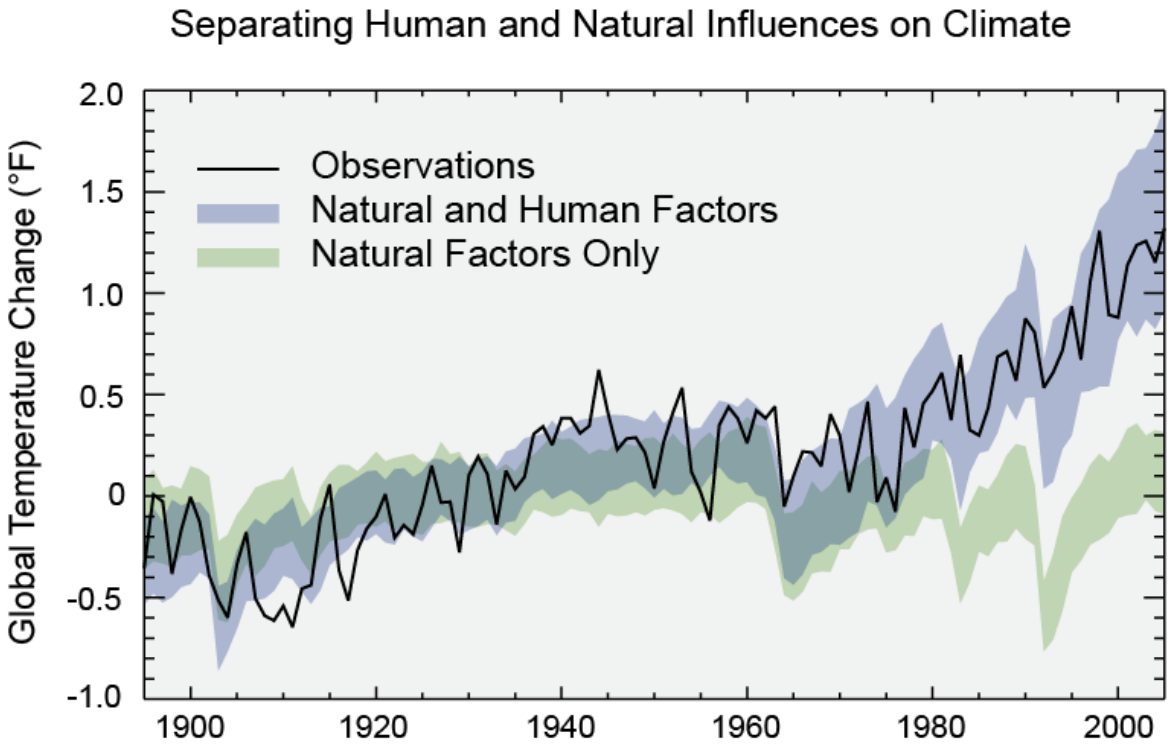
Figure 22. *The natural greenhouse effect intensified by human influence (Walsh et al., 2014a).*



How do we know the current warming is human-caused?

The basic physics of the atmosphere says that increasing atmospheric CO_2 concentrations will cause climate warming through the intensified greenhouse effect. The observed pattern of warming throughout the atmosphere is consistent with the pattern expected under the intensified greenhouse effect rather than natural changes. Furthermore, patterns of human-induced change have been identified in many other aspects of the climate system, including changes in ocean heat content, precipitation, atmospheric moisture, and Arctic sea ice. In addition, global climate modeling demonstrates that the observed 20th century warming can only be replicated when human influences are added to natural factors (see Figure 23) (Walsh et al., 2014a, 2014b).

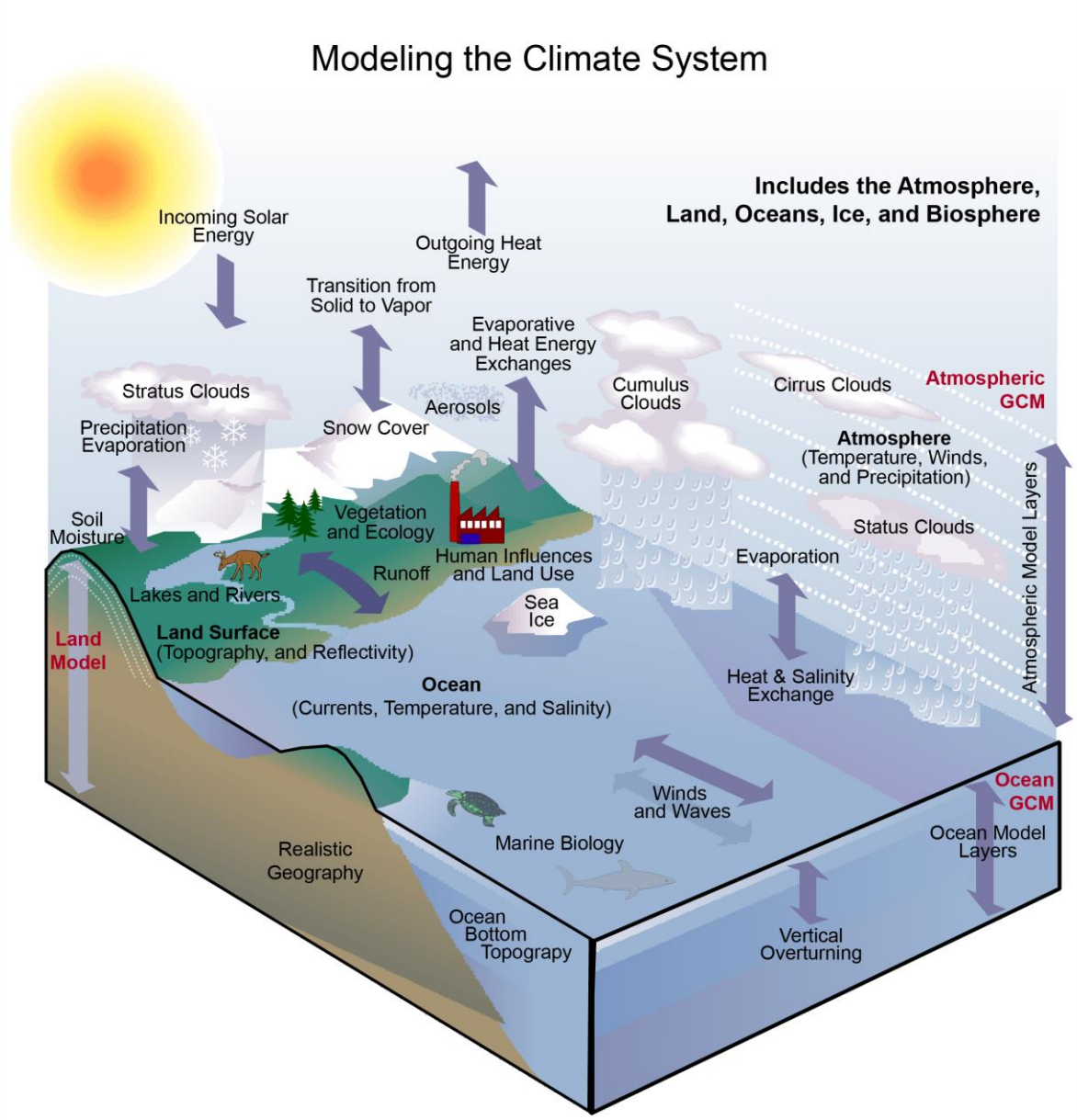
Figure 23. *The green band shows how global average temperature would have changed over the last century due to natural forces alone, as simulated by climate models. The blue band shows model simulations of the effects of human and natural forces (including solar and volcanic activity) combined. The black line shows the actual observed global average temperatures (Walsh et al., 2014b).*



How do scientists project future climate change?

Climate scientists use global climate models to make projections of how temperature, precipitation, and other climate indicators may change in the future. These models use mathematical and physical equations to represent the fundamental laws of nature and relevant climate processes (see Figure 24). They reproduce well the global features of the current climate and the significant warming trend over the last half-century. Hence, climate models are useful tools for exploring how climate may change in the future in response to increasing heat-trapping gases and other external forcings.

Figure 24. *Some of the many processes often included in models of the Earth's climate system (Walsh et al., 2014a).*



Full Description of Data Sources & Analysis Methods

Historic Trends

Observed trends in annual and seasonal temperature and precipitation were analyzed from 1893 to 2014 using monthly data from the United States Historical Climate Network Version 2.5 (USHCNv2.5) downloaded from the Carbon Dioxide Information Analysis Center website for the station in Ashland (350304) located at 42.2128°N and -122.7144°E at an elevation of 532.2 meters. The USHCN is a subset of the National Weather Service Cooperative Observer Program network. While there are several weather stations in the vicinity of Ashland, the USHCN station was selected for its length of record and data completeness. In addition, the USHCN stations have been quality controlled and bias-corrected to remove non-climatic influences such as site moves, canopy changes, and instrumentation changes (Menne et al., 2009). They provide the best quality data for long-term trend analysis. Monthly data of temperature and precipitation were aggregated for winter (December, January, and February), spring (March, April, and May), summer (June, July, and August), fall (September, October, and November), and annually for the analysis. Annual and seasonal trends in maximum, mean, and minimum temperature and total precipitation were estimated over the period 1893-2014.

Observed trends in April 1 snow water equivalent (SWE) were analyzed using SNOTEL and Snow Course data collected by the Natural Resources Conservation Service. Trends were estimated over the period 1960-2014 (Mote & Sharp, 2014) for 13 stations in the Rogue Basin, mostly located within the Upper Rogue sub-basin along the western slopes of the Cascade Mountains. SNOTEL sites began recording data in the 1980s, so NRCS uses data from existing Snow Course sites to extend the record backward by using statistical relationships between co-located, overlapping SNOTEL and Snow Course data.

For temperature, precipitation, and April 1 SWE, standard least squares linear regression was used to estimate the linear trend (i.e., the slope) and calculate the 2.5%-97.5% confidence interval on the trend to determine statistical significance. A lack of statistical significance was reported if the confidence interval included a trend of zero. Because these estimated confidence intervals assume the observed deviations from the linear trend (i.e., the residuals) are normally distributed, a test to confirm normality was performed. When the residuals were not normally distributed, the Mann-Kendall test, preferred in such cases, was used to assess significance in the trend. Strong autocorrelation in a time series can lead to overly narrow confidence intervals and therefore may lead to an improper conclusion of statistical significance when performing either standard linear regression or the Mann-Kendall test. Therefore, adjustments for autocorrelation were applied when strongly present.

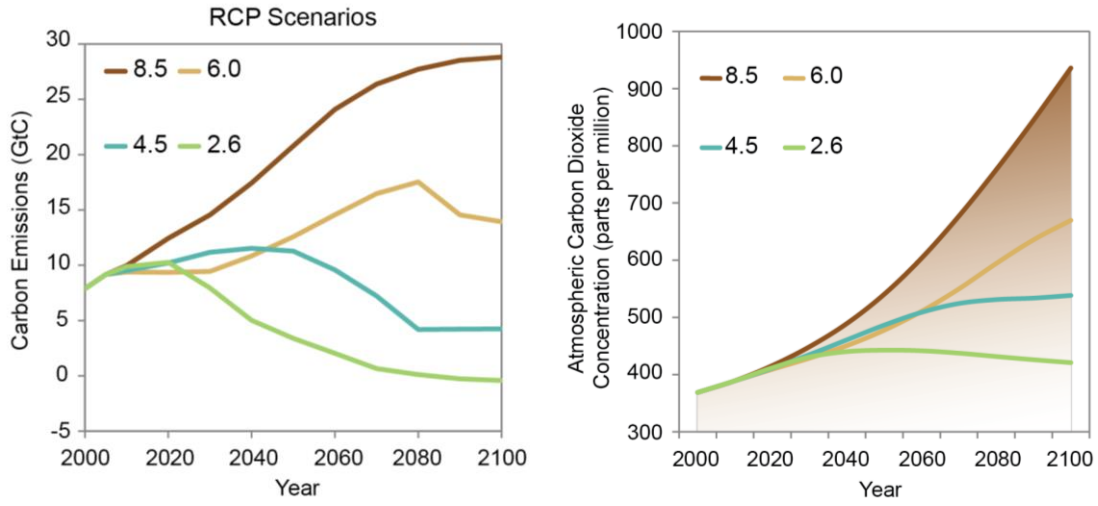
Future Projections

The future climate projections for Ashland are based on the latest generation of global climate models (GCMs) from the Coupled Model Intercomparison Project phase 5 (CMIP5) (Taylor et al., 2012) that were used in the fifth assessment report of the Intergovernmental Panel on Climate Change (IPCC, 2013). CMIP5 simulations of the 21st century were driven by representative concentration pathways (RCPs) that define concentrations of greenhouse gases, aerosols, and chemically active gases leading to set amount of radiative forcing, or extra energy trapped in the earth-atmosphere system, by the year 2100 (van Vuuren et al., 2011). We consider two of the four RCPs (Figure 21): RCP4.5 (“low”) representing moderate efforts to mitigate emissions, and RCP8.5 (“high”) representing a business as usual scenario.

In the RCP4.5 scenario, emissions stabilize by mid-century reaching a peak of about 10 gigatonnes of carbon per year (GtC/yr) and then decline in the decades following resulting in a near stabilization of atmospheric carbon dioxide concentrations at about 500 ppm by the end of the century. The RCP8.5 scenario represents a continuance of our current path of emissions throughout the 21st century that begins to stabilize toward the

end of the century and results in atmospheric carbon dioxide concentrations greater than 900 ppm that will continue to rise beyond 2100. See Figure 25 for a graphic representation of these differences. It is important to note that RCP2.6, which attains negative greenhouse gas emissions by 2100, is the only RCP scenario to keep global temperature likely below 2°C (IPCC, 2013).

Figure 25. Carbon emissions and atmospheric carbon dioxide concentrations for RCP scenarios (Walsh et al., 2014a).



In an integrated climate-hydrology-vegetation modeling project called "Integrated Scenarios of the Future Northwest Environment," the coarse resolution (100-300 km) of the CMIP5 GCM output was downscaled over the Western United States to a resolution of about 6 km using the Multivariate Adaptive Constructed Analogs (MACA) method (Abatzoglou & Brown, 2012). The MACA approach utilizes a gridded training observation dataset to accomplish the downscaling by applying bias-corrections and spatial pattern matching of observed large-scale to small-scale statistical relationships. The downscaled climate data was then used as an input to hydrology and vegetation models.

Simulations of historical and future climate for the 6-km grid cell containing the city of Ashland were obtained at the daily time step for the maximum temperature, minimum temperature, and precipitation variables from 1950 to 2099 for 18 CMIP5 GCMs and the two available RCPs (i.e., RCP4.5 and RCP8.5). The selected temperature and precipitation metrics were derived from these variables (see Table 3).

Streamflow and snow dynamics within the Integrated Scenarios project were simulated using the Variable-Infiltration Capacity hydrological model (VIC version 4.1.2.1; (Liang, Lettenmaier, Wood, & Burges, 1994) and updates) run on a 6 km grid. Simulations of streamflow and snow water equivalent (SWE) are only available for 10 GCMs used as inputs to VIC. Future projections for routed streamflow at sites in the Rogue Basin do not yet exist, but are being generated and are anticipated to become available in fall 2016. However, projections of runoff—the amount of water at a particular location before it flows into a stream—are available. Unfortunately, vegetation data are not yet available. For SWE, the value on the first day of April was averaged over the Middle Rogue sub-basin. For streamflow, monthly sums of total daily runoff were averaged over the Middle Rogue.

For each variable except runoff, we generated an annual time series from 1950 to 2099 and computed time period averages for each model and scenario. In Table 4, we present future changes from the historical period (1950-2005 average) to the 2050s (2040-2069 average) and the 2080s (2070-2099 average) as a mean and range of the differences computed for each model for a low (RCP4.5) and a high (RCP8.5) emissions scenario. Changes in monthly hydrology of total runoff are presented for the 2080s under both emissions scenarios. Projections for the 2080s under RCP8.5 for all variables are described in the text.

Uncertainty

Inherent in GCM projections is uncertainty due to emissions scenario, internal variability, and modeling physics and resolution. Individual GCMs project different magnitudes of warming because the models' "climates" are either more or less sensitive to external radiative forcings (e.g., increasing greenhouse gases). Furthermore, the chaotic nature of the climate system means that even a single climate model, if identical simulations were started on a different day, yields a range of outcomes. In addition, even at 100-mile horizontal resolution most GCMs are still unable to resolve key topographical features that influence western US climate.

Precipitation projections are generally more uncertain than temperature projections. Temperature projections, while models may vary on the magnitude, are highly robust since all models agree on warming under increasing greenhouse gases. Modeling accurate microphysical cloud processes that produce precipitation requires resolutions much finer than current GCMs can attain so most of those processes are estimated (i.e., parameterized), resulting in inherent uncertainty in precipitation projections. There is no consensus among the GCMs on the sign of future precipitation change as some models project increases and others decreases.

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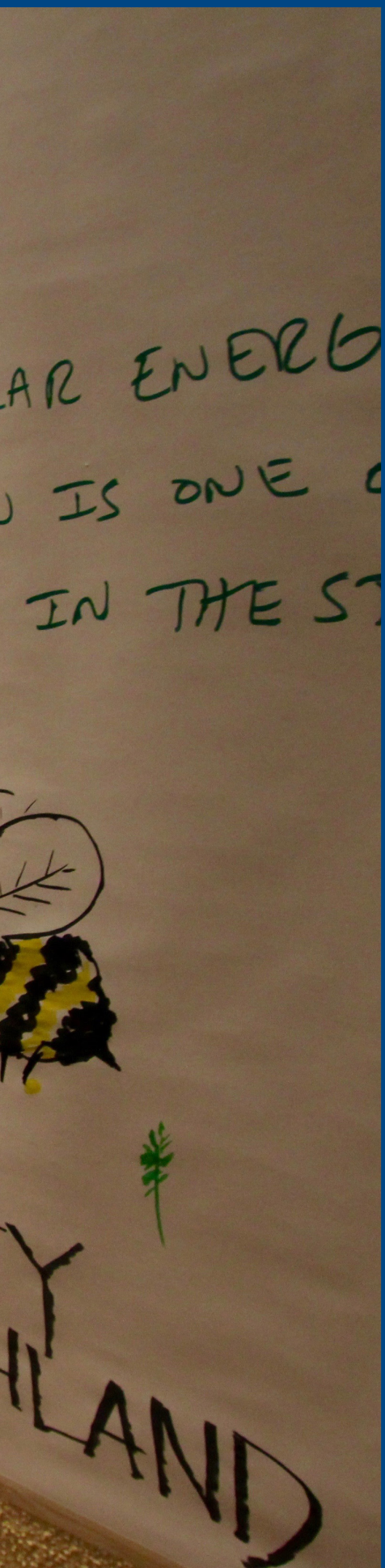


APPENDIX B. PUBLIC ENGAGEMENT PROCESS OVERVIEW

Appendix B:
Public Engagement Process Overview

Development of the Ashland Climate and Energy Action Plan (CEAP) involved robust engagement with the public and other stakeholders, including:

- Over 240 community members who attended at least one of three public open houses.
- Over 135 individuals who responded to an online survey.
- Representatives from over 15 local organizations, businesses, and institutions who participated in presentations and interviews.
- Over 30 City staff members who participated in two facilitated workshops.

This document details this public and stakeholder engagement process, including target audiences, methods, and outcomes of engagement. Overarching goals of the process were to:

- Promote an understanding of the purpose and motivation for the CEAP and the process leading to the final decisions.
- Obtain community feedback on the plan that is representative to guide decision-making and get support from elected officials.
- Ensure that the CEAP provides clear direction for implementation, builds in accountability, and identifies common language and key messages

Public Open Houses and Surveys

Cascadia organized three public open houses between May and December 2016 to obtain feedback on various stages of the plan. Each of these open houses offered multiple ways for participants to provide feedback, such as open-ended comment cards, voting activities, and an online survey available during and after the event. The objectives for each open house are detailed below.

- **Open House 1** (May 2016) focused on the community's ideas and priorities for climate mitigation and adaptation actions in Ashland. Input from this open house was used to develop the overarching goals, vision, and targets for the plan; sectors of focus; and strategies and actions for the plan.
- **Open House 2** (September 2016) presented the results from modeling Ashland's GHG emissions, findings from community climate vulnerability workshops, and the goals and strategies over a number of key focus areas. Input from this open house was used to make recommendations for priority actions in the plan.
- **Open House 3** (December 2016) provided an opportunity for participants to review and ask questions about the draft plan. Input from this open house was used to refine the final Climate and Energy Action Plan and inform the accompanying implementation plan.

To attract attendees, open houses were promoted through community listservs, social media, community meetings, the local newspaper, and the City website. Attendance at these events ranged from 45 to 142 people. Eleven residents attended all three public open houses. Key themes from all three open houses included the following:

- The public saw a **strong need for ambitious action** and wanted to see the community held accountable through an ordinance. Attendees at the open houses favored the most aggressive emission reduction scenario (8% emissions reduction per year) and identified bold and ambitious targets as the elements of the draft CEAP they liked most.
- The public identified **buildings and energy** and **transportation and land use** as the highest priority areas for addressing climate change. Popular actions included to support cleaner energy sources, support better public transit and ride-sharing, and to support more climate-friendly development and land-use.
- Attendees of the first open house were surprised that consumption-related emissions made up such a large proportion of city greenhouse gas emissions; public input at subsequent open houses indicated there was a desire for **education and activities around consumption reduction**, such as by buying less, eating less meat, and reducing utility use in their homes.

Outcomes from each of the workshops are detailed in the accompanying open house public input summaries.

Stakeholder Presentations and Interviews

The consultant team worked with the City of Ashland to identify key stakeholders to interview. These stakeholders included broad community partners (such as Southern Oregon University and the Ashland Chamber of Commerce), technical partners (such as the Geos Institute and South Oregon Climate Action Now), and experts on the each of the plan's focus areas. These experts included but were not limited to representatives from Rogue Valley Transportation District, Recology Ashland, Ashland Food Bank, and the Southern Oregon Land Conservancy.

The project team completed over 10 stakeholder interviews. Interviews and presentations covered stakeholder questions such as:

- How would you characterize Ashland with regards to climate and energy action? Do you see Ashland as a leader in the future, in line with what other cities are doing, or somewhere in between, and why?
- Relative to other civic priorities and given the limitations of budget and other resources, how important is it that the city makes progress toward addressing climate change?
- How do you perceive the roles of the public, City, and organizations in taking action to address climate change? What is the role of you or your organization?
- What are you or your organization already doing to reduce emissions or prepare for climate impacts? What would you like to be doing more of or better?
- What are the challenges businesses and organizations face in taking action? What challenges do you and/or your organization face?

In addition, City staff gave presentations on the CEAP to local civic and service clubs, the City Planning and Transportation Commission, and City engineering staff.

Feedback from stakeholder presentations and interviews were used to solicit input on identified options, identify priorities, and refine the CEAP.

City Staff and Ad-hoc Committee Workshops

The consultant team also prepared and facilitated two workshops for City staff and ad-hoc committee members:

- **Workshop 1: Goal Setting and Strategy Development.** The objectives of this workshop were to understand baseline conditions (including the GHG inventory, open house findings, and climate trends) and solidify Ashland's vision and goals for the CEAP. At this workshop, attendees began brainstorming potential strategies and actions and developing a list of criteria for evaluating actions. The consultant team incorporated the strategies and evaluation criteria identified in this workshop into the draft CEAP.
- **Workshop 2: Action Assessment and Prioritization.** The objective of this workshop was to develop a shared understanding between the consultant team the City, and committee members of process going forward to plan completion. The consultant team worked with City and ad-hoc committee members to prioritize and define the proposed strategies and actions for the CEAP. Input from this workshop was used to shortlist the strategies and actions to be included in the draft plan.

Results from the workshops were used to determine CEAP goals, priorities, strategies, and actions.

Climate and Energy Action Plan: Baseline Public Input Summary

Cascadia Consulting Group

June 2016

CASCADIA
CONSULTING GROUP

Ashland CEAP: Baseline Public Input Summary

Introduction

Development of the City of Ashland's Climate and Energy Action Plan includes an open and inclusive public involvement process with ample opportunities to inform and involve the community. This public input summary document provides a high-level overview of notable trends, opinions, and priorities as revealed through public engagement activities to date, including Climate Week, an online survey, and in-person comments and station exercises at the initial open house.

The initial open house for the Ashland Climate and Energy Action Plan (CEAP), held on May 24, 2016, was intended to capture the community's ideas and priorities for climate mitigation and adaptation action in Ashland. Specifically, objectives of the open house were to provide the public with an opportunity to do the following:

- Learn about the outcomes from the greenhouse gas inventory and climate trends summary
- Learn about the CEAP project's purpose and benefits, including how it builds on past efforts
- Understand points for public input through the process and how the input will be used
- Provide input on the following aspects of the CEAP:
    - What was surprising from the inventory and what was not
    - Sectors or strategies of highest priority
    - What Ashland is already doing well and what could be improved
    - Ideas for actions to address energy and climate issues

The input compiled from this open house will be used—along with input from City staff and the Climate and Energy Action Plan's ad-hoc committee—to help identify recommendations for priority actions in the plan. As part of this process, potential actions will also be carefully evaluated with regard to agreed-upon metrics such as cost, effectiveness, and feasibility. Specifically, the input will be analyzed and considered in devising the CEAP's overarching goals, vision, and targets; sectors of focus; and implementation strategies and actions.

Community members were invited to provide input at the May 2016 open house through a variety of methods, including the following:

- **Open-ended comment cards.** Attendees were provided with comment cards that included space for their name, address, email address, and brief comments.
- **Online survey.** The public online survey was provided on electronic tablets (iPads) during the open house.
- **Station #1—Ashland's Carbon Footprint.** Attendees could learn more about the city's greenhouse gas inventory and write their reactions on sticky notes.
- **Station #2—How Climate Change Will Affect Ashland.** Attendees could learn more about the recent Ashland climate trends analysis, write their ideas for climate preparedness on sticky notes, and vote on the climate impacts that most concern them.
- **Station #3—How's Ashland Doing?** Attendees gauged their impression of Ashland's climate progress on a poster rating scale, and they were asked to draw or write on a mural which climate actions they are most proud of.
- **Station #4—A Shared Vision for Ashland.** Attendees wrote or drew their vision for climate action in Ashland in 2040 on an erasable whiteboard and took their picture with the board.
- **Station #5—Taking Action.** Attendees submitted ideas electronically for taking climate action in Ashland, populating a word cloud in real time on a large screen.
- **Bonus Station—Why Climate Change is Personal.** Attendees provided video testimonials of why climate change is personal to them.

In this document, input are organized by elements of the CEAP, such as vision, priorities, concerns, and actions. Detailed comments and responses are provided in the following appendices:

- Appendix A. Open House Station Responses
- Appendix B. Open House Comment Cards
- Appendix C. Outcomes from Climate Week
- Appendix D. Public Input Survey Results
- Appendix E. Open House Display Boards

By the Numbers

Number of attendees	142 (90% from within zip code 97520)
Number of attendees interested in receiving email updates	108
Number of public input survey responses	92 (includes those submitted before and after the open house)
Number of respondents interested in receiving email updates	41
Number of open-ended comments received	60

Summary of Survey Respondents

- The majority reported that they have a **competent** understanding of climate change (68%) or consider themselves **aware** of the issues (29%).
- The majority live **within Ashland city limits** (85%).
- The respondents were nearly evenly divided by **gender**: male (51%), female (46%).
- The majority of respondents were **White/Caucasian** (91%).
- The largest proportion of respondents have an **advanced degree** (47%) or **4-year degree** (29%).
- Ages were distributed as follows:

Age	Proportion of respondents
17 or younger	1%
18-24	3%
25-34	9%
35-54	19%
55-64	32%
65+	36%

Overarching Trends

- The Ashland public sees a **strong need for ambitious action**—such as reaching a carbon neutrality or 100% renewable goal—and would like to see the community held accountable through an **ordinance**.
- **Water availability** is a top concern among climate change impacts, and **energy** and **transportation** are highest priority sectors for reducing emissions.
- The most commonly cited priority actions include enhanced **bike lanes and public transit**, **renewable energy requirements and incentive programs**, **public education and outreach**, and **water conservation programs**.
- Attendees noted a need for **diversity** and engagement of **vulnerable populations** in the public involvement process.

Priorities and Concerns

- Survey respondents were equally concerned about **climate change mitigation** and **adaptation** (see Question 2 in Appendix E).
- The highest priority sectors for reducing greenhouse gas emissions are 1) **buildings and energy** and 2) **transportation and land use** (see Q3 in Appendix E and Station 1 in Appendix B).
- The most concerning climate impacts are 1) **changes to snowpack and water availability** and 2) **wildfire risk** (see Q5 in Appendix E and Station 2 in Appendix B).
- Open house attendees were surprised to see **consumption** contribute such a large proportion of the city's greenhouse gas emissions (see Station 1 in Appendix B).
- Other priorities and concerns include **geoengineering**, **equity/diversity**, **renewable energy**, **biofuels**, **biking/transit**, **behavior change and individual accountability**, and setting an **ordinance** (see Appendices B and D).

Accomplishments

The public is proud of many activities and characteristics of Ashland, including the following:

- **Solar** energy
- **Bike** infrastructure
- Sense of **community** and engaged **youth**
- **Water conservation** programs
- **Local food**, including farmer's markets
- **Forest resiliency** project, public **parks**, and **gardens**

Vision

Commonly heard elements of a 2030 vision for Ashland include the following (see Station 4 in Appendix B):

- On target to **meet goal** (carbon-neutral, 100% renewable energy)
- **Walk, bike, and use public transit** to get around
- Minimal **waste and consumption** through recycling, reuse, and local food production
- A thriving and sustainability **community** that **shares resources**
- Citizens take **individual responsibility** and feel **empowered** to take action
- Ashland is a **leader** in addressing climate change
- **Clean air, water, natural areas, trees**
- Smart, **energy-efficient** practices

Goal-Setting

The public voiced the following desires regarding goals of the CEAP (e.g., see Stations 3, 4, and 5 in Appendix B):

- Many voiced a desire to set a binding **ordinance** tied the CEAP.
- **Carbon neutrality** was mentioned several times by attendees.
- Themes around setting an **ambitious** goal that sets the city as a **leader.**
- Attendees also mentioned **100% renewable energy** and **fossil fuel-free** goals.

Actions

The most commonly cited actions include:

- Setting an **ordinance** (e.g., cited seven times at Station 5)
- Increased **renewable energy**, especially large-scale **solar**
- Shifting transportation modes from cars to **bikes** and **public transit**
- Ensuring that Ashland has sufficient **water resources** in a future climate
- **Educate** and encourage individual **behaviors** and action

Other specific actions mentioned include the following:

- **Biomass** energy plants
- Commercial water catchment and **greywater** systems
- Improved **bicycle and pedestrian routes**, narrower traffic lanes, central parking with a **shuttle or electronic trolley** (especially downtown)
- **Reflective roofing**
- **Bio-filtration** and constructed wetlands to address stormwater

Appendix A. Open House Station Responses

Station 1. Ashland's Carbon Footprint

DID ANYTHING SURPRISE YOU ABOUT ASHLAND'S GREENHOUSE GAS INVENTORY?

Total responses = 19 (verbatim responses)

- I see how much meat consumption adds to emissions
- That it is so different to measure consumption
- Meat? Oh no…. Oh dear!
- Actually—that there was a category for the stuff we use and eat—let's address that!
- Yes (yikes!) Goods?!! And the fact that I need to reduce mine by 68% by 2020!
- How much personal consumption contributes to emissions
- The high percentage of residential goods
- "Residential goods" make up such a huge portion of emissions
- Residential food and goods is a huge percentage
- 10% decrease in emissions is AWESOME! Keep it up!
- Goods consumption vs. Gas consumption
- 6% decrease in GHG over 5 years
- How can marketing food products and packaging be modified to help reduce greenhouse gas emissions?
- We need to work on several sectors not just energy use. Build smaller homes that are passive solar. Walk, consume less.
- % g Emission due to meat eating
- The size of the residential goods slice of the pie
- Nope. I think we have an inefficient system and I'd like to see us better it
- "Residential goods"- How to lower that??
- How can we as a city, convince/educate us citizens to CONSUME less? This seems central.

WHICH RESULTS FROM THE INVENTORY ALIGNED WITH YOUR EXPECTATIONS?

Total responses = 16

- Residential energy and food (meat)
- Bikes rule! I suggest that in our elec bill city of Ashland newsletter you start a climate alert-not conversation-an ALERT to get people's attention to take action NOW for our KIDS!
- Personal transportation is icey
- 72,000 cars driven in 1 year. We need more public transport!
- Residential goods exceeds transportation in emissions
- Using public transit is climate changing!
- Food is a huge portion of our carbon emissions
- I knew transportation was a big emitter; polluter
- Commercial and residential energy not huge
- High % of inventory is transportation and energy sector
- That total emissions have reduced
- We, the residents are contributing the most problems
- What happened to the CarShare? How much would this program help—
- Better mass transit more convenient
- Years ago CDL Trans promoted ride share—sponsor ride share
- I didn't have any expectations since I didn't know there was an inventory

HOW DOES THIS INFORMATION CHANGE YOUR PERCEPTION OF THE CITY'S ROLE AND PRIORITIES IN MITIGATING CLIMATE CHANGE?

Total responses = 42

- I'd like the city to help offer gray water 'packages', solar installations and community meals, along with energy saving classes
- Makes me feel that Ashland needs to take more drastic measures to decrease emissions before we reach a crisis
- Take immediate and forceful action before it is too late
- This convinces me of the merit of a legally binding plan to hold the city accountable for reducing emissions
- Our plan needs to address climate change through a socially equitable lens and represent all people of Ashland
- An opportunity to collaborate from bottom up
- We need to include and consider communities of color and low income communities who see the most adverse effects of CC and are often hurt by env policy that doesn't take the people into consideration

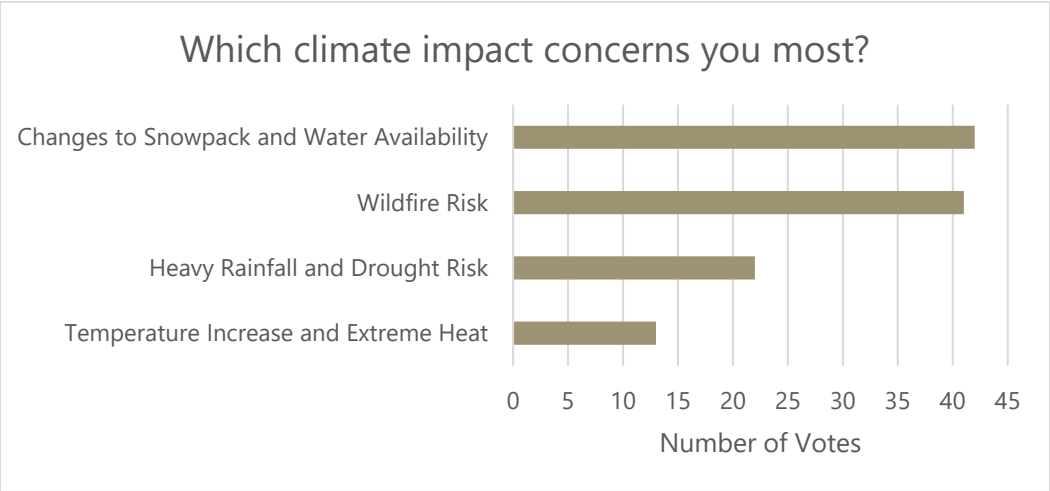
- More actions on stream restoration – (floods, fish, conservation)
- More awareness throughout city (parade, marches)
- Diet change education in schools (less meat)
- Stop slash burns. Break it down to return to the Earth in a good carbon way, rather than into the air
- How are we going to manage water?
- City will have to try to impact/change household/personal choices and habits. But – "Nanny State" pushback will result!!!
- How can do this? Not only education, but clear-piercing visuals/charts/photos etc.
- We need to work intelligently to connect household choices w/ climate change – habits/consumption w/ painful/dangerous climate change
- LEGALLY BINDING PLAN!
- I hope the city walks its talk
- French Initiative "4 for 1000" - Organic Consumers Association. Many countries signed on-U.S. hasn't, maybe Ashland could!
- We need to have a legally binding plan so we have CC mitigation as a legally prioritized plan
- Role of city is important but ambiguous. Need to know and be specific.
- City Role- To keep its citizens (who are the major local polluters) aware of how to reduce their (our) footprint
- City needs to produce 10% of its electricity from new, renewable sources by the year 2020!
- City needs to make laws—Needs to be legally binding ordinances
- Combine compost pick up efforts with Adam's compost pickup and call Ruby's they will have information
- I'm more positive of city willingness to ACT!
- I want to see the mayor, city council, and city staff take more of a leadership role
- Ashland is way behind other similar cities in our planning & action
- Initiate competition between neighbors by letting everyone know energy use in home around them
- We need free mini buses every 15 minutes
- Mandate thermostat settings to 65° and wear sweaters
- It makes me believe that the city needs to be Bold in its goals, and implement renewable energy production and water catchment
- Local electric bus
- Reward and commend those who change their lifestyles
- The state should require that all trucks on Rt5 get on the RR at the border
- Somehow we have to address the fear people feel about climate change so we aren't in denial

- Info about climate change not new but high fives to city for responding
- Keep net metering fair. Promote PV roofs coupled to EV cars. Promote rain barrels
- How can the city "make" people consume less?
- To be more alarmed and willing to cooperate than ever
- City has huge role in directing citizens to take their own steps to reduce GAC and city needs public transport
- Compostable food pickups-trash pickups- I thought this was happening but not?
- See/Google Organic Consumers Assocation. (Projects). Urge Residents to take out lawns. Use permaculture principle to sequester carbon so we can become Carbon neutral and help w/ the global issue-ex. Bhutan

Station 2. How Climate Change Affects Ashland

WHICH CLIMATE IMPACTS TO THE ASHLAND COMMUNITY CONCERN YOU MOST?

Total responses = 118



HOW DO YOU THINK THE CITY AND COMMUNITY SHOULD PREPARE FOR CLIMATE IMPACTS?

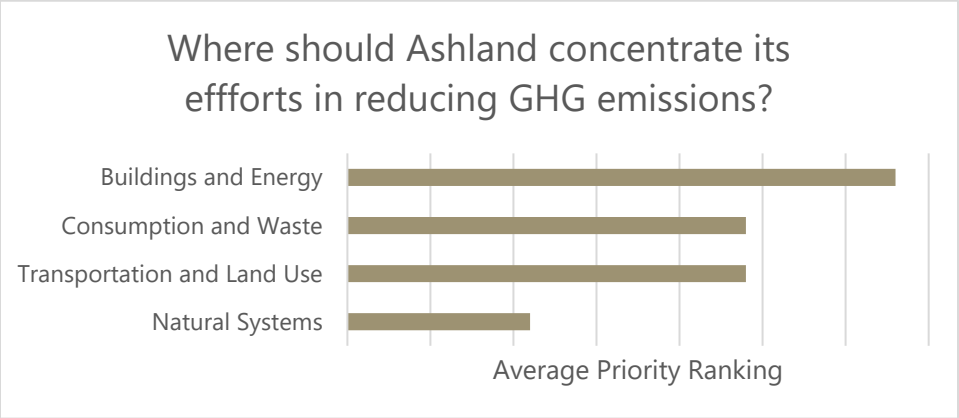
- Make adaptation and mitigation central to every city department and codify our goals
- Conserve our ecological diversity
- Electric buses, solar government buildings, legally binding climate plan
- Geoengineering the atmosphere is the primary criminal here
- Don't see how we can pick one over the other here. They each effect the other
- Change the common ground cover (esp. for SOU* campus) to a water conserving plant- not grass. Watering grass is only aesthetic and waste
- In migration when other part of the country realize Ashland has water growth
- Make climate change a public health equity issue –poor and minorities more impacted
- Became more of a REGIONAL player on these issues—fire, water management and heat
- Focus on prevention stop doing what contributes to climate change
- Get the Public Health Dept. (Jackson County) involved to protect low-income households (living in trailers)
- We need to know the truth. Please research and establish what the white lines (over 24 today) in the sky. Is this good or bad for the climate or us?
- Water conservation-serious program to reduce our base demand including tracking water needs to fish and wildlife

- Following Eugene in passing a science based ordinance
- Begin becoming more resilient
- Please explain difference between 2 & 4
- Shift our culture so adaptation and mitigation are considered for all decisions
- Continue to be proactive about wildfire prevention
- Address extreme heat for elderly, disabled, homeless populations
- Wildfire smoke will drastically affect health & economic viability of this community if we do not
- Codify the plan in ordinance!
- Much more attention to dealing with city wildfire readiness
- Make the plan a legally binding ordinance so that the city and community are accountable for the plan
- Produce most, if not all resources locally and provide more community projects
- Reduce energy usage in public building (turn down heat and turn up ac)
- The reduction of water for humans and wildlife
- Water conservation and enhancements to reliability of water supply
- We need to create a legally binding plan to reduce the risks of these impacts as soon as possible
- Prepare for fire in the watershed and understand what we are doing doesn't make Ash fire proof
- No burn days w/o fire dept supervision?
- Someone needs to be ready to help with the impacts on health
- Rain barrels city wide, maybe start with corporations, incentives for residential barrels
- Drought proof Ashland w/ rainwater catchment esp in the ground w/permaculture.
- Rehydrate the watershed with swales and sinking rainwater in the forest
- Conservation of vital resources like water
- Can't solve the problem with the same people who get paid to make the problem worse!
- Support for solar panels and experimental energy reduction solutions
- Develop a science based plan to figure out targets to reach and build a legally binding plan to implement in Ashland
- Continue w/ water conservation education—start to consider $ rewards
- Google: GeoEngineeringWatch.org. Get the facts!
- Constantly think how we can make it easier to conserve water-to want to conserve-to see/understand the personal benefits of conserving in all way

Station 3. How is Ashland Doing?

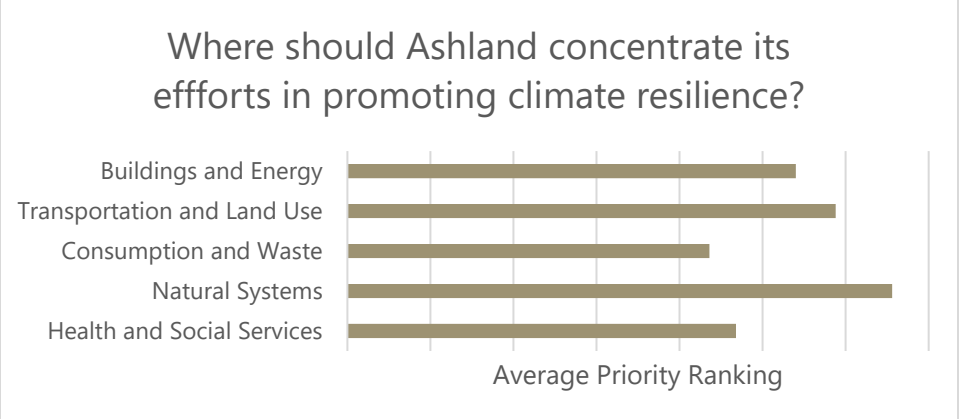
WHERE WOULD YOU LIKE ASHLAND TO CONCENTRATE ITS EFFORTS IN REDUCING GREENHOUSE GAS EMISSIONS?

Total responses = 38



WHERE WOULD YOU LIKE ASHLAND TO CONCENTRATE ITS EFFORTS IN PROMOTING CLIMATE RESILIENCE?

Total responses = 34

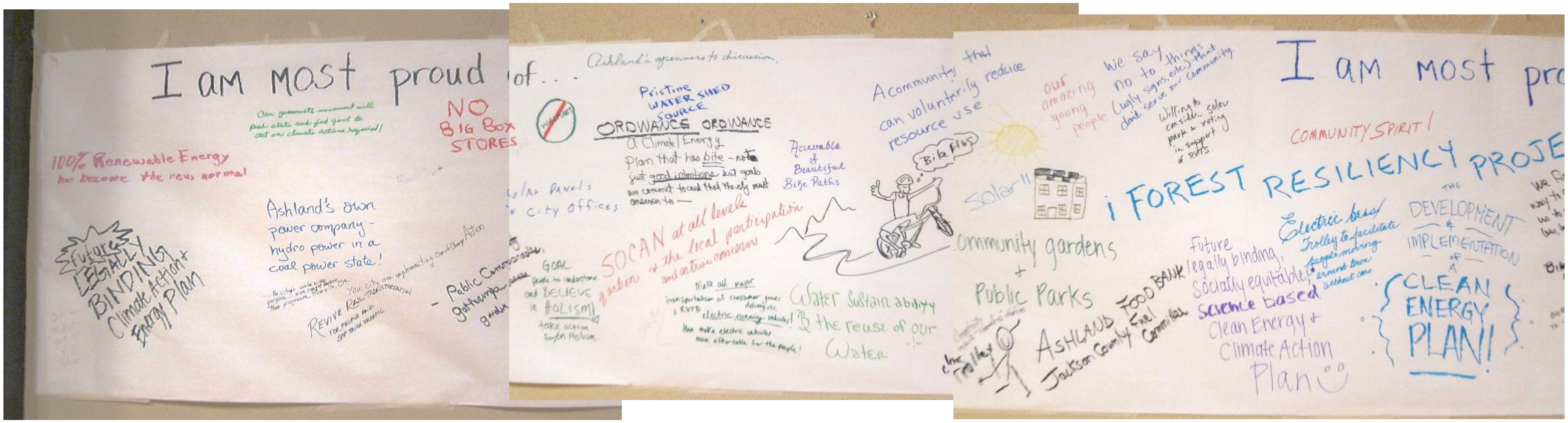


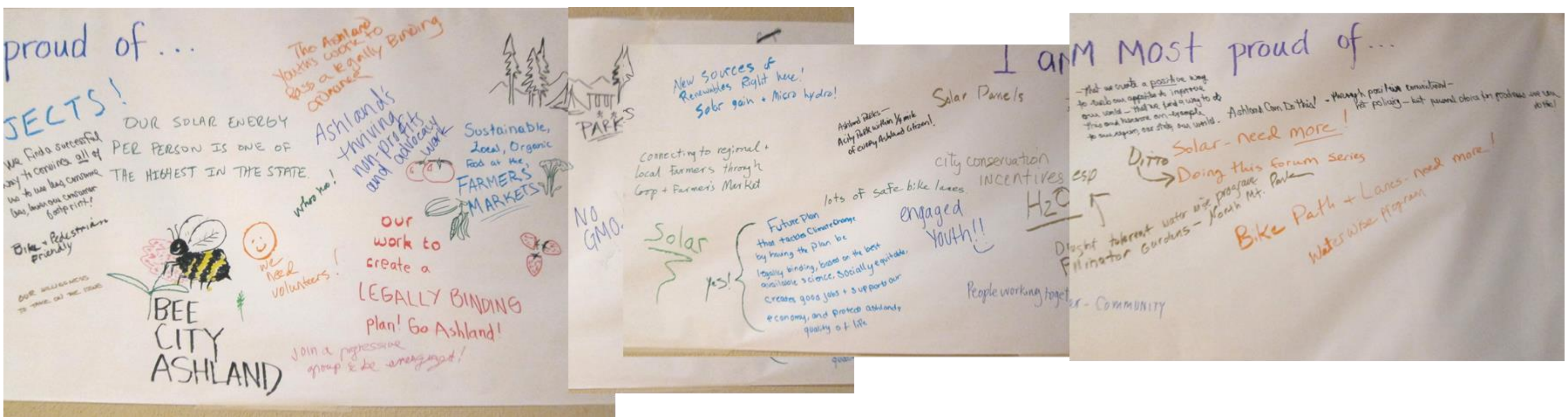
WHAT CLIMATE POLLUTION REDUCING POLICY, PROGRAM, OR ACTIVITY IN ASHLAND ARE YOU MOST PROUD OF?

Total responses = 41

- 100% renewable energy has become the new normal
- Future legally binding climate action and energy plan
- Ashland's own power company – hydropower in a coal power state!
- No big box stores
- Our grassroots movement unite push state and federal government to act on climate actions regional!
- Our SOU students get it + shine
- …The city's water wise program…more comprehensive than progressive Roseville, CA
- You, city, are implementing climate change action
- Revive rail transportation for people and stop truck traffic
- Road diet
- Solar panels on city offices
- Public commenting, gatherings, parades, g…(illegible) classes
- Goal: People to understand and BELIEVE in HOLISM! Take action for/on holism.
- Pristine watershed source
- Ordinance: a climate energy plan that has bite – not just good intentions, but goals we commit to and that the city must answer to.
- SOCAN at all levels of action and the local participation and active concern
- Make all major transportation of consumer goods, delivery etc., and RVTD electric running vehicles! Then make electric vehicles more affordable for the people!
- Accessible and beautiful bike paths
- Water sustainability and the reuse of our water
- A community that can voluntarily reduce resource use
- Our amazing young people
- Solar!!
- Community gardens and public parks
- Creativity in/with "homeless" attention
- Electric trolley
- Ashland food bank
- Jackson County Fuel Committee
- We say no to things (ugly signs, etc.) that don't serve our community
- Willing to consider solar park and voting in support of RVTS
- Community spirit!
- Forest resiliency projects!
- Future legally binding, socially equitable, science based clean energy and action plan
- Electric bus/trolley to facilitate people moving around town without cars
- The development and implementation of a clean energy plan!

- We find a successful way to convince all of us to use less, consume less, lower our consumer footprint!
- Bike and pedestrian friendly
- Our willingness to take on the issue
- Our solar energy per person is one of the highest in the state
- Bee City Ashland
- We need volunteers!
- The Ashland youth's work to pass a legally binding ordinance


I am most proud of...
NO BIG BOX STORES
100% Renewable Energy has become the new normal
Ashland's own power company - hydro power in a coal power state!
Future LEGALLY BINDING Climate Action + Energy Plan
Pristine WATER SHED SOURCE
ORDINANCE ORDINANCE
SOCAN at all levels
Accessable & Beautiful Bike Paths
A community that can voluntarily reduce resource use
Bike Paths
Water Sustainability & the reuse of our Water
Solar!!
Community gardens + Public Parks
I AM MOST PRO
COMMUNITY SPIRIT!
FOREST RESILIENCY PROJE
ASHLAND FOOD BANK
Future legally binding, socially equitable, science based Clean Energy + Climate Action Plan
THE DEVELOPMENT & IMPLEMENTATION OF A CLEAN ENERGY PLAN!


proud of...
JECTS!
OUR SOLAR ENERGY PER PERSON IS ONE OF THE HIGHEST IN THE STATE
Ashland's thriving non-profits and advocacy work
Sustainable, Local, Organic Food at the FARMERS MARKETS
Bike + Pedestrian Friendly
BEE CITY ASHLAND
we need volunteers!
our work to create a LEGALLY BINDING Plan! Go Ashland!
PARKS
NO GMO
New sources of Renewables Right here! Solar gain + micro hydro!
Solar Panels
Connecting to regional + local farmers through Co-op + Farmer's Market
city conservation incentives
lots of safe bike lanes
engaged Youth!!
Solar
I AM MOST proud of...
Solar - need more!
Doing this forum series
Bike Path + Lanes - need more!
Water Wise Program

Station 4. A Shared Vision for Ashland

COMPLETE THE SENTENCE: IN 2030, ASHLAND WILL BE A PLACE WHERE…

Total responses = 23

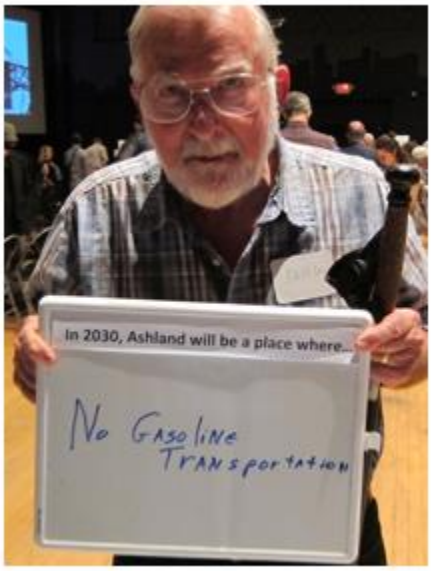
- We are all taking care of one another as things get difficult.
- Almost everyone can get where they want to go without owning a car.
- 25% of our cars are electric!
- We buy and throw away less and enjoy each other and our environment more!
- Carbon neutrality
- No gasoline transportation
- Other cities come to learn how to reduce their carbon footprint.
- It will be easy and fun to play outside! ☺
- No one (City and residents) uses any synthetic pesticides and fertilizers and does not allow the County to either. ☺
- Carbon neutrality exists!
- Zero GHG emissions occur
- 100% renewable energy happened long before!
- We modeled a successful all-city switch to clean renewable energy and sustainability for others to use.
- We have created a comprehensive, legally binding plan to continue our tremendous progress
- Tree-lined streets/pathways/shade/grass/cool bike paths on all main roads.
- We sink more carbon than we generate!
- Everyone who wants has a garden and know-how to grow food.
- The air and water are clean, people are safe, and fish and wildlife are thriving!
- We generate electricity from forest biomass.
- I can take solar electric public transit.
- We generate our own electricity – grow 75% of our own food and don't drive as much!
- We understand each other more, look beyond our biases, and share resources. True care and love grows!
- Cars will almost never be used, because there are alternative modes of transport. And I don't mean an individual solution, like electric cars. Public transit in small mini buses, bikes, walking…


In 2030, Ashland will be a place where...
We buy & throw away less & enjoy each other & our environment more!


In 2030, Ashland will be a place where...
100% Renewable energy happened LONG before!

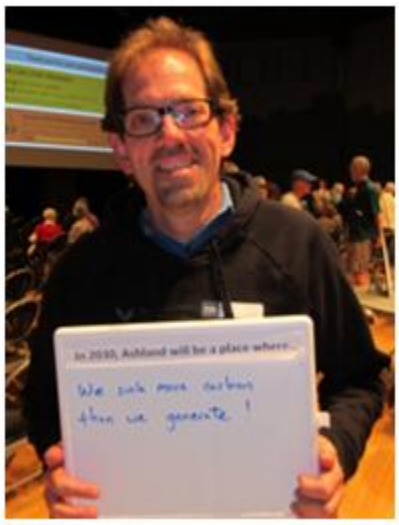

In 2030, Ashland will be a place where...
other cities come to learn how to reduce their carbon footprint.

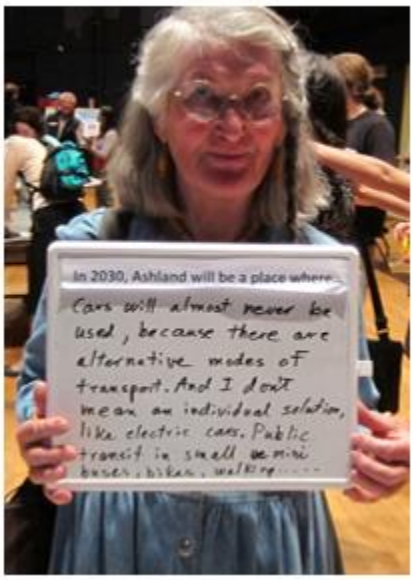

In 2030, Ashland will be a place where...
I CAN TAKE SOLAR ELECTRIC PUBLIC TRANSIT

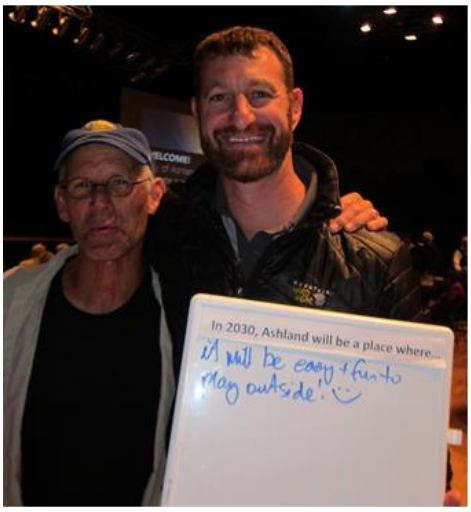

In 2030, Ashland will be a place where...
No Gasoline Transportation


In 2030, Ashland will be a place where...
TREE Lined
Shade/Grass/Cool Bike Paths on all main Roads
Thank you

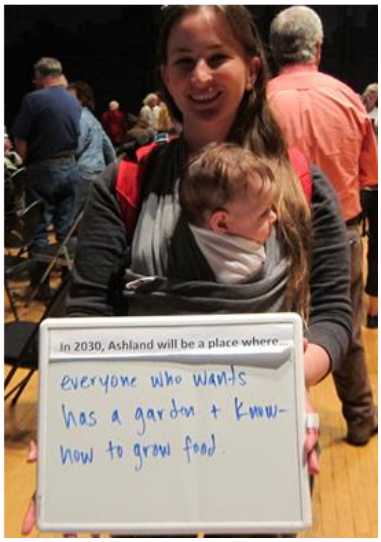

In 2030, Ashland will be a place where...
Claire Pryor
we have created a comprehensive, legally binding plan to continue our tremendous progress


In 2030, Ashland will be a place where...
We sink more carbon than we generate!


In 2030, Ashland will be a place where...
Cars will almost never be used, because there are alternative modes of transport. And I don't mean an individual solution, like electric cars. Public transit in small electric buses, bikes, walking


In 2030, Ashland will be a place where...
it will be easy + fun to play outside!

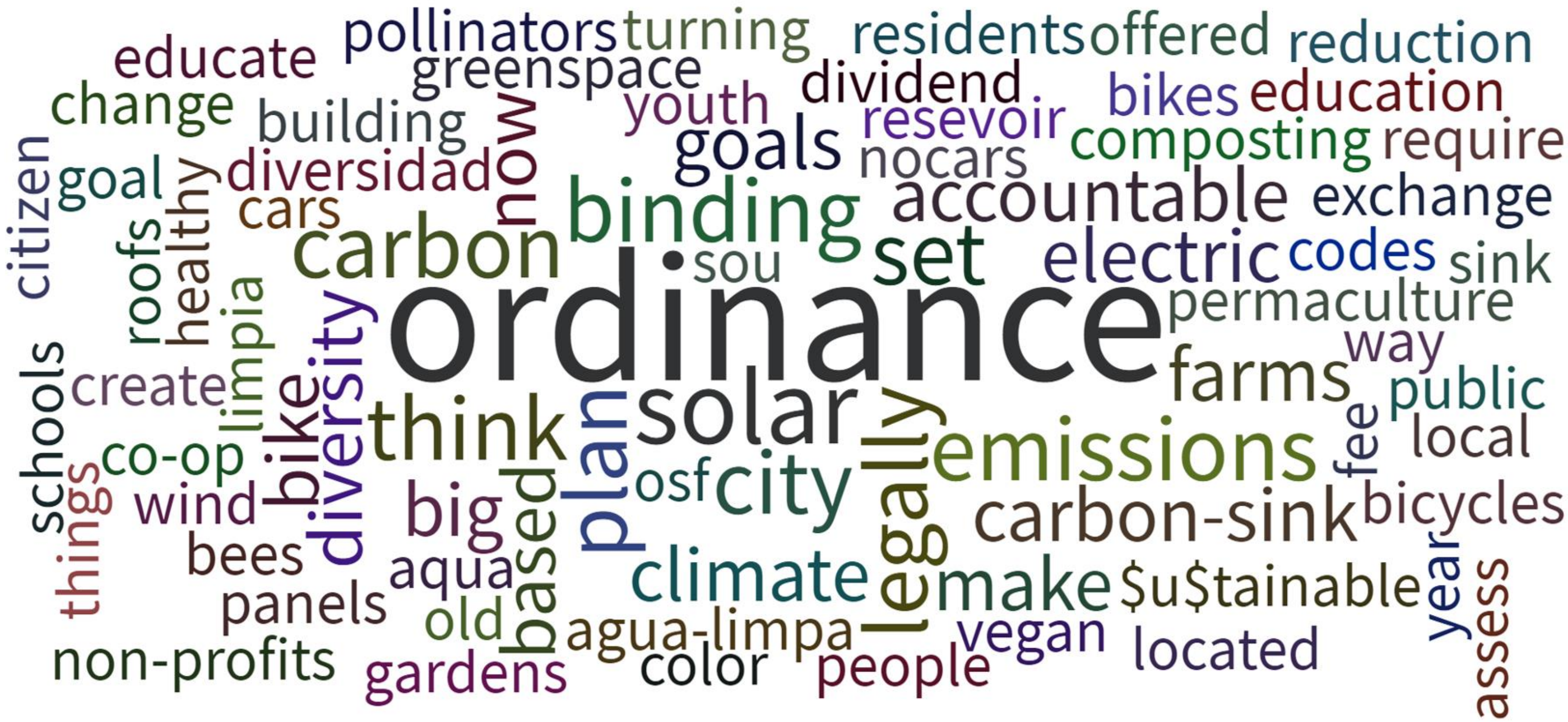

In 2030, Ashland will be a place where...
Carbon Neutrality EXISTS


In 2030, Ashland will be a place where...
everyone who wants has a garden + know-how to grow food.

Station 5. Taking Action

WHAT DO YOU THINK ASHLAND SHOULD DO TO ADDRESS CLIMATE CHANGE?

permaculture	farms	gardens	forests	Diversity	local
no cars	diversidad	bees	solar	Ilise[?]	pollinators
ordinance	$u$tainable	Listen, network, think big	emissions reductions	localized production of all resources	Ordinance
aqua limpia	composting	carbon-sink	inclusive of communities of color	forest regeneration/biomass electricity	conserve
Ordinance	Co-Op	non-profits	Ordinance	Reusing water	ecological diversity
Youth	Bicycle-for-car program	education	socially equitable	community	ordinance
SOU	OSF	public transit	Ordinance	Pass a legally binding ordinance	ordinance
reservoir	healthy	Educate	Cultural and behavior shift	foster cooperation	scientifically-based ordinance
agua limpia	Solar. Bikes. Wind. Building codes. Greenspace. Fee and Dividend. Vegan	NOW	a downtown shuttle bus	Live Lightly On Earth	wildfire smoke
carbon-sink	Get a LOT more solar panels located on public roofs.	public-lands	Think beyond carbon emissions	triple bottom-line	Electric Taxis
Bike lanes everywhere	think big act now	BIKE SHARE	Zero GHG emissions	ZEPHER	MULTIPLE SOLAR FARMS
Set goals that are based in the best available science					
create a legally binding ordinance to make the city accountable					
Individual carbon footprints and reduction goals					


ordinance
binding
carbon
emissions
solar
think
accountable
set
goals
electric
city
climate
make
legally
carbon-sink
plan
diversity
bike
farms
pollinators
turning
residents
offered
reduction
educate
greenspace
dividend
bikes
education
change
building
youth
resevoir
composting
require
now
nocars
exchange
citizen
goal
healthy
diversidad
cars
sou
codes
sink
roofs
limpia
permaculture
way
schools
create
public
fee
local
co-op
osf
things
wind
big
based
bicycles
bees
aqua
$u$tainable
year
panels
old
agua-limpa
vegan
assess
non-profits
gardens
color
people
located

Appendix B. Open House Comment Cards

Summary

Individual Comments

Comment
It is important to try as hard as possible to get a more diverse audience at an event as important as this event. Climate change will harm the minority members of our community the most, so it's extremely important to engage them on these conversations. The large majority of attendees appeared to be elderly and white.
Increase efficiency of energy use, increase renewable sources, vastly increase public transit, limit individual automotive use, encourage decreased consumption of goods and faraway (illegible)
We need to take a very aggressive stance with this - even if it means we are setting goals that really move the needle - even if we don't yet know how to reach them.
Promote large scale solar farms Promote more bike friendly activities including more bike parking and incentives to not drive in town Support and develop RUTD Involve Atts - promote bikes and carpooling only and not kids driving to school Ban large tractor-trailers in town Regarding housing developments - build affordable, small, energy efficient homes - wrangle more co-housing with good access to bus and bike routes.
Electric shuttle buses and swacl [illegible] vehicle to transport tourists around town. Promote tourism without cars!
I support actions - especially incentives for rooftop solar, energy efficient appliances, water conservation, and reduced car use - that Ashland can take to reduce our community carbon footprint. BUT - realistically, our actions will have a very limited effect on the climate change impacts we will experience. Therefore, our most urgent efforts should be to increase our community's resilience to these impacts. The most severe impacts will likely be the linked issues and decreased snowpack/water availability and increased wildfire risk. Ashland has done as good a job as anywhere in fuels reduction in the watershed. However, it is my impression that we have done much less to prepare for reduced water supplies. The inter-tie to the Medford water system was an essential, prudent action. But we need to consider if there are other ways to increase water storage and, of course, to STRONGLY encourage water conservation. One often-suggested option - greatly expanded rainfall capture in residential and commercial water tanks - reduces water flowing into streams, with serious negative ecological effects. Per-capita water use reduction will be essential, as well as policies directing water use to the most necessary uses. In short, reducing our community carbon footprint costly, but enhanced resilience is life-and-death.
Ashland should promote more (a) large scale solar installations, promote human powered transportation as much as possible. Less incentive to drive here.
City must have a policy advocacy strategy as well as a "resilience" or "adaptation" strategy - advocate for in state and federal climate policy.

Comment
1. Reflective roofing 2. Parking lots absorb water 3. More trees in town 4. Charging stations for electric cars, FREE 5. Free leies [?] around town 6. Monitor and recommend improvements to landscape/water systems 7. Home insulation and window improvement incentives 8. Cover crops on fallow fields 9. Thermal sink A/C incentives 10. Reduce rain run-off to be absorbed into the soil 11. Incentives for efficient appliances
Impoundment shall be an expensive but correct answer to a sustainable water supply.
I think it is very important to adopt an ordinance along with the climate plan to make the plan legally binding, science based, equitable, and to make the city accountable for their actions.
Ashland needs to require each citizen to commit to their own carbon footprint reduction annually (could have contest awards!)
Tie Climate and Energy Plan to a city ordinance.
Charge developers an impact fee to be used to create bike/ped routes between town and development Make mass transit EASY and AFFORDABLE Promote shuttle service…solar electric bus? Or bike rickshaws between hotels, town, and the airport Work with ? on an electric bike/bike share program with town to lodging Community education classes on diet and exercise less meat - more walking Also teach diet and exercise in schools... cooking with less meat I talk with many people who circle around town in their cars for 20+ minutes looking for parking - wasted fuel, omg! provide central parking with a shuttle...or another parking garage Reduce or eliminate cars/trucks on Main St. between 10 am and 11 pm? Eliminate daytime (mid-day) watering in city parks Reduce use of air conditioning - no lows than 72-75 degrees. Thank you.

Comment
The 300,000-400,000 people who travel every year to visit the Oregon Shakespeare Festival is a huge emitter of greenhouse gases. The festival is a cultural treasure and the heart of Ashland's economy, so perhaps OSF could encourage Festival attendees to take the train, carpool, or purchase carbon offsets. Festival goers are mostly highly educated, aware people so they might go for it.
The question: Do we have the will to make significant meaningful changes in the way we live and consume (and throw away)?
Stop slash burn - break it down so it goes in the soil - not the air, electric buses, compostable trash pick-up for creating good soil (I thought we might already have)
The city could offer rebates or tax credits for buying an electric bike.
My family and many, many friends in this community are very concerned about geo-engineering aka chemicals in this area that are poisoning us and making all of us and our children very sick. I believe it is very irresponsible of the city of Ashland to NOT address this issue ASAP for we are slowly dying - please stop this. Please, please do not ignore this giant issue that we are dealing with when it comes to climate. Change this geo-engineering solar radiation program is lethal.
Show leadership and vision - let's shift our culture so climate change mitigation and adaptation take priority and are considered for all decisions. We need to educate and support people so they can make educated decisions. If we continue on our current path with only minor tweaks we're in trouble - we need to be willing to make major changes while maintaining a healthy economy and livability.
I am totally upset you are not discerning the geoengineering and SRM programs and ERR disrupting our climate and weather. I am upset you are not allowing areas with waste (paper and cans) and poop for energy and just wanting to promote and use solar and wind that are not always available. Go to geoengineering (illegible) and go to David Blaine's site alcoholcanbeagas.com for an all the geoengineering and for energy technology (illegible).
1. Utilize the homeless to help with wildfire mitigation work 2. Incentivize residential and commercial water catchment systems and grey water installations in current and future buildings 3. Require "natural building" designs for residences and businesses i.e. - passive solar, natural cooling. Many communities are implementing these designs already. Look it up. 4. Geoengineering aka weather control is real - it's happening already. How can Ashland stop it?
1. Limit number of residences in UGB. To insure we have enough resources and infrastructure to serve the community we have. Will there be enough water if we add 400 homes? Insure enough affordable housing in town to reduce community and urban sprawl that will exacerbate climate change. 2. Publish a monthly newsletter to go in utility bills and on Facebook with "Tips" - i.e. turn off outside house lights at night to reduce energy or use dimmer lights.
I think I'm just going to have to move away!
Legally binding clean energy ordinances and resolutions, caps on emissions!

Comment
A good open open house. Not enough attention on health problems that Ashlanders will be dealing with. This involves psychological health. CERT is not set up for this. Something new is needed.
Don't have slides we cannot read even if you apologize for them. Otherwise informative. You handled disrupter well.
Legally binding action plan.
I would love to see an ordinance passed along with the plan to ensure we see the benefits of the goals we set and establish Ashland as a progressive/historic actor in the fight against CC.
Thank you for your work!
BIOMASS PLANTS esp. small to moderate scale to convert excess biomass in local woodlands to electricity while mitigating wildfire danger.
Localized food systems and bio-filtration/constructed wetlands off storm drains!
Suggestion: Methane from city waste and possibly forest waste and bloom energy fuel cells used by Google to presently generate power at at least once of their installations, a YouTube search a year back gave me the info that bloom enlarges fuel cells. Do not use the precious metals that abuse miners. This is already designed technology that is compaly presently installed. Natural gas and bloom energy -> fuel cell, electronics -> 120V commercial, 60 HZ AC Reduces methane and generates cheap power Thanks for your efforts.
Have city of Ashland strongly promote walking and biking over private automobile use by having downtown Main St. go on a road diet. Narrow the traffic lanes, eliminate the third lane, add bike lane, widen sidewalks. Work with the food co-op to offer electric bike delivery to members instead of them driving down to the co-op and driving back home. Offer a rebate to Ashland residents for purchasing an electric bicycle.
Preparing for drier hotter conditions. Making sure our water sources are enough to keep up with future development.
Add more public transportation. Add more solar panels to community structures. Work with state agencies to increase fiscal incentives for commercial solar installations.
1. System by which residents can purchase panels that will be placed on roofs that are not theirs. A roof with 40 panels (10 to each owner) would then have 4 owners credited with the generated power and the credit taken off their home bill. 2. We should set up a system whereby Shakespeare theater goers could ride an RUTD bus rather than drive downtown. 3. Stores would use motion detecting lights rather than leaving lights on all night. I think this would also facilitate better policing.

Comment
1. Pass ordinance capping fossil fuel use by city. 2. Solar rebates for low-income. 3. Get low-income people involved - they matter!
Build second reservoir Buy local Process beef locally Electric trollies Biodiesel
Build on any base that exists (but don't waste time patting ourselves on the back). Move to significant action - such as addressing how we all can buy and throw away less.
By making a plan committed to the best available science, socially equitable, protects Ashland's quality of life, creates good jobs and boosts the economy and has an ordinance so it's legally binding!
1. 2 lanes downtown with BIKE LANE. 2. More public transit! 3. Make Ashland more bike and pedestrian-friendly. 4. Enforce traffic laws (mufflers, speed, etc.). More action Less talking
Support and adopt the Rogue Climate Ashland and Youth Climate Action 5 standards to guide the development of an action plan and ordinance.
Make CEAP a reality, an ordinance, and require solar on new buildings, hot water at least, PV if it's a good solar gain site.
Support non-profit thrift stores. They are recycling!
I want a legally binding plan that is based in science, socially equitable, protects Ashland's quality of life, and is good for the overall economy! Legally binding is a must.
So many ways, for starters: make the town more bike- and bus- and walking-friendly. Require recycling.

Comment
Please consider: -Better information about wildfire smoke pollution -Solar park -Keeping solar tax incentives -Prioritize making Ashland even more bike-friendly -Conservation education and efforts -Solar park -Transition off coal (like Portland) Thanks for: -This event -Water wise campaign
Ashland government needs to provide incentives for lend locally if we want to covet this neutral property (illegible)
Excellent turnout High-energy atmosphere Well done!
Already growing food Bicycling Less waste - making foods that we use a lot of; yogurt - no plastic containers.
Can Ashland (we) take a leading role advocating for climate change challenges?
First: Thank you! Second: I think the city needs to have a strong hand in these changes - like SF and Sonoma - put into law, all new buildings have to have solar Third: Fossil fuel tax Fourth: Create ordinances
1. Plan should promote and require development of clean energy. 2. Clean energy development should create green jobs and boost our economy. 3. New jobs should go to local workers and provide training that benefits local workforce. 4. New green jobs should pay living wage and follow high-road standards of Enhabit.

Comment
1. Needs to be an ordinance to require that the plan will be implemented in ways that will meet numerical targets and benchmarks. 2. Goal should be to do Ashland's part to achieve less than 350 ppm CO2 equivalent by 2100. 3. Targets and benchmarks must be based on up-to-date accepted science. 4. Provide ongoing opportunities for public input and total transparency of results. 5. Climate Plan should meet Rogue Climate Standards.
1. Encourage organic yard care to reduce pollution at source and continued reliance on petroleum products. 2. Build an electronic trolley system to serve Ashland north to south. 3. Give monetary incentives to people who give up their cars and use alternative methods of transportation. 4. Do not allow synthetic pesticides and fertilizers which upset the soil balance - please see article I submitted and read "The Soil Will Save Us" - form a committee to share info.
Demand triple-bottom-line accountant of energy costs from Dover Co. They're not providing us with the cheapest power as they're obligated to do because they don't factor in the huge hidden costs of fossil fuel based-energy - medical, environmental, etc.
More bike racks around town. Use some car parking spaces for big racks, not little ones on the sidewalk.
Member of Talent Clean Energy Plan - inspiring event and thank you for the FACTS and DATA! Excellent turnout and presentations. Keep up the good work!
1. Climate Plan should be socially equitable: measures used should not displace low income or vulnerable people from housing or jobs cause of costs from lowering GHG emissions. 2. Low income and vulnerable people must have voice in measures taken to reduce GHG emissions.

Appendix C. Outcomes from Climate Week

Actions

What actions can you take to achieve your vision?

Install solar panels
Drive electric vehicles
Make home more efficient
Produce less waste
Grow food
Bike and walk
Learn more!

Barriers

What are barriers to achieving your vision?

Cultural
Apathy
Individualism
Fear
Lack of awareness

Financial
Initial Investment
Energy prices

Political
Vested interests
Bureaucracy
Local system

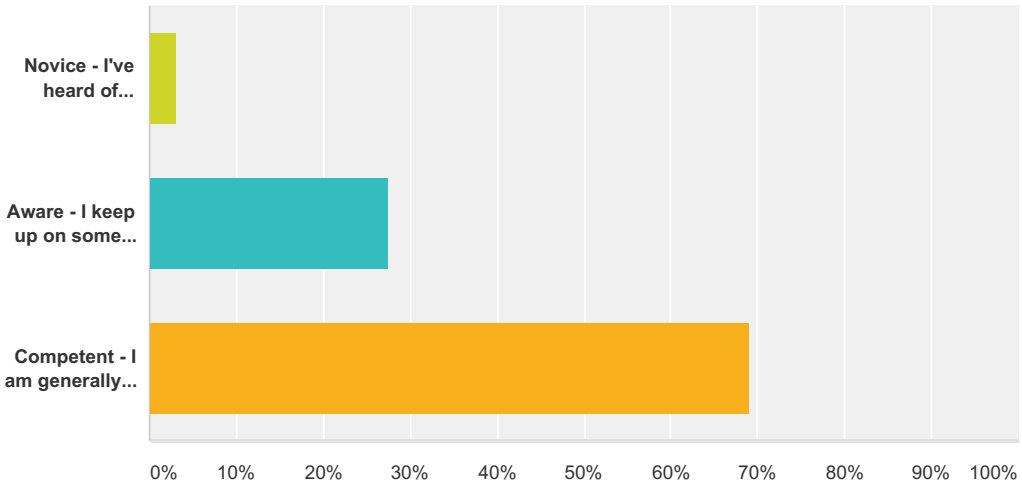
Technical
Technology
Information
Education

Appendix D. Public Input Survey Results

The summary results from the public input survey, conducted online during May and June 2016, appear on the following pages.

Q1 How would you best describe your understanding of climate change issues?

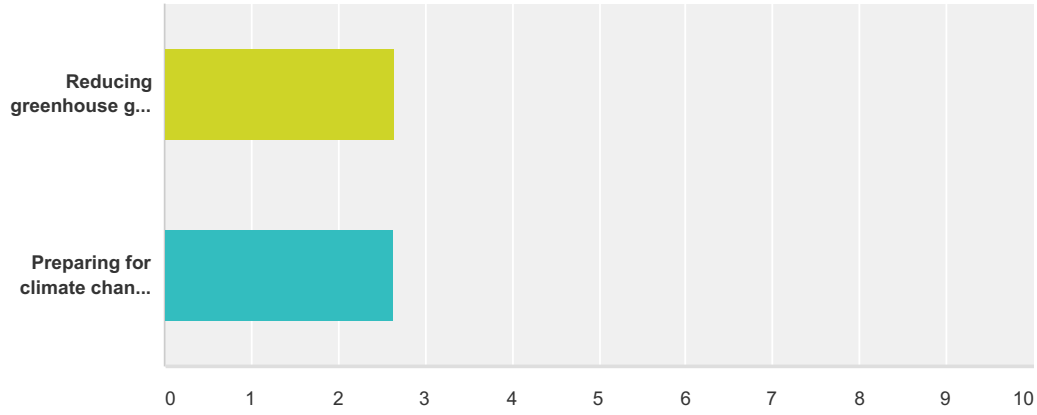
Answered: 94 Skipped: 2



Answer Choices	Responses	
Novice - I've heard of climate change, but don't know much about it	**3.19%**	3
Aware - I keep up on some climate issues, but not all of them or very often	**27.66%**	26
Competent - I am generally informed in climate change issues	**69.15%**	65
Total		**94**

Q2 How concerned are you about the following in Ashland?

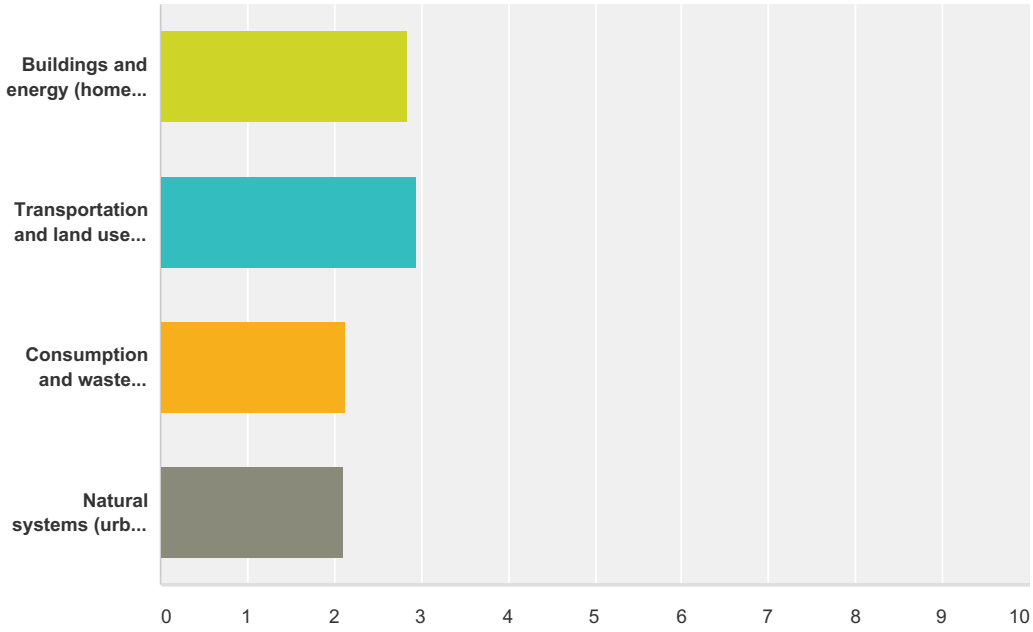
Answered: 96 Skipped: 0



	Not concerned	Somewhat concerned	Very concerned	I'm not sure	Total	Weighted Average
Reducing greenhouse gas emissions	**8.33%** 8	**18.75%** 18	**71.88%** 69	**1.04%** 1	96	2.66
Preparing for climate change impacts	**9.38%** 9	**18.75%** 18	**70.83%** 68	**1.04%** 1	96	2.64

Q3 Which of the following should be highest priority for reducing greenhouse gas emissions in Ashland? Rank the following options from highest (1) to lowest (4) priority.

Answered: 94 Skipped: 2



	1	2	3	4	Total	Score
Buildings and energy (home and business energy use, renewable energy sources)	**34.83%** 31	**28.09%** 25	**22.47%** 20	**14.61%** 13	89	2.83
Transportation and land use (vehicle use, public transit, biking/walking, urban density)	**36.67%** 33	**34.44%** 31	**15.56%** 14	**13.33%** 12	90	2.94
Consumption and waste (consumption of goods such as food and clothing, recycling, composting, landfill maintenance)	**8.89%** 8	**25.56%** 23	**34.44%** 31	**31.11%** 28	90	2.12
Natural systems (urban green space, water management, forests, agriculture)	**20.22%** 18	**11.24%** 10	**26.97%** 24	**41.57%** 37	89	2.10

Q4 Please briefly explain why you selected your highest priority in Question 3 above.

Answered: 88 Skipped: 8

#	Responses	Date
1	Ashland is such a small town, yet so many people still DRIVE EVERYWHERE, even short trips. We have to wean ourselves off of petroleum!	6/10/2016 4:12 PM
2	internal combustion engines are major source of green house gases	6/10/2016 1:07 PM
3	I believe transportation is a major contributor to greenhouse gas emissions, and I also think it is one of the easier issues to address.	6/9/2016 8:58 PM
4	There are things we can do locally	6/9/2016 8:37 PM
5	How we acquire and use energy has an impact on issues like LNG, solar rebates, etc.	6/8/2016 11:19 AM
6	living in rural area like this it is impossible to ignore the environment as our priority because it is our livelihood in this town, it surrounds the town and needs to be healthy	6/8/2016 6:25 AM
7	This is a place where every single individual has an impact.	6/7/2016 6:13 PM
8	My energy bills are very high even though I am doing my best to conserve. I would love more opportunities to get assistance for more renewable, greener and cheaper energy sources.	6/6/2016 1:25 PM
9	Reducing vehicle miles driven by providing increased housing density within walking distance of jobs and services is something a small community can do to develop in a manner that is sustainable in the long term.	6/3/2016 4:55 PM
10	I would like there to be an option for a solar farm that could be expanded as city is able.	6/3/2016 3:04 PM
11	Our entire lives depend on natural systems.	6/2/2016 8:25 PM
12	lessen dependence on fossil fuels.	6/2/2016 2:57 PM
13	I don't think it addresses the major contributors, but it addresses the human need for a perspective change.	6/2/2016 11:10 AM
14	Efficient strategies in this category have both energy conservation and socio-economic benefits.	6/2/2016 10:17 AM
15	It is highest priority only because I "think" that's where the greatest savings lies. I think the rankings should reflect greatest opportunities.	6/2/2016 10:08 AM
16	I wonder if Ashland can lead the way to more creative uses/recycling of things that often go into land fill.	6/2/2016 9:44 AM
17	All important. THis is a crisis!	6/2/2016 9:32 AM
18	Reducing dependence on cars/pickups is the quickest way to improve air quality. Providing convenient options for people to get around without a car is efficient and effective.	6/2/2016 8:54 AM
19	All things exist on the land and within the natural systems. They are our primary defense in protecting the environment/climate.	6/2/2016 8:42 AM
20	This was a really hard choice. Natural systems are what are going to be most affected by climate change. We need to investigate adaptations to these changes.eg crops that will be able to grow in hotter,dryer conditions.	6/2/2016 8:01 AM
21	Most concerned about water management forest and green space .	6/2/2016 4:28 AM
22	We already have technology and knowledge and can start immediately with impact.	6/1/2016 11:13 PM
23	It is important to me	6/1/2016 10:33 PM
24	We need an E shuttle to transport tourists downtown. We need a bike lane through downtown. We need a place to lock our bikes besides trees!	6/1/2016 7:45 PM
25	My sense is that buildings and energy are most amenable to influence by city programs and ordinances; transportation is important, but perhaps a little harder to influence; consumption is likely the most difficult to really get under control (more effort required for uncertain payoff).	6/1/2016 7:07 PM
26	The things we are most dependent on are food and water.	6/1/2016 6:13 PM

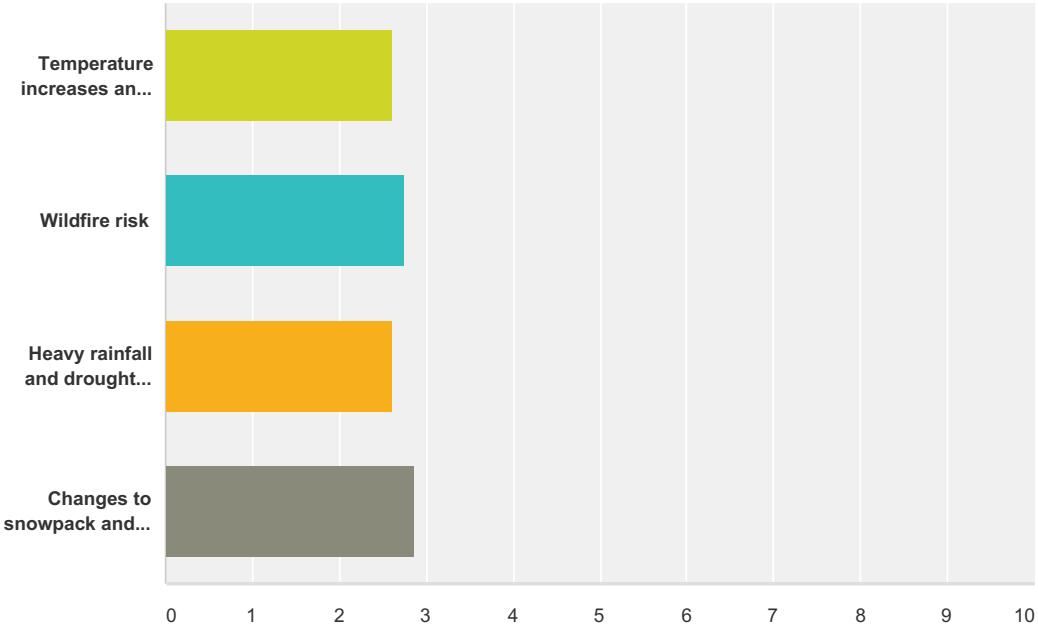
27	I believe this category is greatest source of emissions. If I'm mistaken, I would hope our efforts would focus on the areas that presently create the greatest volume of emissions and that present opportunities for emissions reductions.	6/1/2016 6:08 PM
28	- can be implemented immediately - potentially has the most impact	6/1/2016 4:55 PM
29	I would like the City to make the things it controls/influences the priority in the plan	6/1/2016 3:17 PM
30	None of the above. "Greenhouse Gas" is one of the biggest misinformation propaganda pseudoscience con jobs out there.	6/1/2016 3:07 PM
31	It is something many can do and control	6/1/2016 2:25 PM
32	Affordable, and multi-use housing, in addition to tiny housing is a priority for making our community more diverse and balanced. We need more low-cost, mass transit options.	6/1/2016 2:22 PM
33	Greatest impact	6/1/2016 2:01 PM
34	Building materials and waste (from remodels as well as new), energy efficiency of buildings, water efficiency of buildings, whether buildings are equipped to use grey water are all major factors in reducing greenhouse gas emissions (if you look at cradle to grave of materials manufactured/shipped/used/disposed). With so many wealthy Ashland residents doing home remodels, we could encourage use of local, durable, non-plastic materials - same for home and garden furnishings.	6/1/2016 1:47 PM
35	This section didn't work in my phone but I pick transportation as number 1because I believe it has the most potential for change. Electric cars, better bike and pedestrian facilities and improved transit are crucial	6/1/2016 1:28 PM
36	It seems like the major use of energy is in heating, lights, etc, for home and business, so using renewables is important.	6/1/2016 1:27 PM
37	Need to reduce car trips, especially downtown. More bike lanes and facilities, a local trolley or shuttle service for residents and visitors, and improved pedestrian facilities.	6/1/2016 1:13 PM
38	Because creating electricity causes the most greenhouse gas emissions. Even if our local power is mostly hydro-generated, we need to switch to renewables for the future.	6/1/2016 1:10 PM
39	on the City level it seems like there are Codes that can be implemented. other items are less enforceable.	6/1/2016 12:51 PM
40	I think consumption and waste addresses more than just climate change. It also addresses the amount of landfill resources.	6/1/2016 12:49 PM
41	I believe it has the most potential to reduce our communities GHG emissions over the long run.	6/1/2016 12:38 PM
42	Buildings and energy have the lowest hanging fruit for change.	6/1/2016 10:53 AM
43	Buildings and energy are the lowest hanging fruit.	6/1/2016 10:48 AM
44	Despite impacts from buildings, growth rate in Ashland is relatively low, and I think there's more bang for our buck in sustainable planning (transportation and land use).	5/31/2016 7:09 PM
45	They are all high priority. If I took the survey again, I might change rankings.	5/29/2016 7:08 AM
46	Virtually everything we use here is brought to us by convoys of polluting 18-wheelers. Virtually everyone owns a car and our streets are full.	5/28/2016 10:39 AM
47	It has the greatest negative impact.	5/27/2016 12:47 PM
48	Transportation is usually the highest emitter of GHG	5/26/2016 11:22 AM
49	We should keep the forest green	5/26/2016 9:48 AM
50	Transportation is a very high portion of GHG based on the inventory. Buildings are important but a lot of the city's energy is renewable.	5/25/2016 10:40 PM
51	Transportation accounts for a quarter of Ashland's GHG emissions. Vehicular transportation consumes an unnecessarily large portion of land and resources.	5/25/2016 3:07 PM
52	Natural systems is a much more feasible way financially, resources/ecologically, wildlife, and for the health and overall being of the forests, trees, citizens and tourist	5/25/2016 7:10 AM
53	I think that is where we use the most harmful resources. But I'm not sure!! I could easily change my mind with facts.	5/25/2016 2:57 AM
54	Home energy consumption strategy can lead to the most carbon reductions.	5/24/2016 8:29 PM
55	I am responding to what I thought was a large contributor to GHG emissions in Ashland.	5/24/2016 7:51 PM
56	We can do it on local level	5/24/2016 7:26 PM

57	There are many problems that will affect humans particularly but the more directly we affect other life forms the worst we get. We must conserve natural areas and keep them safe for us but mainly them.	5/24/2016 7:21 PM
58	Drought is my biggest climate change concern, but that has little relevance to gg emissions. Buildings and transportation offer the biggest opportunities to reduce emissions. However rehydration and consequent growth is a carbon sequestration strategy that can have enormous results which are just starting to be studied and measured.	5/24/2016 7:18 PM
59	Power production is nations highest use of energy with industrial agriculture next...and Sadly missing in these choices! transportation is next....but the natural world should be part of every consideration, so that was harder.	5/24/2016 7:03 PM
60	It is the most dominate energy source in Ashland	5/24/2016 7:02 PM
61	Biggest piece of the pie.	5/24/2016 6:59 PM
62	Auftos make up so much of the gas emissions	5/24/2016 6:57 PM
63	Reduction in emissions seems to be so important, it's hard to say more than the others but it seems so much has to do with what's going on in the air and all the rest are like contributing factors. But mostly because of the growing size of populations and how many vehicles not just public commuting but transportation in general trucks and those making the most emission it just seems so much more and consistent than everything even though it's all happening and currently.	5/24/2016 6:37 PM
64	Overall health and well being as well as local standard of living. Usability of environment and recreation. Ease and joy of commute.	5/24/2016 6:30 PM
65	It's a major GHG emission impact & actionable.	5/24/2016 6:28 PM
66	This will be a lot easier than the consumption section.	5/24/2016 6:17 PM
67	I'm passionate about renewable energy	5/24/2016 6:06 PM
68	Biggest slice of the pie, and most voluntary component	5/24/2016 6:02 PM
69	We want to keep our natural capital strong	5/24/2016 6:01 PM
70	I imagine that building consume the most energy in Ashland. Currently, the majority of that energy is derived from coal power plants, which is an extremely dirty source of energy. It's important that Ashland implements widespread renewable energy sources in order to find a way to escape the high percentage of coal in Blue Sky's energy mix.	5/24/2016 6:01 PM
71	I imagine that building consume the most energy in Ashland. Currently, the majority of that energy is derived from coal power plants, which is an extremely dirty source of energy. It's important that Ashland implements widespread renewable energy sources in order to find a way to escape the high percentage of coal in Blue Sky's energy mix.	5/24/2016 5:58 PM
72	Just had baby, would like to keep biking, do not trust roadways or bike paths. Would like to see commuter bike stations, electric bus, train through valley.	5/24/2016 5:53 PM
73	Water the most vital need	5/24/2016 5:50 PM
74	Transportation largest contributor to GHGs, then use of natural gas in home heating!	5/24/2016 5:48 PM
75	Seems to be the highest offender	5/24/2016 3:27 PM
76	The high volume of fossil fuel vehicles both in and especially visiting the city.	5/24/2016 3:25 PM
77	I believe that in our mobile society that if we address transportation and land use issues that many of the other influences on climate change will fall into place.	5/24/2016 1:45 PM
78	Reducing vehicle use through biking, walking, public transit has other benefits to the local economy and public health, as well as community networking. It is an easy way to make a large impact.	5/24/2016 10:54 AM
79	Reducing CO2 in Ashland will have close to zero impact. However, we should do our best to be good stewards, and reducing our reliance on polluting energy sources is something we should do because it is the right thing on many levels. Home and business energy use is a major component of that.	5/24/2016 9:24 AM
80	Question two highest priority is because of all living creatures need protection from people.	5/24/2016 9:23 AM
81	Where we can get the most "bang for our buck" in our town	5/24/2016 9:12 AM
82	Solar energy, captured, stored and used in each vehicle is the most renewable resource we have, and the cleanest alternative we have, and we should place a higher priority on its development.	5/23/2016 10:29 PM
83	My main interest is in carbon sequestration which can be done in an urban environment as mentioned in #3. We are surrounded by forests, and have a gmo free county to support all of which are important components of C.C.	5/23/2016 9:52 PM

84	I believe renewable energy at the local level is the best single line of attack. Solar panels on every building that has good sun exposure, which can also charge electric vehicles, is the best first line of attack.	5/23/2016 9:47 PM
85	we have farms and import food..dumb we can be organic but all chemical inputs dumb we think population equals tax income dumb	5/23/2016 9:00 PM
86	Replacing 4-way stops with round-abouts will reduce gas consumption. Today every car has to stop and then to accelerate again even if there is no other car at the cross section.	5/23/2016 8:24 PM
87	WATER	5/23/2016 7:46 PM
88	people are too wasteful	5/23/2016 7:32 PM

Q5 Climate change will impact Ashland in many ways, including increased temperature, changing precipitation, and increased wildfire risk. How concerned are you about the following climate change impacts in Ashland?

Answered: 96 Skipped: 0



	Not concerned	Somewhat concerned	Very concerned	I'm not sure	Total	Weighted Average
Temperature increases and extreme heat	**6.67%** 6	**24.44%** 22	**68.89%** 62	**0.00%** 0	90	2.62
Wildfire risk	**2.15%** 2	**19.35%** 18	**78.49%** 73	**0.00%** 0	93	2.76
Heavy rainfall and drought risk	**6.45%** 6	**24.73%** 23	**68.82%** 64	**0.00%** 0	93	2.62
Changes to snowpack and water availability	**5.38%** 5	**4.30%** 4	**90.32%** 84	**0.00%** 0	93	2.85

#	Please briefly explain your rationale for impacts that concern you most.	Date
1	Drought, especially, can severely impact our ability to be a sustainable community, especially our ability to produce food.	6/10/2016 4:12 PM
2	Wildfire risk: I'm selfish, hate the smoke. Also hate the destruction of habitat for animals and plants. Snowpack and water availability: this has a major impact on daily life here. It appears the snowpack can't be counted on to provide water through the summer, so another plan (more reservoirs?) needs to be put into place.	6/9/2016 8:58 PM
3	We may not be able to sustain our quality of life or support our population density	6/8/2016 11:19 AM
4	very concerned about air quality while raising children especially, and quality of life concerning heat	6/8/2016 6:25 AM
5	All of these issues can have life or death consequences.	6/7/2016 6:13 PM
6	All of these things affect our daily lives and the ecconomy	6/6/2016 1:25 PM

7	Each of the above items are inter-related and direct results of increasing temperatures.	6/3/2016 4:55 PM
8	It is too hot and dry. The forests are always catching fire.	6/2/2016 8:25 PM
9	the viability of Ashland.	6/2/2016 2:57 PM
10	Catastrophic fire could destroy our watershed and surrounding forest lands jeopardizing one of our water sources as well as killing many species.	6/2/2016 11:10 AM
11	As Ashland gets more and more known for its bad air quality due to summer wildfire smoke and smog, it will have a negative impact on quality of life and future business success.	6/2/2016 10:17 AM
12	It is my understanding that these are the realities with increasing intensity as the years go by	6/2/2016 10:08 AM
13	In the last 10 years (I know it is just a nano-second of the life of the universe) we have seen the impact of the above. I also wonder if the clear-cutting is actually helpful to prevent forest fires. I know nothing about this, but intuitively it does not really seem to be.	6/2/2016 9:44 AM
14	I grew up in Ashland and the climate is decidedly different from the 50s and 60s -- more extreme heat in summer, less snow and cold in winter.	6/2/2016 8:54 AM
15	Reducing the local temperatures to lower fire danger, keeping waterways cool, managing the forests	6/2/2016 8:42 AM
16	These all are integrated with one another. Each one is concerning and they are happening all at the same time.	6/2/2016 8:01 AM
17	Effect on food supply, species survival. Fire	6/2/2016 4:28 AM
18	These impacts have already started and will only get worse.	6/1/2016 11:13 PM
19	...climate change!	6/1/2016 7:45 PM
20	All of these are in-store. The one thing we can truly influence is wildfire risk (creating more resilient forests); water availability will be next, but changes in snow pack are now unavoidable - ditto for extremes of precip and temperature. Responses to these (aside from reducing GHG) will be mostly reactionary.	6/1/2016 7:07 PM
21	These things are all related so I rated them equally.	6/1/2016 6:13 PM
22	As you see, I am "Very concerned" about all four.	6/1/2016 6:08 PM
23	water availability has a major impact for this region	6/1/2016 4:55 PM
24	we don't function well as humans if we don't have water.	6/1/2016 3:17 PM
25	you have no idea what will happen in the next 2 years let alone the next 50. Your computer models are based on guess work and bias.	6/1/2016 3:07 PM
26	Our water supply is linked to snow	6/1/2016 2:25 PM
27	All the consequences of a warming planet are exhibited in the above questions, and they are all impactful to our community.	6/1/2016 2:22 PM
28	Summer smoke and unsustainable cannabis production is if greatest concern.	6/1/2016 2:01 PM
29	These are all likely climate change impacts that could strongly change our current lifestyles.	6/1/2016 1:47 PM
30	Major impacts to lifestyles. Heat means more air conditioners and fewer people walking or biking.	6/1/2016 1:28 PM
31	These seem the most directly life threatening.	6/1/2016 1:27 PM
32	Economic, social, health and agricultural and other impacts that will affect everyone, especially those with limited means and mobility.	6/1/2016 1:13 PM
33	All of my research has shown me that these impacts are happening now and will get worse soon.	6/1/2016 12:51 PM
34	I believe that humans contribute to climate change but do not believe we are the sole cause. Therefore, I am more concerned about what we can address such as water availability and reacting to wildfires.	6/1/2016 12:49 PM
35	They all concern me. There is considerable overlap, or causal relationship, between said impacts.	6/1/2016 12:38 PM
36	All are equally important.	6/1/2016 10:53 AM
37	Each one is eminent.	6/1/2016 10:48 AM
38	Watershed has a limited supply and a limited carrying capacity and is susceptible to wildfire impacts (as is the whole community built on the interface).	5/31/2016 7:09 PM
39	They all impact each other.	5/29/2016 7:08 AM

40	We're already experiencing smoky, dry summers and near-miss wild fires.	5/28/2016 10:39 AM
41	All of the above are inter-related. Drought also leads to extreme dust, forest die-off, mega-fires like never before, extended fire-danger months each year, exploding pollen counts, and effects on our health. These are happening NOW, not 50 years from now. Ashland may be devastated in 50 years. Let's do something for the next 2, 5, and 10 years. Otherwise, it's too late. We have lost our home to last summers wildfire and are refugees. We are not the only climate change refugees in Ashland, and definitely not the last.	5/27/2016 12:47 PM
42	Temperature increase and extremes will drive changes to rainfall and wildfire along with human physical impacts	5/26/2016 11:22 AM
43	I am not sure climate change is a man made thing.	5/26/2016 9:48 AM
44	Hard to choose - all so critical!	5/25/2016 10:40 PM
45	All 4 are inter-connected. Drought my biggest concern.	5/25/2016 3:07 PM
46	our forests MUST be taken care of. Wildfire here in the watershed and forests surrounding Ashland would be a detriment to all	5/25/2016 7:10 AM
47	We already see wildfires all over the place every summer. With Drought-Emigrant lake almost went dry and a wildfire could come to town.	5/25/2016 2:57 AM
48	all pretty much related but snowpack and rain may be the biggest impact.	5/24/2016 8:29 PM
49	Water availability is key to life for humans and wildlife. Wildfire is extremely damaging and dangerous.	5/24/2016 7:51 PM
50	Anything that would heavily impact water ways will be disastrous.	5/24/2016 7:21 PM
51	We have work to do to prepare for drought that is very attainable. Slow it, spread it, sink it strategies address both drought and extreme water events.	5/24/2016 7:18 PM
52	Heat drought and fires will impact us all. I grow food and care about human as well as wildlife having enough to eat. Fires could destroy this whole area, or make it so hard to exist here. And lack of snow pack will impact us, how we grow crops, and how animals will cope.	5/24/2016 7:03 PM
53	They are all intertwined and impact the livelihood of us all. Plants, animals, and humans alike. The delicate infrastructure of our natural ecosystems is changing. It is all a threat.	5/24/2016 7:02 PM
54	People, plants and animals have a very narrow window of tolerance.	5/24/2016 6:59 PM
55	All concerns me greatly. I mostly fear thirst and getting too hot.	5/24/2016 6:57 PM
56	If we run out of water everything dies end of story and we can't stop fire unless we use our brains to find something else and inexpensive for alternative. As well as no help for the other problems if the water is gone	5/24/2016 6:37 PM
57	Water is crucial to our health and well being on every level.	5/24/2016 6:30 PM
58	The data is clear.	5/24/2016 6:28 PM
59	Water supply biggest concern, because most likely severe impact - but of course closely linked to fire hazard.	5/24/2016 6:02 PM
60	All of this is very scary and concerning	5/24/2016 6:01 PM
61	Increase of heat and drought will lead to economic and health difficulties for farming, low income, and outdoor labor based sectors.	5/24/2016 6:01 PM
62	Increase of heat and drought will lead to economic and health difficulties for farming, low income, and outdoor labor based sectors.	5/24/2016 5:58 PM
63	I see lots of sick trees uprooting because of extreme weather. I like trees and don't want this to happen.	5/24/2016 5:53 PM
64	Rising temps = longer, drier, hotter summers, more wildfire risk	5/24/2016 5:48 PM
65	anything extreme ,we are not prepared for	5/24/2016 3:27 PM
66	Fire damage to watershed and residential areas.	5/24/2016 3:25 PM
67	Three of these all come down to water and smart landscaping/forest area usage. Smart use of water will alleviate a lot of the issues with climate change.	5/24/2016 1:45 PM
68	Extremes in precipitation and temperature have always occurred and will continue. We must adapt to that, and fire is the highest risk for Ashland. Recent changes have not deviated significantly from historical records, if you include the past 1000 years.	5/24/2016 9:24 AM
69	More people and less wildlife	5/24/2016 9:23 AM
70	Fires especially--great impact on my professional and personal life	5/24/2016 9:12 AM

71	I believe climate change is unavoidable, uncontrollable, and not anthropomorphic. We will continue to adapt to our changing climate as we always have.	5/23/2016 10:29 PM
72	Temp. increase= lack of snow pack leads to less water=drought and more wildfire risk	5/23/2016 9:52 PM
73	We can live with the warming, but lack of water affects everything.	5/23/2016 9:47 PM
74	fires end. no water no life. temperature drives people to consume energy or move. ok no water no life	5/23/2016 9:00 PM
75	Without water life will cease to exist	5/23/2016 8:24 PM
76	survey only allowed answers to 2 of the above questions	5/23/2016 7:46 PM
77	you cannot control the weather and there is no sense trying	5/23/2016 7:32 PM

Q6 What specific actions or changes do you feel would most help Ashland reduce its greenhouse gas emissions footprint and/or prepare for climate impacts?

Answered: 82 Skipped: 14

#	Responses	Date
1	Reduce car options, and increase bike, pedestrian and public transportation options.	6/10/2016 4:12 PM
2	Just for a start: 1. Provide more public transportation, with some kind of motivator to use it. 2. Insure all public buildings are as energy efficient as possible. 3. Find a way to recycle plastic (i.e. Plastic Roundup) even if we have to pay to do it.	6/9/2016 8:58 PM
3	City infrastructure. Use all EVs. Passive and active solar. No control burns. Leave carbon in the ground.	6/9/2016 8:37 PM
4	Improving public transportation options, including ride share-type programs, improved bus service, and "shuttle" service for local short trips (hotels to OSF, etc)	6/8/2016 11:19 AM
5	not sure but open to learning, this is a small enough town that I think we could have great impact together	6/8/2016 6:25 AM
6	Support alternative transportation options, cap growth, require net zero energy building from here on out, relax any obstacles to in-town food growing endeavors.	6/7/2016 6:13 PM
7	assistance for alternate home energy sources, allowing water reclaiming and green public transportation	6/6/2016 1:25 PM
8	Preserving local farm and forest lands by reducing sprawl and concentrating future development within the existing Urban Growth Boundary.	6/3/2016 4:55 PM
9	Convert to local solar as much as possible	6/3/2016 3:04 PM
10	Stop burning wood stoves. Make downtown a no car zone. Develop a viable transportation system that meets the needs of Ashlanders beyond the bus.	6/2/2016 8:25 PM
11	alternative energy sources such as wind and solar.	6/2/2016 2:57 PM
12	Reducing consumption/transportation while becoming more autonomous with food, water and energy.	6/2/2016 11:10 AM
13	Continued emphasis on local food purchasing, on bike/walk benefits, improving water conservation incentives and education.	6/2/2016 10:17 AM
14	Incentivise the desired behaviors. Plant more more trees. Promote drought tolerant landscapes and not motorized transportation. Promote gray water and rainwater catchment. Require them on new all new development with incentives. Tax higher those who build GIANT homes. Use money to pay for incentives.	6/2/2016 10:08 AM
15	Ashland is doing a good job creating pedestrian and bicycle friendly space. Personally, when I do my spring cleaning, I throw away things that I know could be used/recycled (old cloth to make paper, high quality used candles) and wonder if, as a community we could increase our smart-quotient here. Love that our recycled glass is used for our roads, as an excellent example. I think citizens and businesses are conscious of resources consumed for the most part. Preparing as a community for a disaster is another area we could I,prove upon.	6/2/2016 9:44 AM
16	Better transportation system.	6/2/2016 9:32 AM
17	Reduce vehicle trips. Plant more trees. Provide a free bus running a loop to help residents and visitors move around town. Build the E. Nevada bridge. Don't compromise on the requirement to provide sidewalks and bike lanes.	6/2/2016 8:54 AM
18	1.drastically reduce cars within city limits. 2. More public transportation 3. more tree planting and correct tree planting	6/2/2016 8:42 AM
19	Moving toward the city utility using renewables(solar& wind)Encouraging, if not subsidizing,solar on houses. Getting a bike lane through downtown. Getting a local shuttle(electric at best)through and around town to reduce auto use. Encourage Recology to start a composting facility. Eliminate the sale of plastic bottled water under one gallon.	6/2/2016 8:01 AM
20	Grey water use , conservation of resources , solar, balancing reduced water use with the need to protect pollinators and trees	6/2/2016 4:28 AM
21	Build low cost housing. Incentives pubic transportation to markets and shops	6/1/2016 11:13 PM

22	See comments under #4. We need clean local renewable energy. Why hasn't Governments responded? Why hasn't Ashland responded. Climate change in NOT a new threat....	6/1/2016 7:45 PM
23	To reduce GHG: STRONGLY incentivise alternative energy and improve walkability, bikability and public transit (including building the Nevada St. bridge). To prepare: focus on natural water storage, conservation, and delivery - gray water?!?	6/1/2016 7:07 PM
24	1. Fewer houses burning fuels such as natural gas or wood for heat or esthetics. 2. Instead of venting methane in places such as the landfill, put it to use.	6/1/2016 6:13 PM
25	Public education about the issues and solutions. Assessment and planning by the City and its partners. Policies and incentives to reduce harmful behavior and incentivize helpful changes.	6/1/2016 6:08 PM
26	- more efficient homes, buildings, and appliances, such as LED light, automatic switches, faucet, toilet, etc.. - solar panels	6/1/2016 4:55 PM
27	encourage/reinforce individual action/commitment to behavioral change	6/1/2016 3:17 PM
28	How do you prepare for the impact of an unknown?	6/1/2016 3:07 PM
29	Encourage smaller, more energy efficient housing and transportation. Greater options for garbage than landfill. Forest thinning. Community sharing of land and resources.	6/1/2016 2:22 PM
30	1. Subsidize bus service from end to end in town so that more people are tempted to use the bus for errands (would have to run every 15 minutes I think). 2. Provide parking (ie at Lincoln School) so people can leave their vehicles on Siskiyou and then use them to drive their groceries up the hill - people are not going to walk up mountain st with 2 bags of groceries). 3. Provide education about carbon footprint for different types (or maybe just the worst types) of building materials/furniture/food/goods to help people make good choices. 4. Use wind power. Ashland has a lot of wind. 5. Provide even better prices for selling renewable power back to the grid - this was a winner policy in Germany that started a solar revolution. We could be a major example to other cities for how this works and doesn't hurt the city (esp. since we are at risk of moving to a higher cost level with all the marijuana grows).	6/1/2016 1:47 PM
31	Tax gasoline. Use proceeds for other programs, such as improved insulation in older homes, better transit.	6/1/2016 1:28 PM
32	Education of all citizens about the inevitability of the changes we are facing and a timetable that would motivate all of us to make changes	6/1/2016 1:27 PM
33	More real bike and transit amenities, reduce car trips especially downtown, bike rental/share kiosks, more and better pedestrian amenities that provide connectivity and safety, and a commitment to a local trolley or transit system.	6/1/2016 1:13 PM
34	#1 would be our diet. Animal agriculture is huge. next, we should minimize Air travel as well as cars etc...next localize food production. next reduce consumption.	6/1/2016 12:51 PM
35	Increase bicycle accessibility and encourage reduced gasoline vehicle use. Perform what fire reduction risks we can. Encourage drought-proof yards.	6/1/2016 12:49 PM
36	Continued active forest mgmt for reduced severe wildfire risk, creating more efficient transportation systems and land use regulations, codes, etc.	6/1/2016 12:38 PM

37	Consumption is nearly 50% of our GHG emissions. This is huge but will take time to educate the public and to get manufacturers to change their ways. We should buy GHG offsets through “fees” and apply the money to local renewable energy production and water use savings incentives (e.g. EPC’s – see below). Transportation accounts for 23% of Ashlanders GHG emissions, and is also somewhat gnarly to address. It can, however, be addressed in the long run with integrated transportation and land use policies, as more and more vehicles become electric, if we can educate people to drive less and bike/walk more, provide suitable, frequent mass transportation, and encourage grocery stores to have delivery services thereby reducing traffic flow to the grocery stores. Buildings account for 27% of all of Ashland's GHG emissions and presents the lowest hanging fruit for making meaningful changes. • We need to make even more incentives available to people in order for them to retrofit their buildings to being more energy efficient, and to educate them on how to turn thermostats appropriately to conserve energy. • We need to get solar pv on every building that has the appropriate exposure. We could create neighborhood level “solar pv” cooperatives where several homes/businesses/apartments etc could develop a cooperative where those that have proper solar exposure would have panels paid for by the cooperative, and all would share in the fruits of reduced energy costs across the cooperative. • We need to drastically reduce or remove natural gas as a heating and cooking option and go to all electricity. • Our housing stock in Ashland is 50% rentals. Most landlords are not interested in insulating, replacing windows, etc. if it is not going to make them more money on their rentals. Likewise, some owner occupied residences are not retrofitting because the incentives are not worth it to them (yet). Therefore, we need incentives for them to do so. o "energy savings performance contracts" like what the federal government is doing with its buildings where bonded contractors come in and perform retrofits and the owners pay nothing up front. If the energy savings over a horizon of time (say 10-20 years) is demonstrated, then owners never have to pay a cent. If they don’t demonstrate enough energy savings over that period of time, then they are obligated to pay for the cost of the services plus interest.... read more here https://www.greenbiz.com/blog/2013/09/05/expect-deep-retrofits-federal-buildings-heres-why. o Take the city of Boulder CO city facilities energy performance contract. They have chosen …”It is important that the city leads by example and does its part to reduce the community'senergy consumption and GHG emissions”. In June 2009, the City of Boulder partnered with the Colorado Energy Office on an Energy Performance Contract (EPC),which has enabled the city to make significant energy efficiency upgrades to 66 city facilities. The EPC allowed the City of Boulder to enter into a 2009 lease purchase agreement with McKinstry to implement efficiency upgrades that will be paid off over time using the guaranteed savings from reduced energy and water bills. The upgrades do not cost Boulder taxpayers any additional money and the community will benefit from reduced operations and maintenance costs. ¬ The city's strategic investments in energy efficiency, renewable technologies and water-saving devices will be offset by decreased utility bills and maintenance costs. ¬ The EPC project is a prime example of city programs that are both environmentally and fiscally responsible. ¬ Employee Awareness and Engagement - powerED Program. The powerED program is part of the Energy Performance Contract and is an employee behavior change campaign intended to reduce energy consumption in city facilities. The program began in 2014, and focuses on three areas: People: engage occupants and increase awareness; Process: engage operators and optimize systems; and Performance: energy savings progress tracking and reporting (using a dashboard). ¬ More info https://bouldercolorado.gov/public-works/energy-efficiency-upgrades-at-city-facilities-energy-performance-contract o Portland also has an ordinance. See 5.34.880 Energy Savings Performance Contracts (ESPC) for Portland: https://www.portlandoregon.gov/citycode/article/553736 . o Here is an example of Energy Performance Contracts for Local Governments for New York State – industry standards and best practices guide – 2013: An EPC uses those energy savings to finance the cost of new equipment and other capital improvements over several years. In addition, by bundling multiple small up-front improvements, an EPC allows local governments to leverage money from quick paybacks on those improvements to finance the larger scale investments. In a typical EPC process, the local government hires a private energy services company (ESCO) to conduct an investment-grade energy audit1 of its assets and identify cost-saving energy improvements. If the local government and ESCO agree to pursue the contract, the ESCO guarantees a level of cost savings to result from implementation of the energy improvements. An EPC can vary in scope. Some contracts are for just one building or a sample of buildings, while others are for managing an entire portfolio of buildings. http://www.dec.ny.gov/docs/administration_pdf/epcguide.pdf Natural systems: • If we planted trees around all of the houses to reduce the amount of energy that must be consumed to air condition a home, we need to be smart about it in order to also optimize the availability of rooftops to put solar pv onto. • It might be worthwhile to check with the Forest Service to see if they would be interested in partnering with the City of Ashland by allowing the Ashland Watershed carbon sequestration GHG gas mitigation to be claimed by the City.	6/1/2016 10:53 AM

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39	Focus less on "gadget green" add-on's and ways to consume ourselves out of a problem of consumption and look at how to plan the city as an integrated, holistic ecosystem with living buildings and a "cradle to cradle" approach.	5/31/2016 7:09 PM
40	limit downtown vehicle traffic, encourage more solar heating, partnerships that would encourage more use of electric cars	5/29/2016 7:08 AM
41	Electric trollies, car-free main streets, incentives for gray-water retrofits and solar hot water, make more, import less, limit growth.	5/28/2016 10:39 AM
42	Strong ordinances, recognizing emergency situation. Clean, safe houses for citizens during the smoke months of July through September. An end to any support for petroleum industry. Mitigation plans for smoke, heat, and drought for citizens. Emergency evacuation plans for citizens. Year-round DEQ particulate monitor in Ashland. Medford is different due to topography, winds, etc. Winter inversions and summer smoke can be deadly.	5/27/2016 12:47 PM

43	Getting the city and then a majority citizens aware of the global warming impacts and motivated to act to reduce their GHG footprint.	5/26/2016 11:22 AM
44	I think homelessness in Ashland is a bigger issure	5/26/2016 9:48 AM
45	Having a legally binding ordinance, informed by a robust Climate Action Plan, is HUGE. Great first step	5/25/2016 10:40 PM
46	Mass transit, gas tax, encouraging bicycling and walking, water rationing, relaxing zoning laws to permit more food production. Compost pick-up by Recology.	5/25/2016 3:07 PM
47	Get rid of the road diet. Those of us who live at that end of town not only have worse traffic but the idling traffic makes the air horrible since it's always backed.	5/25/2016 9:37 AM
48	Ashland alone cannot change the world. it takes effort on behalf of all surrounding communities locally, statewide, and on a national level	5/25/2016 7:10 AM
49	Keep up the good work on healthy low litter forests surrounding the town. Encourage electric cars and home electrical generation. Expand recycling program.	5/25/2016 2:57 AM
50	City electric department can use rates and solar installation incentives to make big difference and be equitable to low income folks too	5/24/2016 8:29 PM
51	Move our economy to clean energy development. Create green jobs and boost the economy by paying living wages to local workers. Pass an ordinance that is tied to the climate plan so that we must hold our city accountable to meet numerical targets and benchmarks in GHG emission reduction.	5/24/2016 7:51 PM
52	Educating. Every step that we take to teach people to be aware the more voices the issue have. It's a feed back loop that leads to more change.	5/24/2016 7:21 PM
53	Rehydrate the watershed, drought proof home landscapes, smaller homes with passive solar for heating and cooling.	5/24/2016 7:18 PM
54	Generate a lot more local sources if renewable power and dig another reservoir for water catchment. If we don't do this it will be foolish. Snowpack will be Jill, so we need to catch more rain. She said it tonight and the map showed the decrease.	5/24/2016 7:03 PM
55	Improve streets for biking.	5/24/2016 7:02 PM
56	More communication between fields	5/24/2016 7:00 PM
57	Massive solar farm.	5/24/2016 6:59 PM
58	MAke Ashland more easier to travel by foot,, etc.	5/24/2016 6:57 PM
59	Large companies that give us electricity and our consumer delivered products and RVTD need to make all trucks and buses electric that would be such a large contribution and then we can work on make electric cars affordable for the people too. We also need EVERY living complex apartments homes etc to have recycling and compost and better accessibility for disabled people to do it.	5/24/2016 6:37 PM
60	Emphasis and support bike transportation.	5/24/2016 6:30 PM
61	An accountable action plan based on the 5 standards developed by Rogue a Climate Ashland & Youth Climate Action	5/24/2016 6:28 PM
62	Codifying the goals in an ordinance. Developing local energy saving and energy generation plans.	5/24/2016 6:17 PM
63	Solar farm	5/24/2016 6:06 PM
64	Incentives for reduced car use and rooftop solar	5/24/2016 6:02 PM
65	Looking at science based goals and working our way to get there	5/24/2016 6:01 PM
66	Renewable energy and more resources for the groups who will be most impacted by climate change.	5/24/2016 6:01 PM
67	Renewable energy and more resources for the groups who will be most impacted by climate change.	5/24/2016 5:58 PM
68	Helping the individual homeowner help conserve and make changes	5/24/2016 5:53 PM
69	Elec cars and reduce natural gas use for heating and water heating	5/24/2016 5:48 PM
70	I don't know	5/24/2016 3:27 PM
71	Continue and enhance conservation and energy efficiency efforts. Reduce fossil fuel based transportation traffic inside and coming to the City.	5/24/2016 3:25 PM
72	Multiple methods of transportation to make us less reliant on gas burning for getting around.	5/24/2016 1:45 PM
73	Solar panels on buildings - gov. buildings, schools etc. Incentives for businesses to use 'green energy' Building up biking infrastructure and public transit Incentives to plant native plants/trees, water-smart gardens	5/24/2016 10:54 AM

74	I honestly believe the CO2 focus is misplaced, and a form of mass hysteria. I am not "denying" science, I have studied it a great deal. There are things we should do, because they help on many levels to cope with climate change. They are the right thing to do. Focusing only on CO2 is a distraction. Do something about water resources, forest resilience, pollution reduction, corruption in government. Do not allow the process to be driven by the most radical activists with the loudest voices.	5/24/2016 9:24 AM
75	Get ride of all the motors that burn fuel starting with weed whacker and blowers.	5/24/2016 9:23 AM
76	Stop spending taxpayer money on silly surveys like this one.	5/23/2016 10:29 PM
77	start a program to sequester carbon where lawns were put layers of permaculture edible forests which grow food and hold moisture as well.	5/23/2016 9:52 PM
78	Even more solar panels on public, private, and commercial buildings. Tax breaks and rebates will go a long way to promote this. All new buildings MUST have solar panels.	5/23/2016 9:47 PM
79	regulate fossil fuel use. expand solar production. create real mass transit. limit private car use in town...airports do it even with tourist hordes.	5/23/2016 9:00 PM
80	Reduce traffic of gas powered vehicles, forbid wood stoves	5/23/2016 8:24 PM
81	water usage regs	5/23/2016 7:46 PM
82	there are no climate impacts that we can control	5/23/2016 7:32 PM

Q7 Please describe challenges or barriers, if any, to taking action on climate in Ashland.

Answered: 75 Skipped: 21

#	Responses	Date
1	Citizens willingness to participate	6/10/2016 4:12 PM
2	peoples resistant to change and the cost to do so	6/10/2016 1:07 PM
3	1. People (me included) are reluctant to give up the old convenient ways to do things. 2. Most action requires money, or will impact businesses, corporations, etc. People do not like to spend money on this issue, since the payoff seems out in the future. We are generally shortsighted.	6/9/2016 8:58 PM
4	the American "car culture" has left us thinking each person needs their own car, we must get where we're going quickly, walking is a waste of time, etc. This is a huge barrier.	6/8/2016 11:19 AM
5	money or lack thereof, differences of opinion	6/8/2016 6:25 AM
6	The powerful 'old guard' segment of the population. All actions that seem to put an ever growing tourist base above all else.	6/7/2016 6:13 PM
7	well there isn't much I can personally do as I am financially limited due to my work as a social servant	6/6/2016 1:25 PM
8	Concerns over higher density housing, using less land per dwelling than traditional patterns, will be perceived as consuming limited land area and losing yards and home gardening opportunities. However it should be noted that doing so preserves more efficient farming opportunities within rural county areas.	6/3/2016 4:55 PM
9	Lack of sense of emergency in City government	6/3/2016 3:04 PM
10	The rest of the Rogue Valley, and the world in general.	6/2/2016 8:25 PM
11	Entitlement….	6/2/2016 11:10 AM
12	Ashland is small - we should work with other cities to form local and regional alliances. More cooperation and bridge building.	6/2/2016 10:17 AM
13	The city's conflict of interest in selling electricity and water. Citizens who don't care. The need to create NEW, creative paradigms for running a city and supporting the needs of the community. GREED makes progress difficult and the "not in my backyard" mentality.	6/2/2016 10:08 AM
14	Communication to residents; getting people to take the time to follow up with each other and follow through on personal commitments on behalf of the community	6/2/2016 9:44 AM
15	Citizen will and apathy	6/2/2016 9:32 AM
16	People don't like change so education is essential to help bring change in the use of vehicles and increasing the numbers of walkers/bikers.	6/2/2016 8:54 AM
17	outside business interests, fossil fuel companies, GMO positions, Republican laissez-faire attitudes	6/2/2016 8:42 AM
18	FUNDING. Obstructionist legislation from the top. Climate change deniers. (I don't think Ashland has many of these, but...)	6/2/2016 8:01 AM
19	The age of the population , fact it is a tourist town and unreasonable expectations we will become a biking town . Disagree with downtown circulation plan do not soport the road diet but think public transportTion and electric cars are important. Have seen very few bikes use the bike lane , negative impact to neigh goods and ability to get to hospital and turn left on Wimer	6/2/2016 4:28 AM
20	Housing prices (not sufficient affordable housing). Many of the workers in town live elsewhere. Drive to town.	6/1/2016 11:13 PM
21	Unwillingness to change ...?	6/1/2016 7:45 PM
22	1. Public attitudes - people are more willing to point the finger at a "boogie man" than to recognize their own part in a problem. 2. Money - adaptation is not free.	6/1/2016 7:07 PM
23	Cost.	6/1/2016 6:13 PM

24	Old habits. Greed. Confusion ... "the Fog Bank." The relatively slow pace of climate change, that makes the changes harder for us primates to see and feel concerned about. The many distractions that are so important to us. The reluctance many people feel, to grind their guts about something that feels uncontrollable. The well-founded conviction that "the people in charge," in the Federal government are abysmally unfit.	6/1/2016 6:08 PM
25	- the will to break old habits	6/1/2016 4:55 PM
26	larger scale action requires state/federal action more so than (small town) local. Doesn't mean don't do anything, but big changes need to happen at higher levels	6/1/2016 3:17 PM
27	First, writing surveys designed to make folks answer questions the way you want the survey to turn out only fools your useful idiots. Next look at all sides of the issue, not just the side you like. How can you make an informed decision if you don't look at all the facets?	6/1/2016 3:07 PM
28	Citizens' desire for autonomy; lack of willingness to share land and resources. In America, we consider it our right to do whatever we choose, regardless of the consequences. Even in rural China every house has a solar hot water heater on the roof. Solar is subsidized there; large buildings have massive, living, green roofs. In France, giant furnaces with scrubbers on them incinerate garbage; there is mass public transport all over Europe.	6/1/2016 2:22 PM
29	Intermediary entities profiting from certifications and restrictions.	6/1/2016 2:01 PM
30	People won't change their habits unless something is easy to change without much disruption (ie. if they can take the bus with little planning or waiting, if they can find a lovely recycled glass countertop they love as much as Italian marble, etc.)	6/1/2016 1:47 PM
31	Apathy	6/1/2016 1:28 PM
32	Apathy. The reality that so far we are not experiencing anything very painful or even inconvenient related to climate change.	6/1/2016 1:27 PM
33	Chamber of Commerce, too much control of the narrative, and continually obstructive to real change. City staff incompetent.	6/1/2016 1:13 PM
34	No one wants to address Animal Agriculture... it is the ultimate taboo - and the ultimate way each of us can reduce our footprint in a very big way.	6/1/2016 12:51 PM
35	Same as anywhere. Getting full participation and a full buy-in by the citizens and businesses.	6/1/2016 12:49 PM
36	financial constraints, time needed for implementation	6/1/2016 12:38 PM
37	Apathy, lack of understanding, low priority over other things.	6/1/2016 10:53 AM
38	Lack of incentives to make change. Not enough "peer" pressure to change.	6/1/2016 10:48 AM
39	A general commitment to going through processes (and sometimes creating plans that are never adopted) in lieu of making meaningful changes that result in outcomes.	5/31/2016 7:09 PM
40	Businesses might feel negatively impacted. Cost to install solar panels and purchase electric vehicles might be prohibitive for many people. We need to have greater incentives. Partner with dealerships.	5/29/2016 7:08 AM
41	State laws on growth. Overcoming resistance to change.	5/28/2016 10:39 AM
42	Chamber of Commerce, Board of Realtors, many tourist industry businesses are appearing like climate deniers. It threatens their livelihood to the detriment of Ashland people.	5/27/2016 12:47 PM
43	Convincing people it is more costly to take no action, that your actions matter even if other states outside Oregon are not convinced at this time.	5/26/2016 11:22 AM
44	Taxes	5/26/2016 9:48 AM
45	Household goods and food is a v.high portion of GHG inventory, but is very difficult to understand, measure, and affect. The recent paper bag law shows how difficult it is to REQUIRE people to change their habits.	5/25/2016 10:40 PM
46	People's addiction to cars/trucks. Downtown merchants' addiction to parking. General over-consumption. Everyone has an axe to grind, some loony. In general, city government talks too much and has trouble reaching decisions/conclusions; action needed!!	5/25/2016 3:07 PM
47	Does the city encourage homeowner self sufficiency? More use of Solar and wind would would help the whole west coast elec supply. I didn't know you were working on this plan. Let more people know!!	5/25/2016 2:57 AM
48	city council will not make big changes especially in electric rates and solar installations.	5/24/2016 8:29 PM
49	Any measures we take to reduce GHG emissions must be socially equitable. We must not displace low income people, students, elderly or disabled people because of higher costs for energy or other additional burdens.	5/24/2016 7:51 PM

50	It's so huge and the changes so big, and most people have little idea about how much we could be affected. That makes it hard to deal with and easier to stay in denial....it's overwhelming in other words. Abs so little being done nationally.	5/24/2016 7:03 PM
51	The challenge would be agreeing on what is most important to focus on first. It has the potential to stall an action that is needed now.	5/24/2016 7:02 PM
52	Change is slow and everyone has their own agenda. Need a strong game plan and sell it to the community.	5/24/2016 6:59 PM
53	People's lack of awareness and concern	5/24/2016 6:57 PM
54	Challenges definitely involve money and the quickness in which these changes can be made like the transportation stuff and forcing a lot of people to volunteer for these committees which makes it harder for people to join in when they need to be making money.	5/24/2016 6:37 PM
55	Risk aversion.	5/24/2016 6:30 PM
56	The will to do it and and a comprehensive education to build community support. Inclusion of mitigation to help community members negatively impacted by the action plan.	5/24/2016 6:28 PM
57	Financial challenges, not allocating resources to getting people connected to existing programs. To really move this forward we need a lot of forward thinking and we need to incorporate our goals into every aspect of our communities planning and operation. Codifying the plan in ordinance will be a big step forward in ensuring that our goals are implemented.	5/24/2016 6:17 PM
58	Money and political will	5/24/2016 6:06 PM
59	Difficult to make Costa-effective bus system	5/24/2016 6:02 PM
60	Making sure underserved groups aren't penalized	5/24/2016 6:01 PM
61	Money and public buy in.	5/24/2016 6:01 PM
62	Money and public buy in.	5/24/2016 5:58 PM
63	More public transportation, tax breaks for gray water, rain catch, etc.	5/24/2016 5:53 PM
64	Be careful about telling people what they HAVE to do	5/24/2016 3:27 PM
65	Misdirection by special interests (ie. special interest energy advocates when continued fossil fuel use (local plus vistors) should be our biggest concern.	5/24/2016 3:25 PM
66	Many houses - mine included - still need to do a better job of becoming firewise. As soon as I can move to Ashland full time that is at the top of my list. Getting out of the habit of hopping in the car for every little trip.	5/24/2016 1:45 PM
67	Getting other people on board - getting people to reduce their consumption levels, travel without fossil fuels, support green energy	5/24/2016 10:54 AM
68	Consensus, or lack thereof.	5/24/2016 9:24 AM
69	People not taking responsibility to protect our world and wildlife.	5/24/2016 9:23 AM
70	The very concept of "taking action on climate" is ludicrous.	5/23/2016 10:29 PM
71	Tourism-the economic impact of taking CC seriously could affect tourism. I think we could draw even more folks here and teach them to respect the natural environment that supports them, or doesn't if they keep treating as a endless resource. Folks that don't want change, and seem to feel they are entitles to live HOWEVER they want...even if it uses someone else share of water because they can pay more for it. Limit the use of water, fines for those using to much. They think it is not going to affect them in their lifetime so so what! Everyone has low flow shower heads. Everyone participates. Show documentaries through the city to help educate folks. Talk about their GRANDChildren!	5/23/2016 9:52 PM
72	Finding the funding for tax breaks and solar rebates might be difficult.	5/23/2016 9:47 PM
73	short term greed.vanity.ignorance ,rule by those satisfied with status qou..as they see it.	5/23/2016 9:00 PM
74	Money, ignorance	5/23/2016 8:24 PM
75	global warming, climate change, etc. are a hoax. move on to something more important and controllable. Maybe the budget?	5/23/2016 7:32 PM

Q8 Is there anything else you would like us to consider in development of the Ashland Climate and Energy Action Plan?

Answered: 64 Skipped: 32

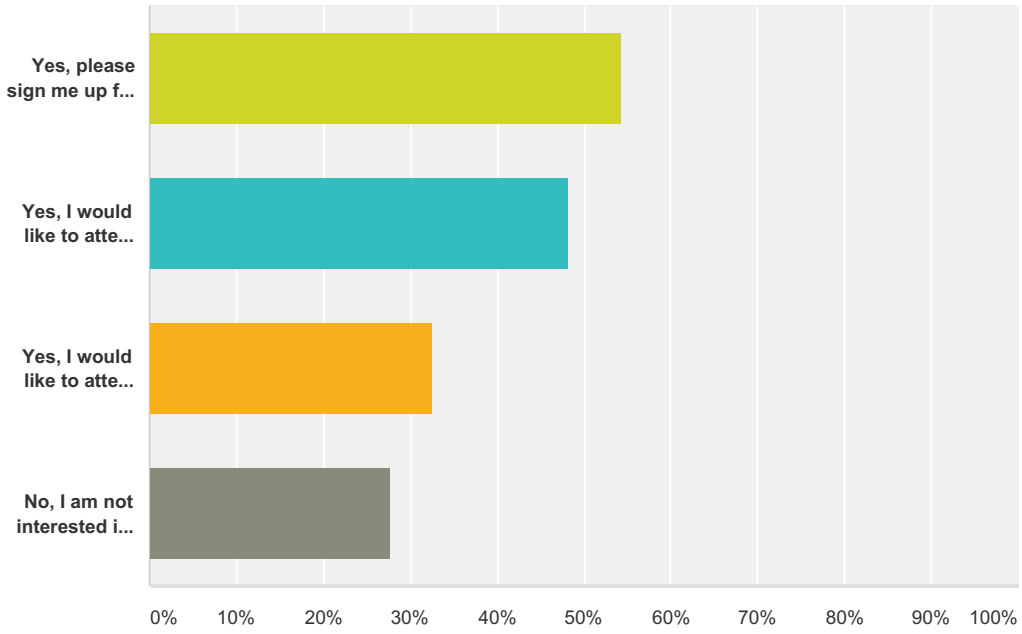
#	Responses	Date
1	inexpensive and easy "grey water" systems	6/8/2016 11:19 AM
2	Very seriously invest in bicycle-friendly infrastructure rather than pursuing the non sustainable 'car is king' mindset.	6/7/2016 6:13 PM
3	we should have bike sites around town to discourage driving	6/6/2016 1:25 PM
4	Promotion of decentralized electricity production (off-grid), incentivising zero net energy homes and small energy systems to enable electric vehicles to be more readily adopted and thus reduce reliance on fossil fuels.	6/3/2016 4:55 PM
5	Stop dumping raw sewage in the creek.	6/2/2016 8:25 PM
6	More a question to consider. If our task is to save humanity and we don't truly consider (no matter how painful) the entire family of life, aren't we just continuing the painful disconnected perspective that keeps us from responding from a fuller intelligence?	6/2/2016 11:10 AM
7	Diverting food waste from the landfill and making local soil to continue the cycle of life.	6/2/2016 10:08 AM
8	Yes. I would like the city to consider working with "citizen juries" that reflect the diversity of our city, as well as the committees appointed by the mayor.	6/2/2016 9:44 AM
9	I would like the city council and city staff to think big and embrace a long term future plan.	6/2/2016 8:54 AM
10	Diagram individual use and impact---how much air, water, food, space does one individual use and need, multiply that by city population. Consider developing roof gardens and vertical wall plantings. Use the expertise of the SOCAN (Southern Oregon Climate Action Now) group	6/2/2016 8:42 AM
11	Effects on the homeless population...providing for cooling and warming centers.	6/2/2016 8:01 AM
12	When creating a plan understanding impact to downtown, which effects our economic survival. Concern about the amount of illegal caming in the watershed, © lifted and propane tanks found and fire danger	6/2/2016 4:28 AM
13	Incentives walking, biking, use of public transport to school and work,	6/1/2016 11:13 PM
14	...thinking outside the box!	6/1/2016 7:45 PM
15	Striking a balance between reaching for lofty ideals and focusing on pragmatic solutions is a challenge. Both are needed. Good luck!	6/1/2016 7:07 PM
16	Be practical and realistic.	6/1/2016 6:13 PM
17	As we do the Climate assessment, planning, and implementation for our own city, I'm wondering if there are ways that we can help other cities, and our state, and other states, and the Federal government, and the general public, choose to give more appropriate kinds of attention, energy, resources, and action to Climate Change.	6/1/2016 6:08 PM
18	- workshops to help educate residence - bike lanes	6/1/2016 4:55 PM
19	be realistic	6/1/2016 3:17 PM
20	The climate issue is a con. Our, the Earths, climate has been fluctuating for as long as we've had a climate. Sometimes its hot and sometimes its not	6/1/2016 3:07 PM
21	A local, free electric shuttle tram that moves people locally around town.	6/1/2016 2:22 PM
22	Focus on a few big bang for the buck projects (bus, energy pricing, building codes) and leave all the little stuff for other groups to push.	6/1/2016 1:47 PM
23	Be realistic, especially about the benefits of educating the public.	6/1/2016 1:28 PM
24	It has to become everybody's problem, not just our leaders or public service agencies.	6/1/2016 1:27 PM
25	No.	6/1/2016 1:13 PM

26	I'd like to get the full picture of what it would take to install renewables at scale here. also what the real costs would be... the actual benefits when all resources and costs are factored in.	6/1/2016 12:51 PM
27	Common sense and gradual implementation. Americans tend to over-react and over legislate.	6/1/2016 12:49 PM
28	1) I have spoken with many people who simply could not make it to the 1st public forum. They are very interested in having an opportunity to review material and give their input, just as those who were at the event had an opportunity to do so. After each open house we should post a replica of what went on at each open house for a period of time after the public event (including video and ppts of speakers). A website should contain all of the material and a link to a survey for each of the questions brought before the public during the open house and allow others who were unable to attend the meeting to give their input as well. 2) Speakers at the public meetings should have a more dynamic interaction with the audience. Some speakers at the first public meeting presented data in a very dry and possibly overwhelming way. We need lively, engaging speakers when presenting material and data.	6/1/2016 10:53 AM
29	1) I have spoken with many people who simply could not make it to the 1st public forum. They are very interested in having an opportunity to review material and give their input, just as those who were at the event had an opportunity to do so. After each open house we should post a replica of what went on at each open house for a period of time after the public event (including video and ppts of speakers). A website should contain all of the material and a link to a survey for each of the questions brought before the public during the open house and allow others who were unable to attend the meeting to give their input as well. 2) Speakers at the public meetings should have a more dynamic interaction with the audience. Some speakers at the first public meeting presented data in a very dry and possibly overwhelming way. We need lively, engaging speakers when presenting material and data.	6/1/2016 10:48 AM
30	Making a plan is only a first (tiny) step... Then you need to provide funding to support implementation including staffing, public education, compliance, etc.	5/31/2016 7:09 PM
31	Thank you for all the great work you are doing right now.	5/29/2016 7:08 AM
32	SOAR - Save Our Agricultural Resources! Limit importing food.	5/28/2016 10:39 AM
33	Use shorter term targets. 50 years is coming from denial. We are in crisis now. Though most do not know it yet. Be a committee that recommends action and ordinance, not just study, study, study.	5/27/2016 12:47 PM
34	Important to breakout from the total GHG reduction goals in what the city can commit to vs what Ashland citizens need to commit to. Decide if it makes any sense to use carbon offsets.	5/26/2016 11:22 AM
35	Solar Roads	5/26/2016 9:48 AM
36	Mandatory energy assessment at time of sale for residential properties, and for leasing/selling commercial properties. Second step would be a list of mandatory upgrades. All supported by financing (PACE?). Would also like to see a concerted effort to reach kids in schools and start them early in understanding climate issues - I saw a lot of grey hair at the recent open house, need to empower the next generation. Would also like to see social science best practice applied for behavior change programs/initiatives. If you want people to act you can't just 'inform/educate' them and expect change to just happen, it's more complicated than that!	5/25/2016 10:40 PM
37	Hope talk, meetings, consultants, power point presentations, etc. etc. etc. results in ACTION. Not everyone can like every part of the plan.	5/25/2016 3:07 PM
38	Manage the forests, encourage trees and landscape with vegetation. Encourage Solar, LEDS, etc.	5/25/2016 7:10 AM
39	Make it easier for us to do wanted things instead of harder/more expensive to do unwanted things.	5/25/2016 2:57 AM
40	Equity is crucial for our plan so that low income folks are not overly impacted	5/24/2016 8:29 PM
41	All of our climate plan's targets and benchmarks must be made on the basis of the most up-to-date accepted science.	5/24/2016 7:51 PM
42	agriculture agriculture agriculture. If we keep letting all the land go to wine and cannabis, we won't have enough locally grown food!	5/24/2016 7:03 PM
43	Consider having a community parade and involving the local schools.	5/24/2016 7:02 PM
44	Promote more human powered locomotion.	5/24/2016 6:59 PM
45	Require recycling	5/24/2016 6:57 PM
46	It's great and all we have these public meetings with info but it would be nice if some people could start like door to door info and incentives for people to start doing things at home to make differences. Or things that people can do who are willing to help these committees get things moving.	5/24/2016 6:37 PM
47	Recreation and leading the way for holistic "joyful" living. Public spaces for community gatherings and celebration.	5/24/2016 6:30 PM
48	It requires a culture change & creative solutions.	5/24/2016 6:28 PM

49	We need to be sure that our goals are based in science and that our plan is equitable to all Ashland residents. It is important that the solutions our community chooses to move forward do not disproportionately impact low income communities and that there are targeted efforts to get input into the plan from sectors of our community that could be more impacted.	5/24/2016 6:17 PM
50	Action items	5/24/2016 6:06 PM
51	An ordinance	5/24/2016 6:01 PM
52	Consider adopting fee and divided legislation	5/24/2016 6:01 PM
53	Consider adopting fee and divided legislation	5/24/2016 5:58 PM
54	Community lunches	5/24/2016 5:53 PM
55	small implementations	5/24/2016 3:27 PM
56	Who will be paying and what are we truly willing to sacrifice (visitor traffic)	5/24/2016 3:25 PM
57	I like that we are talking about this and have momentum.	5/24/2016 1:45 PM
58	My concern is that extremist activists, truly believing the are saving the world, will drive action that should not be taken. The Plan needs to represent ALL of the citizens.	5/24/2016 9:24 AM
59	I would like you to consider calling a halt to this wealth-transfer charade.	5/23/2016 10:29 PM
60	That we can be model for other cities. What actions have other cities taken. Present them. What can work in Ashland the best.	5/23/2016 9:52 PM
61	Nope	5/23/2016 9:47 PM
62	world class demonstration of solar powered city. world class demonstration of city support organic food production	5/23/2016 9:00 PM
63	Support plastic recycle	5/23/2016 8:24 PM
64	spend no money on it, waste no time on it, move on to something more important	5/23/2016 7:32 PM

Q9 Would you like to be involved in the planning process? (Choose all that apply.)

Answered: 83 Skipped: 13



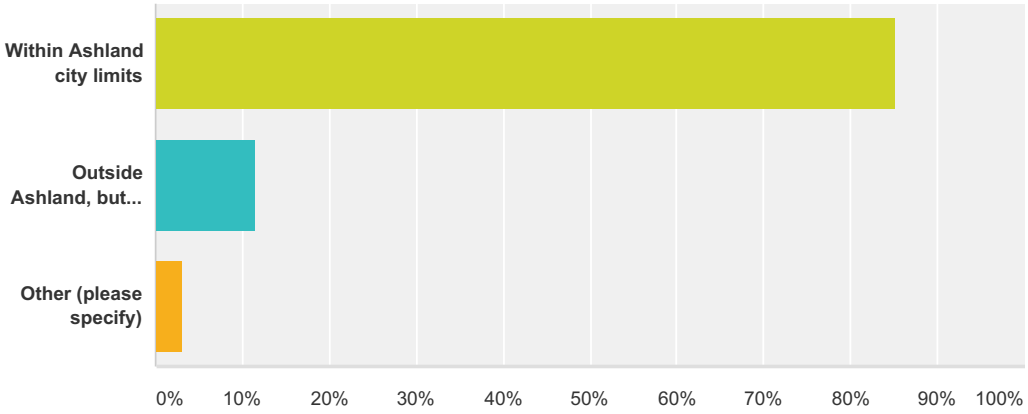
Answer Choices	Responses	
Yes, please sign me up for email updates (please enter email address below)	**54.22%**	45
Yes, I would like to attend an open house	**48.19%**	40
Yes, I would like to attend meetings of the Mayor-appointed committee	**32.53%**	27
No, I am not interested in further involvement.	**27.71%**	23
Total Respondents: 83		

#	If you are interested in email updates, please enter your email address:	Date
1	darrell@daboldtconstruction.com	6/10/2016 1:07 PM
2	MLMATLPC@hotmail.com	6/9/2016 8:58 PM
3	Friends@anastash.com	6/9/2016 8:37 PM
4	egrush@gmail.com	6/8/2016 11:19 AM
5	openheartdancer@gmail.com	6/7/2016 6:13 PM
6	thatsuecarney@gmail.com	6/2/2016 8:25 PM
7	chrishje@mind.net	6/2/2016 2:57 PM
8	Manju.lyn.bazzell@gmail.com	6/2/2016 9:44 AM
9	karensue@jeffnet.org	6/2/2016 8:54 AM
10	pythpress@sprynet.com	6/2/2016 8:42 AM
11	gardengriotashland@gmail.com	6/2/2016 8:01 AM
12	mkmichelsen@jeffnet.org	6/1/2016 11:13 PM

13	downeyshan@gmail.com	6/1/2016 7:07 PM
14	onlineperson99@gmail.com	6/1/2016 6:08 PM
15	adam@ashland.or.us	6/1/2016 3:17 PM
16	parkershames@gmail.com	6/1/2016 2:22 PM
17	jack@jackwiens.com	6/1/2016 1:27 PM
18	safecircle@gmail.com	6/1/2016 12:51 PM
19	darrencam@gmail.com	6/1/2016 12:38 PM
20	lndncrouch@gmail.com	5/29/2016 7:08 AM
21	tahoe1780@msn.com	5/28/2016 10:39 AM
22	Philmiller@mind.net	5/27/2016 12:47 PM
23	rmmallettes@gmail.com	5/26/2016 11:22 AM
24	eliotcrowe@hotmail.com (on the list already I think)	5/25/2016 10:40 PM
25	juliamsommer@gmail.com	5/25/2016 3:07 PM
26	deb@shimmeringwind.com	5/25/2016 2:57 AM
27	caren9752@yahoo.com	5/24/2016 7:51 PM
28	calliemcrob@gmail.com	5/24/2016 7:02 PM
29	Marinaberny79@gmail.com	5/24/2016 6:37 PM
30	Free2bjammin@yahoo.com	5/24/2016 6:30 PM
31	Rlindleybb@hotmail.com	5/24/2016 6:28 PM
32	Ptrail@ashlandnet.net	5/24/2016 6:02 PM
33	Nortonc1@sou.edu	5/24/2016 6:01 PM
34	Samhbecker@gmail.com	5/24/2016 6:01 PM
35	Samhbecker@gmail.com	5/24/2016 5:58 PM
36	Steph.abrams@icloud.com	5/24/2016 5:53 PM
37	Mcecil mind.net	5/24/2016 5:50 PM
38	bendavidscott@gmail.com	5/24/2016 5:48 PM
39	crawbush@gmail.com	5/24/2016 1:45 PM
40	knoonan@mauilight.com	5/24/2016 9:24 AM
41	mays2458@aol	5/24/2016 9:23 AM
42	kfotheringhampotts47@gmail.com	5/23/2016 9:52 PM
43	shrgrp@mind.net	5/23/2016 9:00 PM
44	Snug97520@gmail.com	5/23/2016 8:24 PM

Q10 Where do you live?

Answered: 95 Skipped: 1

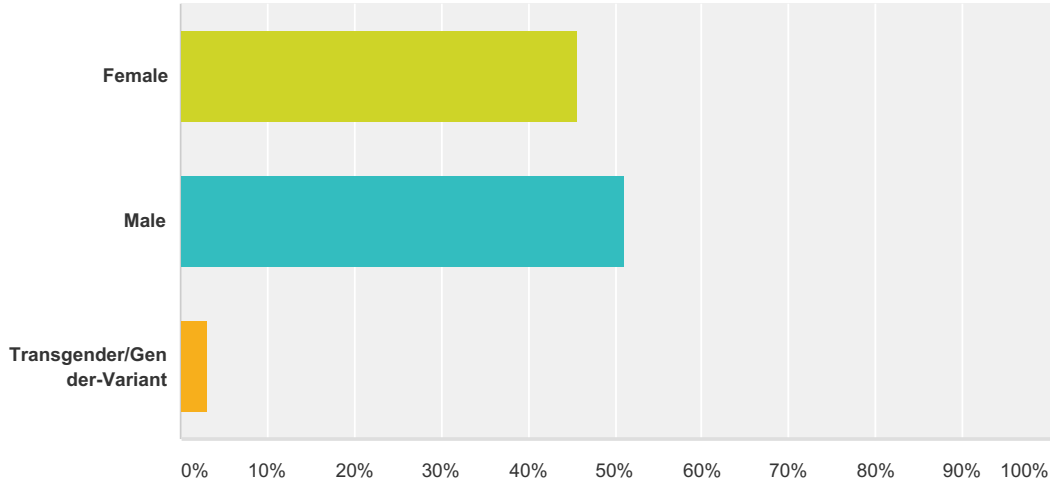


Answer Choices	Responses	
Within Ashland city limits	**85.26%**	81
Outside Ashland, but within Jackson County	**11.58%**	11
Other (please specify)	**3.16%**	3
Total		**95**

#	Other (please specify)	Date
1	Moving from short-term rental to short-term rental since last summer wildfire. May have to leave after 35 years here.	5/27/2016 12:50 PM
2	Split time between Dallas TX and Ashland. Will be full time in 18 months.	5/24/2016 1:45 PM
3	I am 8 feet outside Ashland	5/23/2016 9:01 PM

Q11 What is your gender?

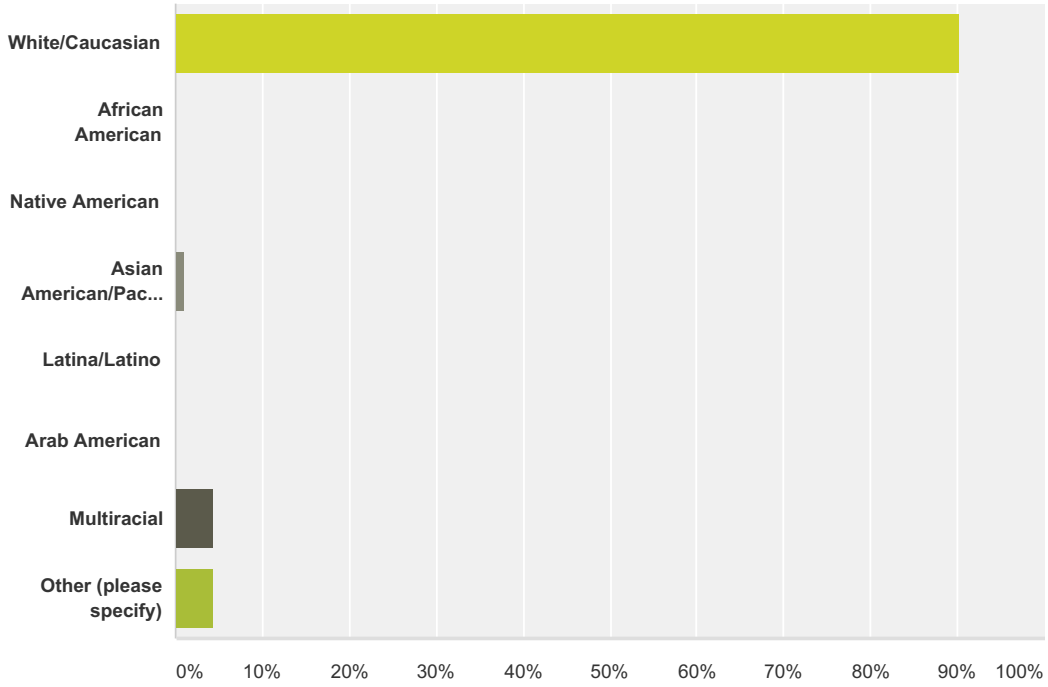
Answered: 94 Skipped: 2



Answer Choices	Responses	
Female	**45.74%**	43
Male	**51.06%**	48
Transgender/Gender-Variant	**3.19%**	3
Total		**94**

Q12 Which of the following best represents your racial or ethnic heritage?

Answered: 92 Skipped: 4

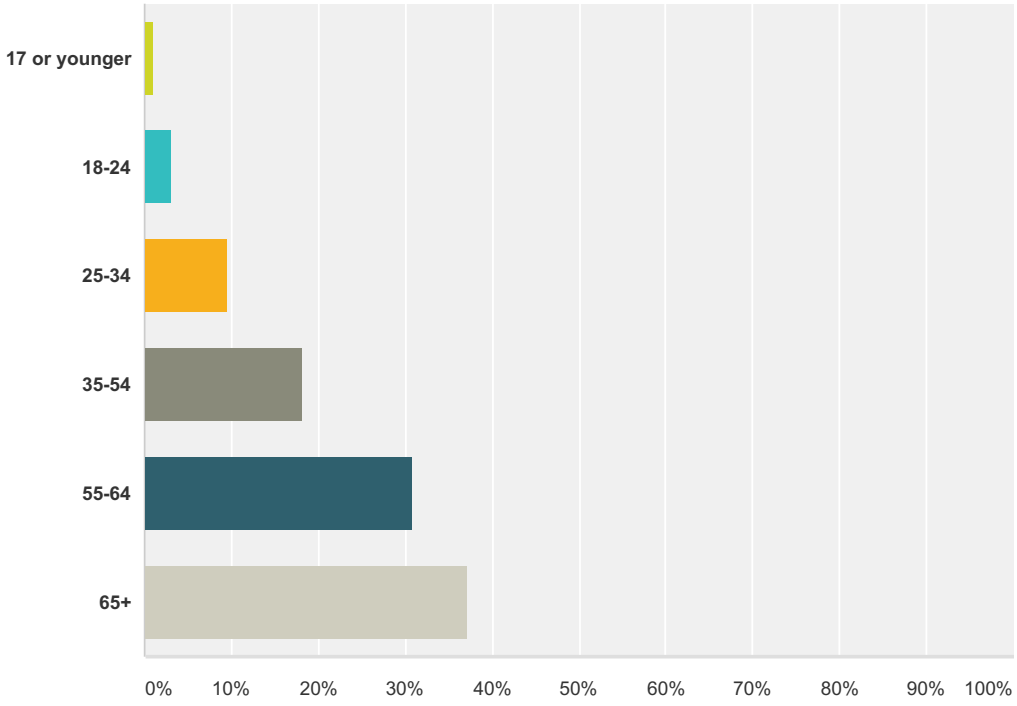


Answer Choices	Responses	
White/Caucasian	**90.22%**	83
African American	**0.00%**	0
Native American	**0.00%**	0
Asian American/Pacific Islander	**1.09%**	1
Latina/Latino	**0.00%**	0
Arab American	**0.00%**	0
Multiracial	**4.35%**	4
Other (please specify)	**4.35%**	4
Total		**92**

#	Other (please specify)	Date
1	what does this have to do with anything?	6/2/2016 2:58 PM
2	does ethnicity matter when we are all in this together?	6/2/2016 8:43 AM
3	Human Being	5/31/2016 7:10 PM
4	X	5/24/2016 6:58 PM

Q13 What is your age?

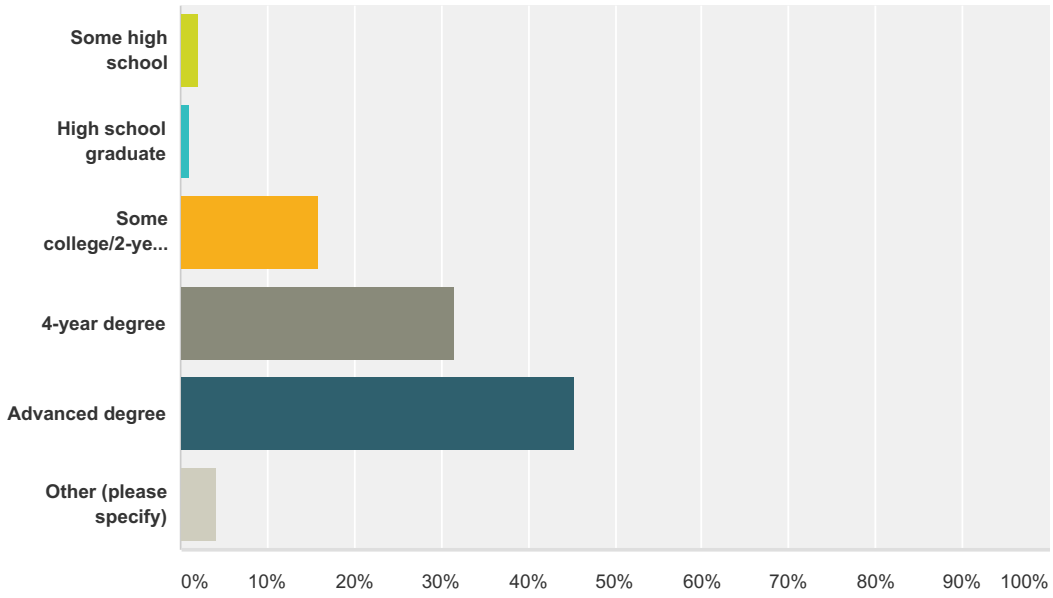
Answered: 94 Skipped: 2



Answer Choices	Responses	
17 or younger	**1.06%**	1
18-24	**3.19%**	3
25-34	**9.57%**	9
35-54	**18.09%**	17
55-64	**30.85%**	29
65+	**37.23%**	35
Total		**94**

Q14 What is the highest level of education you have completed?

Answered: 95 Skipped: 1



Answer Choices	Responses	
Some high school	**2.11%**	2
High school graduate	**1.05%**	1
Some college/2-year degree	**15.79%**	15
4-year degree	**31.58%**	30
Advanced degree	**45.26%**	43
Other (please specify)	**4.21%**	4
Total		**95**

#	Other (please specify)	Date
1	MFA in Art	6/2/2016 8:43 AM
2	Why are these personal questions needed?	6/1/2016 7:46 PM
3	2 yr degree, most of 4 yr engineering, 3 decades of self study	5/24/2016 9:26 AM
4	health practitioner	5/23/2016 9:52 PM

Appendix E. Public Open House Display Boards

The display boards from the public open house held in May 2016 appear on the following pages.

Station

1 Ashland's Carbon Footprint

How big is Ashland's carbon footprint?

As big as burning

38.6 million

gallons of gasoline,
or the equivalent of over

72,000 cars driven

for one year!

On a per-capita basis, Ashland's 2013 footprint was only 65 percent that of Corvallis the same year, and 15 percent of Eugene's 2005 emissions.

Why do we care?

To avoid the most serious climate change impacts, the United Nations Intergovernmental Panel on Climate Change (IPCC) advises that the average global temperature increases must be limited to under 1.5 to 2° C. As of 2015, we have already passed the halfway point—average temperatures have increased 1°C since the industrial revolution. Meeting the 2°C goal will require countries and cities around the world to collectively reduce emissions by more than 50% by 2050.

To understand our role in curbing dangerous greenhouse gas pollution, the City completed its first-ever greenhouse gas inventory. The inventory quantifies greenhouse gas emissions from both City operations and the Ashland community, including residents, businesses, and industries. The inventory included many different sources of greenhouse gas emissions in the city, including building energy use, transportation, solid waste disposal, and the consumption of goods and food by Ashland residents.

What is your role?

The Ashland community has a role to play in mitigating the harmful impacts of climate change. To meet global climate change mitigation goals set forth by the UN Intergovernmental Panel on Climate Change, each Ashland resident will have to reduce their personal carbon footprint by over 12 metric tons or 68% from 2015 levels by 2020. This is equivalent to taking 2.6 passenger vehicles off the road every year per person!

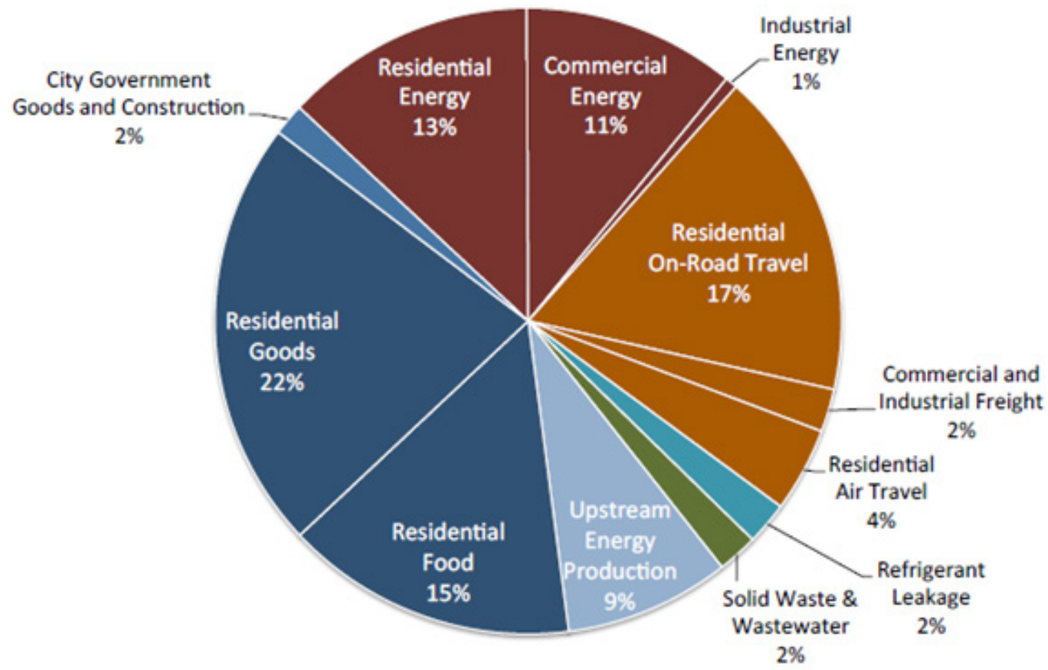
City of Ashland
Climate and Energy Action Plan Open House

Station

1 Ashland's Carbon Footprint

Where do emissions come from?

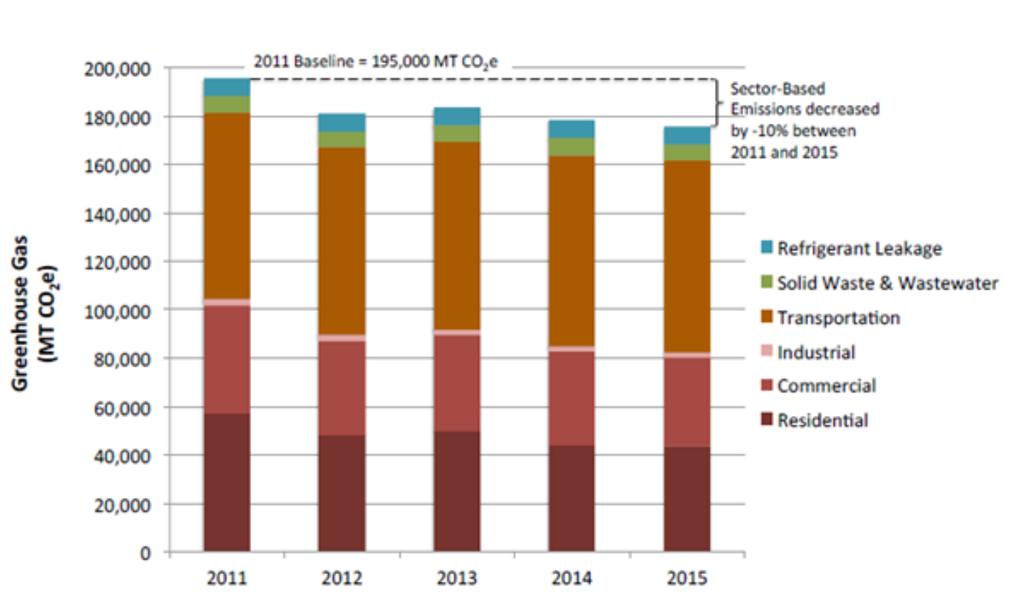
This chart shows how different sources and sectors contribute to Ashland's 2015 carbon footprint.



How have Ashland's emissions changed over time?

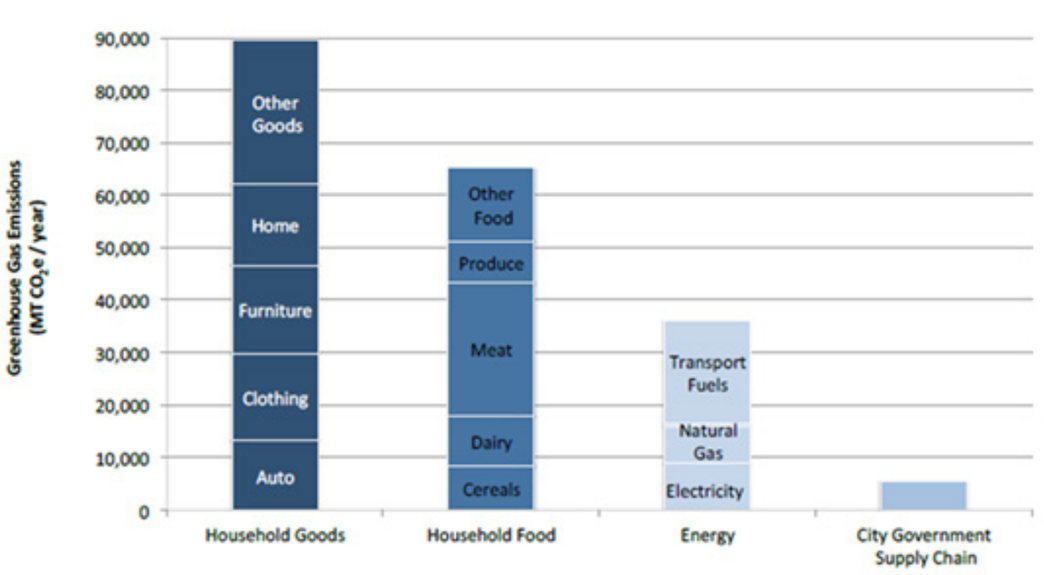
Total emissions in Ashland have decreased by 10% between 2011 and 2015.

This is largely driven by decreases in electricity and natural gas use, as well as increased hydro electricity generation.



How do consumption emissions stack up?

Emissions from household goods are dominated by home construction, furniture, clothing, and vehicle purchases, while the production of meat accounts for a large share of food consumption emissions from Ashland residents.



City of Ashland
Climate and Energy Action Plan Open House

Station

1 Ashland's Carbon Footprint

Did anything **surprise** you about Ashland's greenhouse gas inventory?

Please use the post-its to share your feedback.

City of Ashland
Climate and Energy Action Plan Open House

Station

1 Ashland's Carbon Footprint

Which results from the inventory **align** with your expectations?

Please use post-it notes to share your feedback.

City of Ashland
Climate and Energy Action Plan Open House

Station

1 Ashland's Carbon Footprint

CO_2

How does this information **change your perception** of the city's role and priorities in mitigating climate change?

Please use post-its to describe how your understanding has changed.

City of Ashland
Climate and Energy Action Plan Open House

Station

2

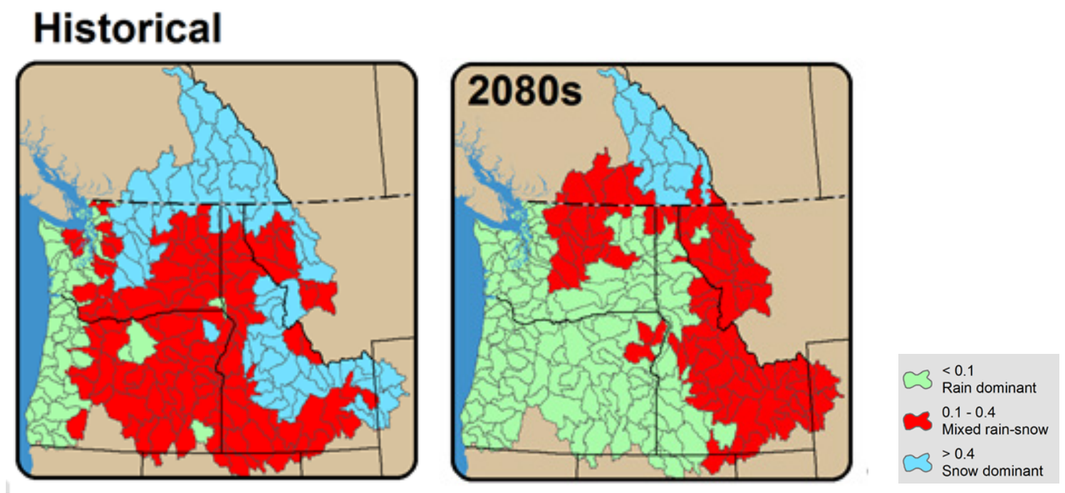
How Climate Change Affects Ashland

What changes could we see in Ashland by the 2080s?

Declining Snowpack and Changing Streamflow

The map on the right shows how watersheds will change as more precipitation falls as rain rather than snow.

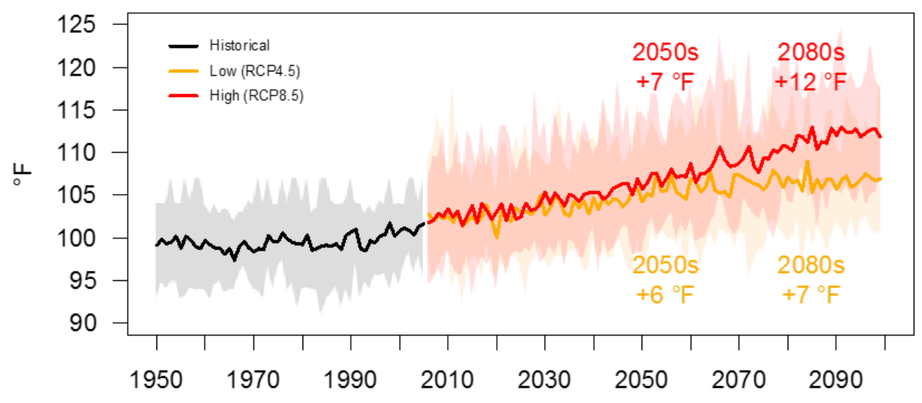
Source: Hamlet et al., 2013; Raymondi et al. 2013



Extreme Heat Risk

The graph on the right shows projected increases in the temperature of the hottest day of the year in Ashland. Models show a +12 degree F increase in the hottest day of the year in Ashland by 2080.

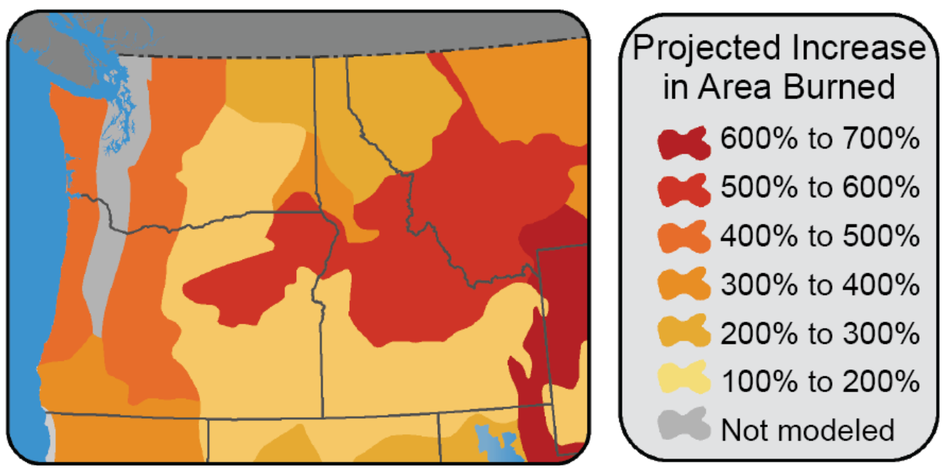
Source: Oregon Climate Change Research Institute



Increased Wildfire Risk

The map on the right shows increase in area burned due to temperature and precipitation changes. Local impacts will vary depending on fuel sensitivity.

Source: Mote et al., 2014



City of Ashland
Climate and Energy Action Plan Open House

Station

2 How Climate Change Affects Ashland

What changes could we see in Ashland by the 2080s?

The below projections summarize regional climate model projections under the low to high emissions scenarios in the 2080s for Ashland.

Temperature Increase and Extreme Heat

+7-12°F
increase in the hottest day of the year

+39-90
more days a year of warm spells

Wildfire Risk

IN WESTERN US:

+30%
increase in probability of large wildfires**

IN WESTERN WA & OR:

-40 year
decrease in average time between fires***

Increased burn acreage

Heavy Rainfall and Drought Risk

+0.8-1.3 in
increase in rainfall during the heaviest rain days*

+4-6 day
increase in the longest dry spells*

More winter precipitation

Changes to Snowpack and Water Availability

IN THE MIDDLE ROGUE SUBBASIN:

-71 to -86%
decline in April 1 snowpack

More preciptation as rain instead of snow

Earlier spring snowmelt

Higher winter streamflow

Lower summer streamflow

*Some models show decreases

**Stavros, Abatzoglou, Larkin, McKenzie, & Steel, 2014
*** Sheehan, Bachelet, & Ferschweiler, 2015

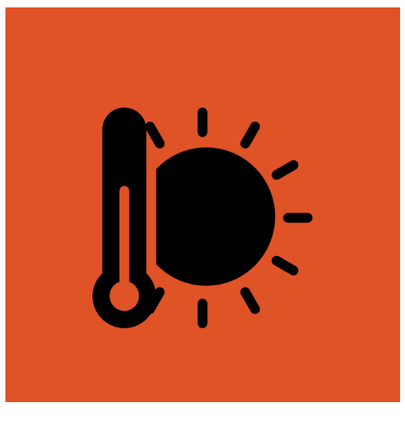
Station

2

How Climate Change Affects Ashland

Which **climate impacts** to the Ashland community **concern** you most?

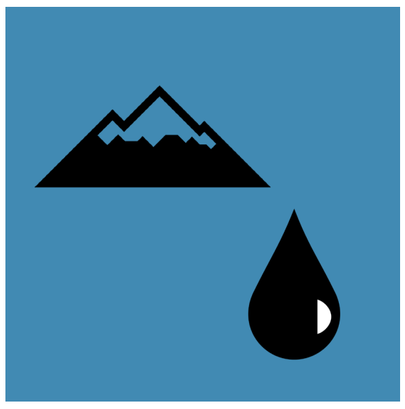
Drop tokens into the jar that best represents your concern.



Temperature Increase and Extreme Heat

Heavy Rainfall and Drought Risk

Wildfire Risk



Changes to Snowpack and Water Availability

City of Ashland
Climate and Energy Action Plan Open House

Station

2 How Climate Change Affects Ashland

How do you think the City and community should **prepare** for climate impacts?

Please use post-its to list how Ashland should prepare for climate impacts.

City of Ashland
Climate and Energy Action Plan Open House

Station

3 How is Ashland doing?

Where would you like Ashland to concentrate its efforts in **reducing greenhouse gas emissions**?

Using a scale of 1 (highest priority) to 5 (lowest priority), tell us where Ashland should focus its resources. Please fill in one circle for each row/category.

	Highest priority 1	2	3	4	Lowest priority 5
BUILDINGS AND ENERGY (Home and energy business use, renewable energy sources)	○	○	○	○	○
TRANSPORTATION AND LAND USE (Vehicle use, public transit, biking/walking, urban density)	○	○	○	○	○
CONSUMPTION AND WASTE (Consumption of goods such as food and clothing, recycling, composting)	○	○	○	○	○
NATURAL SYSTEMS (Urban green space, water management, forests, agriculture)	○	○	○	○	○

City of Ashland
Climate and Energy Action Plan Open House

Station

3 How is Ashland doing?

Where would you like Ashland to concentrate its efforts in **promoting climate resilience**?

Using a scale of 1 (highest priority) to 5 (lowest priority), tell us where Ashland should focus its resources.

	Highest priority 1	2	3	4	Lowest priority 5
BUILDINGS AND ENERGY (Heating and cooling needs, power generation)	○	○	○	○	○
TRANSPORTATION AND LAND USE (Urban heat island, stormwater management)	○	○	○	○	○
CONSUMPTION AND WASTE (Food availability, supply chain)	○	○	○	○	○
NATURAL SYSTEMS (Forest health, water resources, biodiversity)	○	○	○	○	○
HEALTH AND SOCIAL SERVICES (Air quality, heat stress)	○	○	○	○	○

City of Ashland
Climate and Energy Action Plan Open House

Station

3 How is Ashland doing?

What climate pollution reducing policy, program, or activity in Ashland are you **most proud** of?

Write or draw your answer to share with our community!

I am most proud of
our extensive bike trail system.

I am most proud of
our commitment to renewable energy!

City of Ashland
Climate and Energy Action Plan Open House

Station

4 A Shared Vision for Ashland

Complete the sentence.

In 2030, Ashland will be a place where _____.

Write your answer and pose for a photo to share with our community!

In 2030, Ashland will be a place where
we are prepared for reduced snowpack and other water issues.

In 2030, Ashland will be a place where
pedestrians, bicyclists, and transit are prominent throughout the city.

City of Ashland
Climate and Energy Action Plan Open House

Station

5 Taking Action

What do you think Ashland should do to address climate change?

Help us create a word cloud by sending us a word or phrase calling our city to action!

Text **ASHLANDCLIMATE** to **22333** once to join, then text your message.

Respond at **PollEv.com/ashlandclimate**

Or enter right here!

City of Ashland
Climate and Energy Action Plan Open House

We want to hear from you!

The City of Ashland wants to know your priorities and concerns regarding sustainable City and community practices and policies related to climate change in Ashland.

Your input will help shape the vision, goals, and strategies of the Climate and Energy Action Plan.

1 **How do you think the City and community should address climate change?**

2 **What are your priorities and concerns?**

3 **Do you have questions?**

How can you provide input?

RIGHT NOW Fill out a comment card here!

EMAIL adam.hanks@ashland.or.us

ONLINE Learn more, take our survey, or provide a comment at: **www.Ashland.or.us/climateplan**

IN PERSON At our open house series September 25th, December 7th

City of Ashland
Climate and Energy Action Plan Open House

We heard you!

Last year, you may have told us what you think about climate action at the Climate Week event. We heard you, and are building on that strong foundation by incorporating input from that event to inform this process.

A summary of what we heard is below.

2030 Vision

What's your vision for Ashland in 2030?

Barriers

What are barriers to achieving your vision?

Cultural
Apathy
Individualism
Fear
Lack of awareness

Financial
Initial Investment
Energy prices

Political
Vested interests
Bureaucracy
Local system

Technical
Technology
Information
Education

Actions

What actions can you take to achieve your vision?

Install solar panels
Drive electric vehicles
Make home more efficient
Produce less waste
Grow food
Bike and walk
Learn more!

WELCOME!

Planning for the future of Ashland amidst a changing climate

The City of Ashland is developing a Climate and Energy Action Plan to reduce greenhouse gas emissions and prepare our community for a changing climate. This open house is a key way for you to provide input, share priorities, and help shape the City's plan for reducing climate pollution and preparing for climate change impacts.

What are we doing tonight?

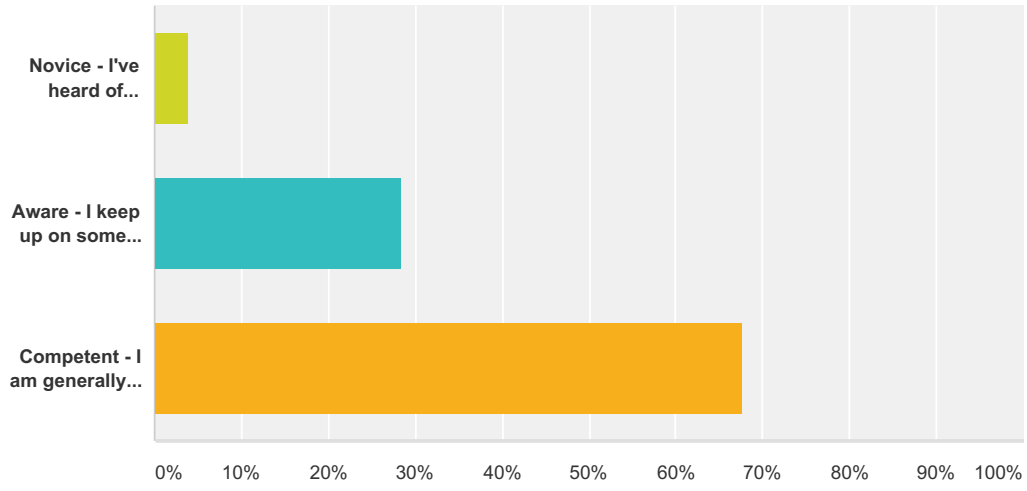
5:30 PM **Open House Begins**
6:00 PM **Introductory Presentation**
6:30 PM **Visit Stations & Share Your Input**
7:30 PM **Open House Adjourns**

What can you do at this event?

- **Learn more** about the city's recent greenhouse gas inventory and how climate change could impact Ashland.
- **Provide your ideas** for taking climate action in Ashland.
- **Tell us which climate impacts concern you most,** and what Ashland should do to prepare.
- **Tell us what Ashland is already doing well,** and what the City and community could do better.
- **Share your vision of a future Ashland** that addresses climate change pollution and impacts.

Q1 How would you best describe your understanding of climate change issues?

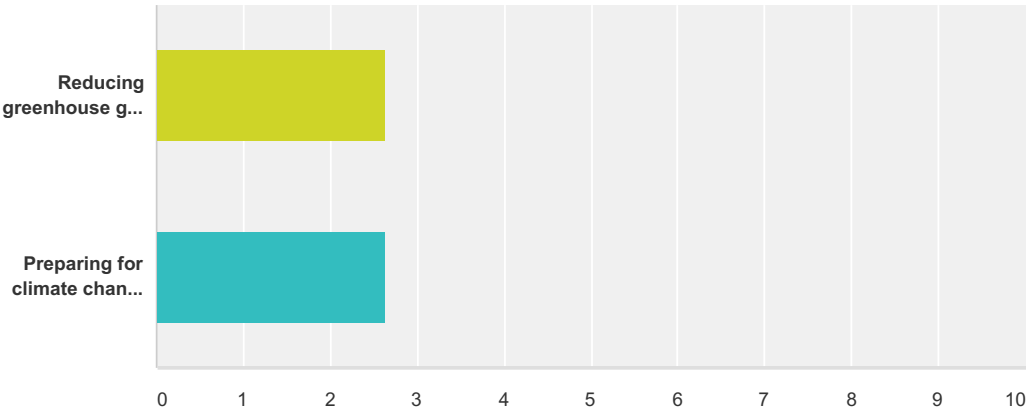
Answered: 102 Skipped: 2



Answer Choices	Responses	
Novice - I've heard of climate change, but don't know much about it	**3.92%**	4
Aware - I keep up on some climate issues, but not all of them or very often	**28.43%**	29
Competent - I am generally informed in climate change issues	**67.65%**	69
Total		**102**

Q2 How concerned are you about the following in Ashland?

Answered: 104 Skipped: 0

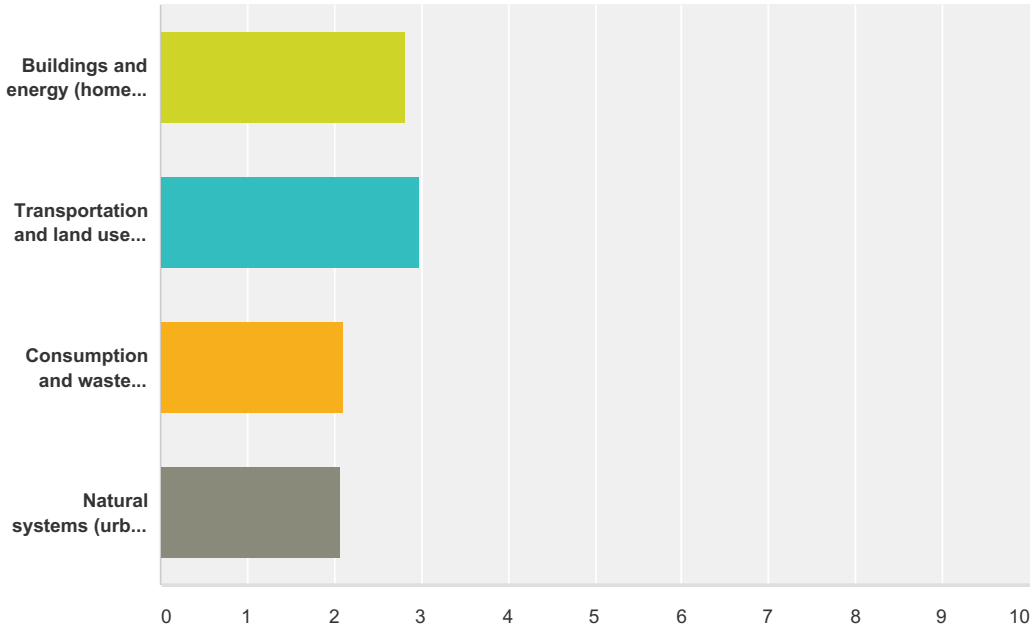


	Not concerned	Somewhat concerned	Very concerned	I'm not sure	Total	Weighted Average
Reducing greenhouse gas emissions	**8.65%** 9	**19.23%** 20	**71.15%** 74	**0.96%** 1	104	2.64

Preparing for climate change impacts	**9.62%** 10	**19.23%** 20	**70.19%** 73	**0.96%** 1	104	2.63

Q3 Which of the following should be highest priority for reducing greenhouse gas emissions in Ashland? Rank the following options from highest (1) to lowest (4) priority.

Answered: 102 Skipped: 2



	1	2	3	4	Total	Score
Buildings and energy (home and business energy use, renewable energy sources)	**33.68%** 32	**29.47%** 28	**22.11%** 21	**14.74%** 14	95	2.82
Transportation and land use (vehicle use, public transit, biking/walking, urban density)	**38.78%** 38	**32.65%** 32	**16.33%** 16	**12.24%** 12	98	2.98
Consumption and waste (consumption of goods such as food and clothing, recycling, composting, landfill maintenance)	**9.28%** 9	**24.74%** 24	**32.99%** 32	**32.99%** 32	97	2.10
Natural systems (urban green space, water management, forests, agriculture)	**18.75%** 18	**11.46%** 11	**28.13%** 27	**41.67%** 40	96	2.07

Q4 Please briefly explain why you selected your highest priority in Question 3 above.

Answered: 95 Skipped: 9

#	Responses	Date
1	Every mile driven generates 0.98 pounds of CO2 emissions. Reducing our dependence upon automobiles is a solution directly within the control of everyone who chooses to make the shift.	9/21/2016 7:46 AM
2	Not enough choices	9/19/2016 11:57 AM

3	The highest consumer of energy and the an easy target to improve energy efficiency and reduce use by using incentives and penalties.	9/17/2016 9:50 PM
4	Transportation/land use contribute the most immediate carbon emissions and noxious pollutants to Ashland's atmosphere. Improved transit options, multimodal designs and proper density planning are cost-effective, feasible ways to reduce emissions in the near and long term.	9/4/2016 7:46 PM
5	Transportation must be corrected. Electrical trolleys in town could be part of the solution. Banning cars in downtown would make the downtown healthier.	8/31/2016 2:10 PM
6	reduce most carbon dioxide	6/22/2016 12:06 PM
7	I chose it because if you could make it easier to get somewhere more people would use it and it would make a huge impact.	6/14/2016 11:10 AM
8	Ashland is such a small town, yet so many people still DRIVE EVERYWHERE, even short trips. We have to wean ourselves off of petroleum!	6/10/2016 4:12 PM
9	internal combustion engines are major source of green house gases	6/10/2016 1:07 PM
10	I believe transportation is a major contributor to greenhouse gas emissions, and I also think it is one of the easier issues to address.	6/9/2016 8:58 PM
11	There are things we can do locally	6/9/2016 8:37 PM
12	How we acquire and use energy has an impact on issues like LNG, solar rebates, etc.	6/8/2016 11:19 AM
13	living in rural area like this it is impossible to ignore the environment as our priority because it is our livelihood in this town, it surrounds the town and needs to be healthy	6/8/2016 6:25 AM
14	This is a place where every single individual has an impact.	6/7/2016 6:13 PM
15	My energy bills are very high even though I am doing my best to conserve. I would love more opportunities to get assistance for more renewable, greener and cheaper energy sources.	6/6/2016 1:25 PM
16	Reducing vehicle miles driven by providing increased housing density within walking distance of jobs and services is something a small community can do to develop in a manner that is sustainable in the long term.	6/3/2016 4:55 PM
17	I would like there to be an option for a solar farm that could be expanded as city is able.	6/3/2016 3:04 PM
18	Our entire lives depend on natural systems.	6/2/2016 8:25 PM
19	lessen dependence on fossil fuels.	6/2/2016 2:57 PM
20	I don't think it addresses the major contributors, but it addresses the human need for a perspective change.	6/2/2016 11:10 AM
21	Efficient strategies in this category have both energy conservation and socio-economic benefits.	6/2/2016 10:17 AM
22	It is highest priority only because I "think" that's where the greatest savings lies. I think the rankings should reflect greatest opportunities.	6/2/2016 10:08 AM
23	I wonder if Ashland can lead the way to more creative uses/recycling of things that often go into land fill.	6/2/2016 9:44 AM
24	All important. THis is a crisis!	6/2/2016 9:32 AM
25	Reducing dependence on cars/pickups is the quickest way to improve air quality. Providing convenient options for people to get around without a car is efficient and effective.	6/2/2016 8:54 AM
26	All things exist on the land and within the natural systems. They are our primary defense in protecting the environment/climate.	6/2/2016 8:42 AM
27	This was a really hard choice. Natural systems are what are going to be most affected by climate change. We need to investigate adaptations to these changes.eg crops that will be able to grow in hotter,dryer conditions.	6/2/2016 8:01 AM
28	Most concerned about water management forest and green space .	6/2/2016 4:28 AM
29	We already have technology and knowledge and can start immediately with impact.	6/1/2016 11:13 PM
30	It is important to me	6/1/2016 10:33 PM
31	We need an E shuttle to transport tourists downtown. We need a bike lane through downtown. We need a place to lock our bikes besides trees!	6/1/2016 7:45 PM
32	My sense is that buildings and energy are most amenable to influence by city programs and ordinances; transportation is important, but perhaps a little harder to influence; consumption is likely the most difficult to really get under control (more effort required for uncertain payoff).	6/1/2016 7:07 PM

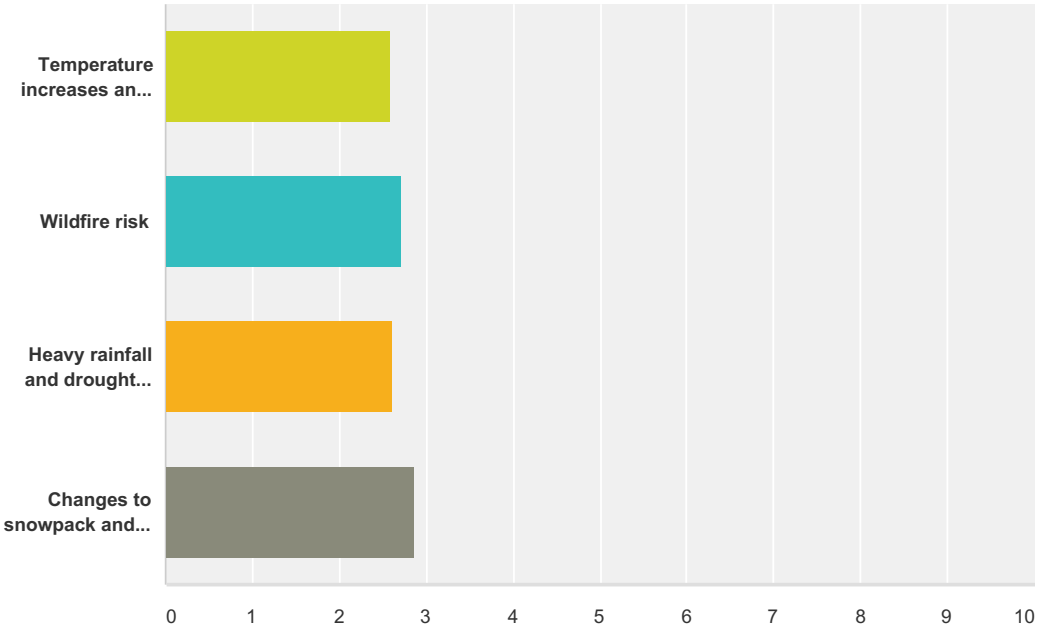
33	The things we are most dependent on are food and water.	6/1/2016 6:13 PM
34	I believe this category is greatest source of emissions. If I'm mistaken, I would hope our efforts would focus on the areas that presently create the greatest volume of emissions and that present opportunities for emissions reductions.	6/1/2016 6:08 PM
35	- can be implemented immediately - potentially has the most impact	6/1/2016 4:55 PM
36	I would like the City to make the things it controls/influences the priority in the plan	6/1/2016 3:17 PM
37	None of the above. "Greenhouse Gas" is one of the biggest misinformation propaganda pseudoscience con jobs out there.	6/1/2016 3:07 PM
38	It is something many can do and control	6/1/2016 2:25 PM
39	Affordable, and multi-use housing, in addition to tiny housing is a priority for making our community more diverse and balanced. We need more low-cost, mass transit options.	6/1/2016 2:22 PM
40	Greatest impact	6/1/2016 2:01 PM
41	Building materials and waste (from remodels as well as new), energy efficiency of buildings, water efficiency of buildings, whether buildings are equipped to use grey water are all major factors in reducing greenhouse gas emissions (if you look at cradle to grave of materials manufactured/shipped/used/disposed). With so many wealthy Ashland residents doing home remodels, we could encourage use of local, durable, non-plastic materials - same for home and garden furnishings.	6/1/2016 1:47 PM
42	This section didn't work in my phone but I pick transportation as number 1because I believe it has the most potential for change. Electric cars, better bike and pedestrian facilities and improved transit are crucial	6/1/2016 1:28 PM
43	It seems like the major use of energy is in heating, lights, etc, for home and business, so using renewables is important.	6/1/2016 1:27 PM
44	Need to reduce car trips, especially downtown. More bike lanes and facilities, a local trolley or shuttle service for residents and visitors, and improved pedestrian facilities.	6/1/2016 1:13 PM
45	Because creating electricity causes the most greenhouse gas emissions. Even if our local power is mostly hydro-generated, we need to switch to renewables for the future.	6/1/2016 1:10 PM
46	on the City level it seems like there are Codes that can be implemented. other items are less enforceable.	6/1/2016 12:51 PM
47	I think consumption and waste addresses more than just climate change. It also addresses the amount of landfill resources.	6/1/2016 12:49 PM
48	I believe it has the most potential to reduce our communities GHG emissions over the long run.	6/1/2016 12:38 PM
49	Buildings and energy have the lowest hanging fruit for change.	6/1/2016 10:53 AM
50	Buildings and energy are the lowest hanging fruit.	6/1/2016 10:48 AM
51	Despite impacts from buildings, growth rate in Ashland is relatively low, and I think there's more bang for our buck in sustainable planning (transportation and land use).	5/31/2016 7:09 PM
52	They are all high priority. If I took the survey again, I might change rankings.	5/29/2016 7:08 AM
53	Virtually everything we use here is brought to us by convoys of polluting 18-wheelers. Virtually everyone owns a car and our streets are full.	5/28/2016 10:39 AM
54	It has the greatest negative impact.	5/27/2016 12:47 PM
55	Transportation is usually the highest emitter of GHG	5/26/2016 11:22 AM
56	We should keep the forest green	5/26/2016 9:48 AM
57	Transportation is a very high portion of GHG based on the inventory. Buildings are important but a lot of the city's energy is renewable.	5/25/2016 10:40 PM
58	Transportation accounts for a quarter of Ashland's GHG emissions. Vehicular transportation consumes an unnecessarily large portion of land and resources.	5/25/2016 3:07 PM
59	Natural systems is a much more feasible way financially, resources/ecologically, wildlife, and for the health and overall being of the forests, trees, citizens and tourist	5/25/2016 7:10 AM
60	I think that is where we use the most harmful resources. But I'm not sure!! I could easily change my mind with facts.	5/25/2016 2:57 AM
61	Home energy consumption strategy can lead to the most carbon reductions.	5/24/2016 8:29 PM
62	I am responding to what I thought was a large contributor to GHG emissions in Ashland.	5/24/2016 7:51 PM

63	We can do it on local level	5/24/2016 7:26 PM
64	There are many problems that will affect humans particularly but the more directly we affect other life forms the worst we get. We must conserve natural areas and keep them safe for us but mainly them.	5/24/2016 7:21 PM
65	Drought is my biggest climate change concern, but that has little relevance to gg emissions. Buildings and transportation offer the biggest opportunities to reduce emissions. However rehydration and consequent growth is a carbon sequestration strategy that can have enormous results which are just starting to be studied and measured.	5/24/2016 7:18 PM
66	Power production is nations highest use of energy with industrial agriculture next...and Sadly missing in these choices! transportation is next....but the natural world should be part of every consideration, so that was harder.	5/24/2016 7:03 PM
67	It is the most dominate energy source in Ashland	5/24/2016 7:02 PM
68	Biggest piece of the pie.	5/24/2016 6:59 PM
69	Auftos make up so much of the gas emissions	5/24/2016 6:57 PM
70	Reduction in emissions seems to be so important, it's hard to say more than the others but it seems so much has to do with what's going on in the air and all the rest are like contributing factors. But mostly because of the growing size of populations and how many vehicles not just public commuting but transportation in general trucks and those making the most emission it just seems so much more and consistent than everything even though it's all happening and currently.	5/24/2016 6:37 PM
71	Overall health and well being as well as local standard of living. Usability of environment and recreation. Ease and joy of commute.	5/24/2016 6:30 PM
72	It's a major GHG emission impact & actionable.	5/24/2016 6:28 PM
73	This will be a lot easier than the consumption section.	5/24/2016 6:17 PM
74	I'm passionate about renewable energy	5/24/2016 6:06 PM
75	Biggest slice of the pie, and most voluntary component	5/24/2016 6:02 PM
76	I imagine that building consume the most energy in Ashland. Currently, the majority of that energy is derived from coal power plants, which is an extremely dirty source of energy. It's important that Ashland implements widespread renewable energy sources in order to find a way to escape the high percentage of coal in Blue Sky's energy mix.	5/24/2016 6:01 PM
77	We want to keep our natural capital strong	5/24/2016 6:01 PM
78	I imagine that building consume the most energy in Ashland. Currently, the majority of that energy is derived from coal power plants, which is an extremely dirty source of energy. It's important that Ashland implements widespread renewable energy sources in order to find a way to escape the high percentage of coal in Blue Sky's energy mix.	5/24/2016 5:58 PM
79	Just had baby, would like to keep biking, do not trust roadways or bike paths. Would like to see commuter bike stations, electric bus, train through valley.	5/24/2016 5:53 PM
80	Water the most vital need	5/24/2016 5:50 PM
81	Transportation largest contributor to GHGs, then use of natural gas in home heating!	5/24/2016 5:48 PM
82	Seems to be the highest offender	5/24/2016 3:27 PM
83	The high volume of fossil fuel vehicles both in and especially visiting the city.	5/24/2016 3:25 PM
84	I believe that in our mobile society that if we address transportation and land use issues that many of the other influences on climate change will fall into place.	5/24/2016 1:45 PM
85	Reducing vehicle use through biking, walking, public transit has other benefits to the local economy and public health, as well as community networking. It is an easy way to make a large impact.	5/24/2016 10:54 AM
86	Reducing CO2 in Ashland will have close to zero impact. However, we should do our best to be good stewards, and reducing our reliance on polluting energy sources is something we should do because it is the right thing on many levels. Home and business energy use is a major component of that.	5/24/2016 9:24 AM
87	Question two highest priority is because of all living creatures need protection from people.	5/24/2016 9:23 AM
88	Where we can get the most "bang for our buck" in our town	5/24/2016 9:12 AM
89	Solar energy, captured, stored and used in each vehicle is the most renewable resource we have, and the cleanest alternative we have, and we should place a higher priority on its development.	5/23/2016 10:29 PM
90	My main interest is in carbon sequestration which can be done in an urban environment as mentioned in #3. We are surrounded by forests, and have a gmo free county to support all of which are important components of C.C.	5/23/2016 9:52 PM

91	I believe renewable energy at the local level is the best single line of attack. Solar panels on every building that has good sun exposure, which can also charge electric vehicles, is the best first line of attack.	5/23/2016 9:47 PM
92	we have farms and import food..dumb we can be organic but all chemical inputs dumb we think population equals tax income dumb	5/23/2016 9:00 PM
93	Replacing 4-way stops with round-abouts will reduce gas consumption. Today every car has to stop and then to accelerate again even if there is no other car at the cross section.	5/23/2016 8:24 PM
94	WATER	5/23/2016 7:46 PM
95	people are too wasteful	5/23/2016 7:32 PM

Q5 Climate change will impact Ashland in many ways, including increased temperature, changing precipitation, and increased wildfire risk. How concerned are you about the following climate change impacts in Ashland?

Answered: 103 Skipped: 1



	Not concerned	Somewhat concerned	Very concerned	I'm not sure	Total	Weighted Average
Temperature increases and extreme heat	**7.22%** 7	**23.71%** 23	**68.04%** 66	**1.03%** 1	97	2.59
Wildfire risk	**3.00%** 3	**19.00%** 19	**77.00%** 77	**1.00%** 1	100	2.72
Heavy rainfall and drought risk	**7.00%** 7	**24.00%** 24	**69.00%** 69	**0.00%** 0	100	2.62
Changes to snowpack and water availability	**5.00%** 5	**5.00%** 5	**90.00%** 90	**0.00%** 0	100	2.85

#	Please briefly explain your rationale for impacts that concern you most.	Date
1	Too many people, not enough water ALREADY.	9/19/2016 11:57 AM

2	water conservation and wildfire land management.	9/17/2016 9:50 PM
3	The most critical element in negatively impacting Ashland is annual water availability. I expect wildfires to increase as the climate dries and heats but water availability is the most critical element for life here.	9/4/2016 7:46 PM
4	Living here since 1988, water has always been an issue. We need to always be conserving water in good years as well as bad years. Conservation is a habit.	8/31/2016 2:10 PM
5	watering lawn	6/22/2016 12:06 PM
6	Ha-ha. I am concerned because our town could burn down or if we don't get snow like in past years, we could have no water. No water=no life.	6/14/2016 11:10 AM
7	Drought, especially, can severely impact our ability to be a sustainable community, especially our ability to produce food.	6/10/2016 4:12 PM
8	Wildfire risk: I'm selfish, hate the smoke. Also hate the destruction of habitat for animals and plants. Snowpack and water availability: this has a major impact on daily life here. It appears the snowpack can't be counted on to provide water through the summer, so another plan (more reservoirs?) needs to be put into place.	6/9/2016 8:58 PM
9	We may not be able to sustain our quality of life or support our population density	6/8/2016 11:19 AM
10	very concerned about air quality while raising children especially, and quality of life concerning heat	6/8/2016 6:25 AM
11	All of these issues can have life or death consequences.	6/7/2016 6:13 PM
12	All of these things affect our daily lives and the ecconomy	6/6/2016 1:25 PM
13	Each of the above items are inter-related and direct results of increasing temperatures.	6/3/2016 4:55 PM
14	It is too hot and dry. The forests are always catching fire.	6/2/2016 8:25 PM
15	the viability of Ashland.	6/2/2016 2:57 PM
16	Catastrophic fire could destroy our watershed and surrounding forest lands jeopardizing one of our water sources as well as killing many species.	6/2/2016 11:10 AM
17	As Ashland gets more and more known for its bad air quality due to summer wildfire smoke and smog, it will have a negative impact on quality of life and future business success.	6/2/2016 10:17 AM
18	It is my understanding that these are the realities with increasing intensity as the years go by	6/2/2016 10:08 AM
19	In the last 10 years (I know it is just a nano-second of the life of the universe) we have seen the impact of the above. I also wonder if the clear-cutting is actually helpful to prevent forest fires. I know nothing about this, but intuitively it does not really seem to be.	6/2/2016 9:44 AM
20	I grew up in Ashland and the climate is decidedly different from the 50s and 60s -- more extreme heat in summer, less snow and cold in winter.	6/2/2016 8:54 AM
21	Reducing the local temperatures to lower fire danger, keeping waterways cool, managing the forests	6/2/2016 8:42 AM
22	These all are integrated with one another. Each one is concerning and they are happening all at the same time.	6/2/2016 8:01 AM
23	Effect on food supply, species survival. Fire	6/2/2016 4:28 AM
24	These impacts have already started and will only get worse.	6/1/2016 11:13 PM
25	...climate change!	6/1/2016 7:45 PM
26	All of these are in-store. The one thing we can truly influence is wildfire risk (creating more resilient forests); water availability will be next, but changes in snow pack are now unavoidable - ditto for extremes of precip and temperature. Responses to these (aside from reducing GHG) will be mostly reactionary.	6/1/2016 7:07 PM
27	These things are all related so I rated them equally.	6/1/2016 6:13 PM
28	As you see, I am "Very concerned" about all four.	6/1/2016 6:08 PM
29	water availability has a major impact for this region	6/1/2016 4:55 PM
30	we don't function well as humans if we don't have water.	6/1/2016 3:17 PM
31	you have no idea what will happen in the next 2 years let alone the next 50. Your computer models are based on guess work and bias.	6/1/2016 3:07 PM
32	Our water supply is linked to snow	6/1/2016 2:25 PM

33	All the consequences of a warming planet are exhibited in the above questions, and they are all impactful to our community.	6/1/2016 2:22 PM
34	Summer smoke and unsustainable cannabis production is if greatest concern.	6/1/2016 2:01 PM
35	These are all likely climate change impacts that could strongly change our current lifestyles.	6/1/2016 1:47 PM
36	Major impacts to lifestyles. Heat means more air conditioners and fewer people walking or biking.	6/1/2016 1:28 PM
37	These seem the most directly life threatening.	6/1/2016 1:27 PM
38	Economic, social, health and agricultural and other impacts that will affect everyone, especially those with limited means and mobility.	6/1/2016 1:13 PM
39	All of my research has shown me that these impacts are happening now and will get worse soon.	6/1/2016 12:51 PM
40	I believe that humans contribute to climate change but do not believe we are the sole cause. Therefore, I am more concerned about what we can address such as water availability and reacting to wildfires.	6/1/2016 12:49 PM
41	They all concern me. There is considerable overlap, or causal relationship, between said impacts.	6/1/2016 12:38 PM
42	All are equally important.	6/1/2016 10:53 AM
43	Each one is eminent.	6/1/2016 10:48 AM
44	Watershed has a limited supply and a limited carrying capacity and is susceptible to wildfire impacts (as is the whole community built on the interface).	5/31/2016 7:09 PM
45	They all impact each other.	5/29/2016 7:08 AM
46	We're already experiencing smoky, dry summers and near-miss wild fires.	5/28/2016 10:39 AM
47	All of the above are inter-related. Drought also leads to extreme dust, forest die-off, mega-fires like never before, extended fire-danger months each year, exploding pollen counts, and effects on our health. These are happening NOW, not 50 years from now. Ashland may be devastated in 50 years. Let's do something for the next 2, 5, and 10 years. Otherwise, it's too late. We have lost our home to last summers wildfire and are refugees. We are not the only climate change refugees in Ashland, and definitely not the last.	5/27/2016 12:47 PM
48	Temperature increase and extremes will drive changes to rainfall and wildfire along with human physical impacts	5/26/2016 11:22 AM
49	I am not sure climate change is a man made thing.	5/26/2016 9:48 AM
50	Hard to choose - all so critical!	5/25/2016 10:40 PM
51	All 4 are inter-connected. Drought my biggest concern.	5/25/2016 3:07 PM
52	our forests MUST be taken care of. Wildfire here in the watershed and forests surrounding Ashland would be a detriment to all	5/25/2016 7:10 AM
53	We already see wildfires all over the place every summer. With Drought-Emigrant lake almost went dry and a wildfire could come to town.	5/25/2016 2:57 AM
54	all pretty much related but snowpack and rain may be the biggest impact.	5/24/2016 8:29 PM
55	Water availability is key to life for humans and wildlife. Wildfire is extremely damaging and dangerous.	5/24/2016 7:51 PM
56	Anything that would heavily impact water ways will be disastrous.	5/24/2016 7:21 PM
57	We have work to do to prepare for drought that is very attainable. Slow it, spread it, sink it strategies address both drought and extreme water events.	5/24/2016 7:18 PM
58	Heat drought and fires will impact us all. I grow food and care about human as well as wildlife having enough to eat. Fires could destroy this whole area, or make it so hard to exist here. And lack of snow pack will impact us, how we grow crops, and how animals will cope.	5/24/2016 7:03 PM
59	They are all intertwined and impact the livelihood of us all. Plants, animals, and humans alike. The delicate infrastructure of our natural ecosystems is changing. It is all a threat.	5/24/2016 7:02 PM
60	People, plants and animals have a very narrow window of tolerance.	5/24/2016 6:59 PM
61	All concerns me greatly. I mostly fear thirst and getting too hot.	5/24/2016 6:57 PM
62	If we run out of water everything dies end of story and we can't stop fire unless we use our brains to find something else and inexpensive for alternative. As well as no help for the other problems if the water is gone	5/24/2016 6:37 PM
63	Water is crucial to our health and well being on every level.	5/24/2016 6:30 PM

64	The data is clear.	5/24/2016 6:28 PM
65	Water supply biggest concern, because most likely severe impact - but of course closely linked to fire hazard.	5/24/2016 6:02 PM
66	Increase of heat and drought will lead to economic and health difficulties for farming, low income, and outdoor labor based sectors.	5/24/2016 6:01 PM
67	All of this is very scary and concerning	5/24/2016 6:01 PM
68	Increase of heat and drought will lead to economic and health difficulties for farming, low income, and outdoor labor based sectors.	5/24/2016 5:58 PM
69	I see lots of sick trees uprooting because of extreme weather. I like trees and don't want this to happen.	5/24/2016 5:53 PM
70	Rising temps = longer, drier, hotter summers, more wildfire risk	5/24/2016 5:48 PM
71	anything extreme ,we are not prepared for	5/24/2016 3:27 PM
72	Fire damage to watershed and residential areas.	5/24/2016 3:25 PM
73	Three of these all come down to water and smart landscaping/forest area usage. Smart use of water will alleviate a lot of the issues with climate change.	5/24/2016 1:45 PM
74	Extremes in precipitation and temperature have always occurred and will continue. We must adapt to that, and fire is the highest risk for Ashland. Recent changes have not deviated significantly from historical records, if you include the past 1000 years.	5/24/2016 9:24 AM
75	More people and less wildlife	5/24/2016 9:23 AM
76	Fires especially--great impact on my professional and personal life	5/24/2016 9:12 AM
77	I believe climate change is unavoidable, uncontrollable, and not anthropomorphic. We will continue to adapt to our changing climate as we always have.	5/23/2016 10:29 PM
78	Temp. increase= lack of snow pack leads to less water=drought and more wildfire risk	5/23/2016 9:52 PM
79	We can live with the warming, but lack of water affects everything.	5/23/2016 9:47 PM
80	fires end. no water no life. temperature drives people to consume energy or move. ok no water no life	5/23/2016 9:00 PM
81	Without water life will cease to exist	5/23/2016 8:24 PM
82	survey only allowed answers to 2 of the above questions	5/23/2016 7:46 PM
83	you cannot control the weather and there is no sense trying	5/23/2016 7:32 PM

Q6 What specific actions or changes do you feel would most help Ashland reduce its greenhouse gas emissions footprint and/or prepare for climate impacts?

Answered: 88 Skipped: 16

#	Responses	Date
1	Get people to stop driving cars	9/21/2016 7:46 AM
2	Build :)	9/19/2016 11:57 AM
3	Solar Hot Water, solar electric, EDUCATION to REDUCE ... (RRR)	9/17/2016 9:50 PM
4	Improve public transit and reduce traffic/vehicle use. Consider clustered parking with shuttle service. Increase funding for RVTD to increase service. Consider rail service between communities for people and commodities. GET PEOPLE OUT OF THEIR VEHICLES AND TRUCKS OFF THE ROAD.	9/4/2016 7:46 PM
5	Pushing renewlable electric transportation. Buying carbon off sets. Building wind and solar farms.	8/31/2016 2:10 PM
6	a caring government	6/22/2016 12:06 PM
7	Reduce car options, and increase bike, pedestrian and public transportation options.	6/10/2016 4:12 PM

8	Just for a start: 1. Provide more public transportation, with some kind of motivator to use it. 2. Insure all public buildings are as energy efficient as possible. 3. Find a way to recycle plastic (i.e. Plastic Roundup) even if we have to pay to do it.	6/9/2016 8:58 PM
9	City infrastructure. Use all EVs. Passive and active solar. No control burns. Leave carbon in the ground.	6/9/2016 8:37 PM
10	Improving public transportation options, including ride share-type programs, improved bus service, and "shuttle" service for local short trips (hotels to OSF, etc)	6/8/2016 11:19 AM
11	not sure but open to learning, this is a small enough town that I think we could have great impact together	6/8/2016 6:25 AM
12	Support alternative transportation options, cap growth, require net zero energy building from here on out, relax any obstacles to in-town food growing endeavors.	6/7/2016 6:13 PM
13	assistance for alternate home energy sources, allowing water reclaiming and green public transportation	6/6/2016 1:25 PM
14	Preserving local farm and forest lands by reducing sprawl and concentrating future development within the existing Urban Growth Boundary.	6/3/2016 4:55 PM
15	Convert to local solar as much as possible	6/3/2016 3:04 PM
16	Stop burning wood stoves. Make downtown a no car zone. Develop a viable transportation system that meets the needs of Ashlanders beyond the bus.	6/2/2016 8:25 PM
17	alternative energy sources such as wind and solar.	6/2/2016 2:57 PM
18	Reducing consumption/transportation while becoming more autonomous with food, water and energy.	6/2/2016 11:10 AM
19	Continued emphasis on local food purchasing, on bike/walk benefits, improving water conservation incentives and education.	6/2/2016 10:17 AM
20	Incentivise the desired behaviors. Plant more more trees. Promote drought tolerant landscapes and not motorized transportation. Promote gray water and rainwater catchment. Require them on new all new development with incentives. Tax higher those who build GIANT homes. Use money to pay for incentives.	6/2/2016 10:08 AM
21	Ashland is doing a good job creating pedestrian and bicycle friendly space. Personally, when I do my spring cleaning, I throw away things that I know could be used/recycled (old cloth to make paper, high quality used candles) and wonder if, as a community we could increase our smart-quotient here. Love that our recycled glass is used for our roads, as an excellent example. I think citizens and businesses are conscious of resources consumed for the most part. Preparing as a community for a disaster is another area we could I,prove upon.	6/2/2016 9:44 AM
22	Better transportation system.	6/2/2016 9:32 AM
23	Reduce vehicle trips. Plant more trees. Provide a free bus running a loop to help residents and visitors move around town. Build the E. Nevada bridge. Don't compromise on the requirement to provide sidewalks and bike lanes.	6/2/2016 8:54 AM
24	1.drastically reduce cars within city limits. 2. More public transportation 3. more tree planting and correct tree planting	6/2/2016 8:42 AM
25	Moving toward the city utility using renewables(solar& wind)Encouraging, if not subsidizing,solar on houses. Getting a bike lane through downtown. Getting a local shuttle(electric at best)through and around town to reduce auto use. Encourage Recology to start a composting facility. Eliminate the sale of plastic bottled water under one gallon.	6/2/2016 8:01 AM
26	Grey water use , conservation of resources , solar, balancing reduced water use with the need to protect pollinators and trees	6/2/2016 4:28 AM
27	Build low cost housing. Incentives pubic transportation to markets and shops	6/1/2016 11:13 PM
28	See comments under #4. We need clean local renewable energy. Why hasn't Governments responded? Why hasn't Ashland responded. Climate change in NOT a new threat....	6/1/2016 7:45 PM
29	To reduce GHG: STRONGLY incentivise alternative energy and improve walkability, bikability and public transit (including building the Nevada St. bridge). To prepare: focus on natural water storage, conservation, and delivery - gray water?!?	6/1/2016 7:07 PM
30	1. Fewer houses burning fuels such as natural gas or wood for heat or esthetics. 2. Instead of venting methane in places such as the landfill, put it to use.	6/1/2016 6:13 PM
31	Public education about the issues and solutions. Assessment and planning by the City and its partners. Policies and incentives to reduce harmful behavior and incentivize helpful changes.	6/1/2016 6:08 PM
32	- more efficient homes, buildings, and appliances, such as LED light, automatic switches, faucet, toilet, etc.. - solar panels	6/1/2016 4:55 PM
33	encourage/reinforce individual action/commitment to behavioral change	6/1/2016 3:17 PM

34	How do you prepare for the impact of an unknown?	6/1/2016 3:07 PM
35	Encourage smaller, more energy efficient housing and transportation. Greater options for garbage than landfill. Forest thinning. Community sharing of land and resources.	6/1/2016 2:22 PM
36	1. Subsidize bus service from end to end in town so that more people are tempted to use the bus for errands (would have to run every 15 minutes I think). 2. Provide parking (ie at Lincoln School) so people can leave their vehicles on Siskiyou and then use them to drive their groceries up the hill - people are not going to walk up mountain st with 2 bags of groceries). 3. Provide education about carbon footprint for different types (or maybe just the worst types) of building materials/furniture/food/goods to help people make good choices. 4. Use wind power. Ashland has a lot of wind. 5. Provide even better prices for selling renewable power back to the grid - this was a winner policy in Germany that started a solar revolution. We could be a major example to other cities for how this works and doesn't hurt the city (esp. since we are at risk of moving to a higher cost level with all the marijuana grows).	6/1/2016 1:47 PM
37	Tax gasoline. Use proceeds for other programs, such as improved insulation in older homes, better transit.	6/1/2016 1:28 PM
38	Education of all citizens about the inevitability of the changes we are facing and a timetable that would motivate all of us to make changes	6/1/2016 1:27 PM
39	More real bike and transit amenities, reduce car trips especially downtown, bike rental/share kiosks, more and better pedestrian amenities that provide connectivity and safety, and a commitment to a local trolley or transit system.	6/1/2016 1:13 PM
40	#1 would be our diet. Animal agriculture is huge. next, we should minimize Air travel as well as cars etc...next localize food production. next reduce consumption.	6/1/2016 12:51 PM
41	Increase bicycle accessibility and encourage reduced gasoline vehicle use. Perform what fire reduction risks we can. Encourage drought-proof yards.	6/1/2016 12:49 PM
42	Continued active forest mgmt for reduced severe wildfire risk, creating more efficient transportation systems and land use regulations, codes, etc.	6/1/2016 12:38 PM

43	Consumption is nearly 50% of our GHG emissions. This is huge but will take time to educate the public and to get manufacturers to change their ways. We should buy GHG offsets through “fees” and apply the money to local renewable energy production and water use savings incentives (e.g. EPC’s – see below). Transportation accounts for 23% of Ashlanders GHG emissions, and is also somewhat gnarly to address. It can, however, be addressed in the long run with integrated transportation and land use policies, as more and more vehicles become electric, if we can educate people to drive less and bike/walk more, provide suitable, frequent mass transportation, and encourage grocery stores to have delivery services thereby reducing traffic flow to the grocery stores. Buildings account for 27% of all of Ashland's GHG emissions and presents the lowest hanging fruit for making meaningful changes. • We need to make even more incentives available to people in order for them to retrofit their buildings to being more energy efficient, and to educate them on how to turn thermostats appropriately to conserve energy. • We need to get solar pv on every building that has the appropriate exposure. We could create neighborhood level “solar pv” cooperatives where several homes/businesses/apartments etc could develop a cooperative where those that have proper solar exposure would have panels paid for by the cooperative, and all would share in the fruits of reduced energy costs across the cooperative. • We need to drastically reduce or remove natural gas as a heating and cooking option and go to all electricity. • Our housing stock in Ashland is 50% rentals. Most landlords are not interested in insulating, replacing windows, etc. if it is not going to make them more money on their rentals. Likewise, some owner occupied residences are not retrofitting because the incentives are not worth it to them (yet). Therefore, we need incentives for them to do so. o "energy savings performance contracts" like what the federal government is doing with its buildings where bonded contractors come in and perform retrofits and the owners pay nothing up front. If the energy savings over a horizon of time (say 10-20 years) is demonstrated, then owners never have to pay a cent. If they don’t demonstrate enough energy savings over that period of time, then they are obligated to pay for the cost of the services plus interest.... read more here https://www.greenbiz.com/blog/2013/09/05/expect-deep-retrofits-federal-buildings-heres-why. o Take the city of Boulder CO city facilities energy performance contract. They have chosen …”It is important that the city leads by example and does its part to reduce the community'senergy consumption and GHG emissions”. In June 2009, the City of Boulder partnered with the Colorado Energy Office on an Energy Performance Contract (EPC),which has enabled the city to make significant energy efficiency upgrades to 66 city facilities. The EPC allowed the City of Boulder to enter into a 2009 lease purchase agreement with McKinstry to implement efficiency upgrades that will be paid off over time using the guaranteed savings from reduced energy and water bills. The upgrades do not cost Boulder taxpayers any additional money and the community will benefit from reduced operations and maintenance costs. ¬ The city's strategic investments in energy efficiency, renewable technologies and water-saving devices will be offset by decreased utility bills and maintenance costs. ¬ The EPC project is a prime example of city programs that are both environmentally and fiscally responsible. ¬ Employee Awareness and Engagement - powerED Program. The powerED program is part of the Energy Performance Contract and is an employee behavior change campaign intended to reduce energy consumption in city facilities. The program began in 2014, and focuses on three areas: People: engage occupants and increase awareness; Process: engage operators and optimize systems; and Performance: energy savings progress tracking and reporting (using a dashboard). ¬ More info https://bouldercolorado.gov/public-works/energy-efficiency-upgrades-at-city-facilities-energy-performance-contract o Portland also has an ordinance. See 5.34.880 Energy Savings Performance Contracts (ESPC) for Portland: https://www.portlandoregon.gov/citycode/article/553736 . o Here is an example of Energy Performance Contracts for Local Governments for New York State – industry standards and best practices guide – 2013: An EPC uses those energy savings to finance the cost of new equipment and other capital improvements over several years. In addition, by bundling multiple small up-front improvements, an EPC allows local governments to leverage money from quick paybacks on those improvements to finance the larger scale investments. In a typical EPC process, the local government hires a private energy services company (ESCO) to conduct an investment-grade energy audit1 of its assets and identify cost-saving energy improvements. If the local government and ESCO agree to pursue the contract, the ESCO guarantees a level of cost savings to result from implementation of the energy improvements. An EPC can vary in scope. Some contracts are for just one building or a sample of buildings, while others are for managing an entire portfolio of buildings. http://www.dec.ny.gov/docs/administration_pdf/epcguide.pdf Natural systems: • If we planted trees around all of the houses to reduce the amount of energy that must be consumed to air condition a home, we need to be smart about it in order to also optimize the availability of rooftops to put solar pv onto. • It might be worthwhile to check with the Forest Service to see if they would be interested in partnering with the City of Ashland by allowing the Ashland Watershed carbon sequestration GHG gas mitigation to be claimed by the City.	6/1/2016 10:53 AM

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Some contracts are for just one building or a sample of buildings, while others are for managing an entire portfolio of buildings. http://www.dec.ny.gov/docs/administration_pdf/epcguide.pdf Natural systems: • If we planted trees around all of the houses to reduce the amount of energy that must be consumed to air condition a home, we need to be smart about it in order to also optimize the availability of rooftops to put solar pv onto. • It might be worthwhile to check with the Forest Service to see if they would be interested in partnering with the City of Ashland by allowing the Ashland Watershed carbon sequestration GHG gas mitigation to be claimed by the City.	6/1/2016 10:48 AM
45	Focus less on "gadget green" add-on's and ways to consume ourselves out of a problem of consumption and look at how to plan the city as an integrated, holistic ecosystem with living buildings and a "cradle to cradle" approach.	5/31/2016 7:09 PM
46	limit downtown vehicle traffic, encourage more solar heating, partnerships that would encourage more use of electric cars	5/29/2016 7:08 AM
47	Electric trollies, car-free main streets, incentives for gray-water retrofits and solar hot water, make more, import less, limit growth.	5/28/2016 10:39 AM
48	Strong ordinances, recognizing emergency situation. Clean, safe houses for citizens during the smoke months of July through September. An end to any support for petroleum industry. Mitigation plans for smoke, heat, and drought for citizens. Emergency evacuation plans for citizens. Year-round DEQ particulate monitor in Ashland. Medford is different due to topography, winds, etc. Winter inversions and summer smoke can be deadly.	5/27/2016 12:47 PM

49	Getting the city and then a majority citizens aware of the global warming impacts and motivated to act to reduce their GHG footprint.	5/26/2016 11:22 AM
50	I think homelessness in Ashland is a bigger issure	5/26/2016 9:48 AM
51	Having a legally binding ordinance, informed by a robust Climate Action Plan, is HUGE. Great first step	5/25/2016 10:40 PM
52	Mass transit, gas tax, encouraging bicycling and walking, water rationing, relaxing zoning laws to permit more food production. Compost pick-up by Recology.	5/25/2016 3:07 PM
53	Get rid of the road diet. Those of us who live at that end of town not only have worse traffic but the idling traffic makes the air horrible since it's always backed.	5/25/2016 9:37 AM
54	Ashland alone cannot change the world. it takes effort on behalf of all surrounding communities locally, statewide, and on a national level	5/25/2016 7:10 AM
55	Keep up the good work on healthy low litter forests surrounding the town. Encourage electric cars and home electrical generation. Expand recycling program.	5/25/2016 2:57 AM
56	City electric department can use rates and solar installation incentives to make big difference and be equitable to low income folks too	5/24/2016 8:29 PM
57	Move our economy to clean energy development. Create green jobs and boost the economy by paying living wages to local workers. Pass an ordinance that is tied to the climate plan so that we must hold our city accountable to meet numerical targets and benchmarks in GHG emission reduction.	5/24/2016 7:51 PM
58	Educating. Every step that we take to teach people to be aware the more voices the issue have. It's a feed back loop that leads to more change.	5/24/2016 7:21 PM
59	Rehydrate the watershed, drought proof home landscapes, smaller homes with passive solar for heating and cooling.	5/24/2016 7:18 PM
60	Generate a lot more local sources if renewable power and dig another reservoir for water catchment. If we don't do this it will be foolish. Snowpack will be Jill, so we need to catch more rain. She said it tonight and the map showed the decrease.	5/24/2016 7:03 PM
61	Improve streets for biking.	5/24/2016 7:02 PM
62	More communication between fields	5/24/2016 7:00 PM
63	Massive solar farm.	5/24/2016 6:59 PM
64	MAke Ashland more easier to travel by foot,, etc.	5/24/2016 6:57 PM
65	Large companies that give us electricity and our consumer delivered products and RVTD need to make all trucks and buses electric that would be such a large contribution and then we can work on make electric cars affordable for the people too. We also need EVERY living complex apartments homes etc to have recycling and compost and better accessibility for disabled people to do it.	5/24/2016 6:37 PM
66	Emphasis and support bike transportation.	5/24/2016 6:30 PM
67	An accountable action plan based on the 5 standards developed by Rogue a Climate Ashland & Youth Climate Action	5/24/2016 6:28 PM
68	Codifying the goals in an ordinance. Developing local energy saving and energy generation plans.	5/24/2016 6:17 PM
69	Solar farm	5/24/2016 6:06 PM
70	Incentives for reduced car use and rooftop solar	5/24/2016 6:02 PM
71	Renewable energy and more resources for the groups who will be most impacted by climate change.	5/24/2016 6:01 PM
72	Looking at science based goals and working our way to get there	5/24/2016 6:01 PM
73	Renewable energy and more resources for the groups who will be most impacted by climate change.	5/24/2016 5:58 PM
74	Helping the individual homeowner help conserve and make changes	5/24/2016 5:53 PM
75	Elec cars and reduce natural gas use for heating and water heating	5/24/2016 5:48 PM
76	I don't know	5/24/2016 3:27 PM
77	Continue and enhance conservation and energy efficiency efforts. Reduce fossil fuel based transportation traffic inside and coming to the City.	5/24/2016 3:25 PM
78	Multiple methods of transportation to make us less reliant on gas burning for getting around.	5/24/2016 1:45 PM
79	Solar panels on buildings - gov. buildings, schools etc. Incentives for businesses to use 'green energy' Building up biking infrastructure and public transit Incentives to plant native plants/trees, water-smart gardens	5/24/2016 10:54 AM

80	I honestly believe the CO2 focus is misplaced, and a form of mass hysteria. I am not "denying" science, I have studied it a great deal. There are things we should do, because they help on many levels to cope with climate change. They are the right thing to do. Focusing only on CO2 is a distraction. Do something about water resources, forest resilience, pollution reduction, corruption in government. Do not allow the process to be driven by the most radical activists with the loudest voices.	5/24/2016 9:24 AM
81	Get ride of all the motors that burn fuel starting with weed whacker and blowers.	5/24/2016 9:23 AM
82	Stop spending taxpayer money on silly surveys like this one.	5/23/2016 10:29 PM
83	start a program to sequester carbon where lawns were put layers of permaculture edible forests which grow food and hold moisture as well.	5/23/2016 9:52 PM
84	Even more solar panels on public, private, and commercial buildings. Tax breaks and rebates will go a long way to promote this. All new buildings MUST have solar panels.	5/23/2016 9:47 PM
85	regulate fossil fuel use. expand solar production. create real mass transit. limit private car use in town...airports do it even with tourist hordes.	5/23/2016 9:00 PM
86	Reduce traffic of gas powered vehicles, forbid wood stoves	5/23/2016 8:24 PM
87	water usage regs	5/23/2016 7:46 PM
88	there are no climate impacts that we can control	5/23/2016 7:32 PM

Q7 Please describe challenges or barriers, if any, to taking action on climate in Ashland.

Answered: 81 Skipped: 23

#	Responses	Date
1	Psychological barriers to change an ingrained habit (People are used to driving, and investment in parking caters to their habit). Lack of public transit infrastructure (i.e. city administrative offices are not accessible by bus). Unsafe road conditions for cycling (Incomplete lanes through major routes force cyclists to merge with cars. Motorists driving and stopping in bicycle lane, cutting off cyclists while turning, "dooring" cyclists when exiting parked cars)	9/21/2016 7:46 AM
2	Turning food into automobile fuel is immoral. Raising energy costs discriminates against the poor.	9/19/2016 11:57 AM
3	You have to create incentives and education - Bring in the emotional aspect to increase the Solar PV or Hot water. Give us a goal as a community... A Game.	9/17/2016 9:50 PM
4	Changing attitudes about transportation. Accepting increased costs of public services and utilities. Politics	9/4/2016 7:46 PM
5	Changing peoples mind set.	8/31/2016 2:10 PM
6	not here yet	6/22/2016 12:06 PM
7	Citizens willingness to participate	6/10/2016 4:12 PM
8	peoples resistant to change and the cost to do so	6/10/2016 1:07 PM
9	1. People (me included) are reluctant to give up the old convenient ways to do things. 2. Most action requires money, or will impact businesses, corporations, etc. People do not like to spend money on this issue, since the payoff seems out in the future. We are generally shortsighted.	6/9/2016 8:58 PM
10	the American "car culture" has left us thinking each person needs their own car, we must get where we're going quickly, walking is a waste of time, etc. This is a huge barrier.	6/8/2016 11:19 AM
11	money or lack thereof, differences of opinion	6/8/2016 6:25 AM
12	The powerful 'old guard' segment of the population. All actions that seem to put an ever growing tourist base above all else.	6/7/2016 6:13 PM
13	well there isn't much I can personally do as I am financially limited due to my work as a social servant	6/6/2016 1:25 PM
14	Concerns over higher density housing, using less land per dwelling than traditional patterns, will be perceived as consuming limited land area and losing yards and home gardening opportunities. However it should be noted that doing so preserves more efficient farming opportunities within rural county areas.	6/3/2016 4:55 PM
15	Lack of sense of emergency in City government	6/3/2016 3:04 PM

16	The rest of the Rogue Valley, and the world in general.	6/2/2016 8:25 PM
17	Entitlement….	6/2/2016 11:10 AM
18	Ashland is small - we should work with other cities to form local and regional alliances. More cooperation and bridge building.	6/2/2016 10:17 AM
19	The city's conflict of interest in selling electricity and water. Citizens who don't care. The need to create NEW, creative paradigms for running a city and supporting the needs of the community. GREED makes progress difficult and the "not in my backyard" mentality.	6/2/2016 10:08 AM
20	Communication to residents; getting people to take the time to follow up with each other and follow through on personal commitments on behalf of the community	6/2/2016 9:44 AM
21	Citizen will and apathy	6/2/2016 9:32 AM
22	People don't like change so education is essential to help bring change in the use of vehicles and increasing the numbers of walkers/bikers.	6/2/2016 8:54 AM
23	outside business interests, fossil fuel companies, GMO positions, Republican laissez-faire attitudes	6/2/2016 8:42 AM
24	FUNDING. Obstructionist legislation from the top. Climate change deniers. (I don't think Ashland has many of these, but...)	6/2/2016 8:01 AM
25	The age of the population , fact it is a tourist town and unreasonable expectations we will become a biking town . Disagree with downtown circulation plan do not soport the road diet but think public transportTion and electric cars are important. Have seen very few bikes use the bike lane , negative impact to neigh goods and ability to get to hospital and turn left on Wimer	6/2/2016 4:28 AM
26	Housing prices (not sufficient affordable housing). Many of the workers in town live elsewhere. Drive to town.	6/1/2016 11:13 PM
27	Unwillingness to change ...?	6/1/2016 7:45 PM
28	1. Public attitudes - people are more willing to point the finger at a "boogie man" than to recognize their own part in a problem. 2. Money - adaptation is not free.	6/1/2016 7:07 PM
29	Cost.	6/1/2016 6:13 PM
30	Old habits. Greed. Confusion ... "the Fog Bank." The relatively slow pace of climate change, that makes the changes harder for us primates to see and feel concerned about. The many distractions that are so important to us. The reluctance many people feel, to grind their guts about something that feels uncontrollable. The well-founded conviction that "the people in charge," in the Federal government are abysmally unfit.	6/1/2016 6:08 PM
31	- the will to break old habits	6/1/2016 4:55 PM
32	larger scale action requires state/federal action more so than (small town) local. Doesn't mean don't do anything, but big changes need to happen at higher levels	6/1/2016 3:17 PM
33	First, writing surveys designed to make folks answer questions the way you want the survey to turn out only fools your useful idiots. Next look at all sides of the issue, not just the side you like. How can you make an informed decision if you don't look at all the facets?	6/1/2016 3:07 PM
34	Citizens' desire for autonomy; lack of willingness to share land and resources. In America, we consider it our right to do whatever we choose, regardless of the consequences. Even in rural China every house has a solar hot water heater on the roof. Solar is subsidized there; large buildings have massive, living, green roofs. In France, giant furnaces with scrubbers on them incinerate garbage; there is mass public transport all over Europe.	6/1/2016 2:22 PM
35	Intermediary entities profiting from certifications and restrictions.	6/1/2016 2:01 PM
36	People won't change their habits unless something is easy to change without much disruption (ie. if they can take the bus with little planning or waiting, if they can find a lovely recycled glass countertop they love as much as Italian marble, etc.)	6/1/2016 1:47 PM
37	Apathy	6/1/2016 1:28 PM
38	Apathy. The reality that so far we are not experiencing anything very painful or even inconvenient related to climate change.	6/1/2016 1:27 PM
39	Chamber of Commerce, too much control of the narrative, and continually obstructive to real change. City staff incompetent.	6/1/2016 1:13 PM
40	No one wants to address Animal Agriculture... it is the ultimate taboo - and the ultimate way each of us can reduce our footprint in a very big way.	6/1/2016 12:51 PM
41	Same as anywhere. Getting full participation and a full buy-in by the citizens and businesses.	6/1/2016 12:49 PM

42	financial constraints, time needed for implementation	6/1/2016 12:38 PM
43	Apathy, lack of understanding, low priority over other things.	6/1/2016 10:53 AM
44	Lack of incentives to make change. Not enough "peer" pressure to change.	6/1/2016 10:48 AM
45	A general commitment to going through processes (and sometimes creating plans that are never adopted) in lieu of making meaningful changes that result in outcomes.	5/31/2016 7:09 PM
46	Businesses might feel negatively impacted. Cost to install solar panels and purchase electric vehicles might be prohibitive for many people. We need to have greater incentives. Partner with dealerships.	5/29/2016 7:08 AM
47	State laws on growth. Overcoming resistance to change.	5/28/2016 10:39 AM
48	Chamber of Commerce, Board of Realtors, many tourist industry businesses are appearing like climate deniers. It threatens their livelihood to the detriment of Ashland people.	5/27/2016 12:47 PM
49	Convincing people it is more costly to take no action, that your actions matter even if other states outside Oregon are not convinced at this time.	5/26/2016 11:22 AM
50	Taxes	5/26/2016 9:48 AM
51	Household goods and food is a v.high portion of GHG inventory, but is very difficult to understand, measure, and affect. The recent paper bag law shows how difficult it is to REQUIRE people to change their habits.	5/25/2016 10:40 PM
52	People's addiction to cars/trucks. Downtown merchants' addiction to parking. General over-consumption. Everyone has an axe to grind, some loony. In general, city government talks too much and has trouble reaching decisions/conclusions; action needed!!	5/25/2016 3:07 PM
53	Does the city encourage homeowner self sufficiency? More use of Solar and wind would would help the whole west coast elec supply. I didn't know you were working on this plan. Let more people know!!	5/25/2016 2:57 AM
54	city council will not make big changes especially in electric rates and solar installations.	5/24/2016 8:29 PM
55	Any measures we take to reduce GHG emissions must be socially equitable. We must not displace low income people, students, elderly or disabled people because of higher costs for energy or other additional burdens.	5/24/2016 7:51 PM
56	It's so huge and the changes so big, and most people have little idea about how much we could be affected. That makes it hard to deal with and easier to stay in denial....it's overwhelming in other words. Abs so little being done nationally.	5/24/2016 7:03 PM
57	The challenge would be agreeing on what is most important to focus on first. It has the potential to stall an action that is needed now.	5/24/2016 7:02 PM
58	Change is slow and everyone has their own agenda. Need a strong game plan and sell it to the community.	5/24/2016 6:59 PM
59	People's lack of awareness and concern	5/24/2016 6:57 PM
60	Challenges definitely involve money and the quickness in which these changes can be made like the transportation stuff and forcing a lot of people to volunteer for these committees which makes it harder for people to join in when they need to be making money.	5/24/2016 6:37 PM
61	Risk aversion.	5/24/2016 6:30 PM
62	The will to do it and and a comprehensive education to build community support. Inclusion of mitigation to help community members negatively impacted by the action plan.	5/24/2016 6:28 PM
63	Financial challenges, not allocating resources to getting people connected to existing programs. To really move this forward we need a lot of forward thinking and we need to incorporate our goals into every aspect of our communities planning and operation. Codifying the plan in ordinance will be a big step forward in ensuring that our goals are implemented.	5/24/2016 6:17 PM
64	Money and political will	5/24/2016 6:06 PM
65	Difficult to make Costa-effective bus system	5/24/2016 6:02 PM
66	Money and public buy in.	5/24/2016 6:01 PM
67	Making sure underserved groups aren't penalized	5/24/2016 6:01 PM
68	Money and public buy in.	5/24/2016 5:58 PM
69	More public transportation, tax breaks for gray water, rain catch, etc.	5/24/2016 5:53 PM
70	Be careful about telling people what they HAVE to do	5/24/2016 3:27 PM

71	Misdirection by special interests (ie. special interest energy advocates when continued fossil fuel use (local plus vistors) should be our biggest concern.	5/24/2016 3:25 PM
72	Many houses - mine included - still need to do a better job of becoming firewise. As soon as I can move to Ashland full time that is at the top of my list. Getting out of the habit of hopping in the car for every little trip.	5/24/2016 1:45 PM
73	Getting other people on board - getting people to reduce their consumption levels, travel without fossil fuels, support green energy	5/24/2016 10:54 AM
74	Consensus, or lack thereof.	5/24/2016 9:24 AM
75	People not taking responsibility to protect our world and wildlife.	5/24/2016 9:23 AM
76	The very concept of "taking action on climate" is ludicrous.	5/23/2016 10:29 PM
77	Tourism-the economic impact of taking CC seriously could affect tourism. I think we could draw even more folks here and teach them to respect the natural environment that supports them, or doesn't if they keep treating as a endless resource. Folks that don't want change, and seem to feel they are entitles to live HOWEVER they want...even if it uses someone else share of water because they can pay more for it. Limit the use of water, fines for those using to much. They think it is not going to affect them in their lifetime so so what! Everyone has low flow shower heads. Everyone participates. Show documentaries through the city to help educate folks. Talk about their GRANDChildren!	5/23/2016 9:52 PM
78	Finding the funding for tax breaks and solar rebates might be difficult.	5/23/2016 9:47 PM
79	short term greed.vanity.ignorance ,rule by those satisfied with status qou..as they see it.	5/23/2016 9:00 PM
80	Money, ignorance	5/23/2016 8:24 PM
81	global warming, climate change, etc. are a hoax. move on to something more important and controllable. Maybe the budget?	5/23/2016 7:32 PM

Q8 Is there anything else you would like us to consider in development of the Ashland Climate and Energy Action Plan?

Answered: 69 Skipped: 35

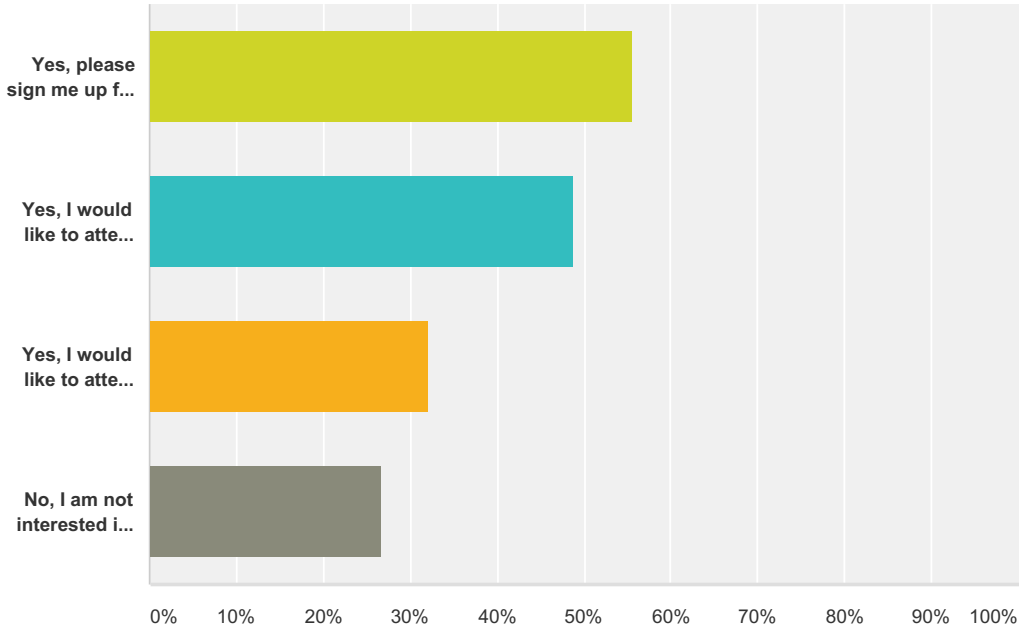
#	Responses	Date
1	Use Ashland's dams to store water pumped into their reservoirs by renewAble power sources to generate power when the renewable energy sources aren't producing enough power.	9/19/2016 11:57 AM
2	Lets have fun. Ashland has a lot of creative and competitive people. Lets use that.	9/17/2016 9:50 PM
3	Continuing public education and participation in understanding and addressing climate change challenges.	9/4/2016 7:46 PM
4	Keeping in mind the urgency of implementing goals. Pushing an agenda that today has come for change.	8/31/2016 2:10 PM
5	it doesn't exist yet	6/22/2016 12:06 PM
6	inexpensive and easy "grey water" systems	6/8/2016 11:19 AM
7	Very seriously invest in bicycle-friendly infrastructure rather than pursuing the non sustainable 'car is king' mindset.	6/7/2016 6:13 PM
8	we should have bike sites around town to discourage driving	6/6/2016 1:25 PM
9	Promotion of decentralized electricity production (off-grid), incentivising zero net energy homes and small energy systems to enable electric vehicles to be more readily adopted and thus reduce reliance on fossil fuels.	6/3/2016 4:55 PM
10	Stop dumping raw sewage in the creek.	6/2/2016 8:25 PM
11	More a question to consider. If our task is to save humanity and we don't truly consider (no matter how painful) the entire family of life, aren't we just continuing the painful disconnected perspective that keeps us from responding from a fuller intelligence?	6/2/2016 11:10 AM
12	Diverting food waste from the landfill and making local soil to continue the cycle of life.	6/2/2016 10:08 AM
13	Yes. I would like the city to consider working with "citizen juries" that reflect the diversity of our city, as well as the committees appointed by the mayor.	6/2/2016 9:44 AM
14	I would like the city council and city staff to think big and embrace a long term future plan.	6/2/2016 8:54 AM

15	Diagram individual use and impact---how much air, water, food, space does one individual use and need, multiply that by city population. Consider developing roof gardens and vertical wall plantings. Use the expertise of the SOCAN (Southern Oregon Climate Action Now) group	6/2/2016 8:42 AM
16	Effects on the homeless population...providing for cooling and warming centers.	6/2/2016 8:01 AM
17	When creating a plan understanding impact to downtown, which effects our economic survival. Concern about the amount of illegal caming in the watershed, © lifted and propane tanks found and fire danger	6/2/2016 4:28 AM
18	Incentives walking, biking, use of public transport to school and work,	6/1/2016 11:13 PM
19	...thinking outside the box!	6/1/2016 7:45 PM
20	Striking a balance between reaching for lofty ideals and focusing on pragmatic solutions is a challenge. Both are needed. Good luck!	6/1/2016 7:07 PM
21	Be practical and realistic.	6/1/2016 6:13 PM
22	As we do the Climate assessment, planning, and implementation for our own city, I'm wondering if there are ways that we can help other cities, and our state, and other states, and the Federal government, and the general public, choose to give more appropriate kinds of attention, energy, resources, and action to Climate Change.	6/1/2016 6:08 PM
23	- workshops to help educate residence - bike lanes	6/1/2016 4:55 PM
24	be realistic	6/1/2016 3:17 PM
25	The climate issue is a con. Our, the Earths, climate has been fluctuating for as long as we've had a climate. Sometimes its hot and sometimes its not	6/1/2016 3:07 PM
26	A local, free electric shuttle tram that moves people locally around town.	6/1/2016 2:22 PM
27	Focus on a few big bang for the buck projects (bus, energy pricing, building codes) and leave all the little stuff for other groups to push.	6/1/2016 1:47 PM
28	Be realistic, especially about the benefits of educating the public.	6/1/2016 1:28 PM
29	It has to become everybody's problem, not just our leaders or public service agencies.	6/1/2016 1:27 PM
30	No.	6/1/2016 1:13 PM
31	I'd like to get the full picture of what it would take to install renewables at scale here. also what the real costs would be... the actual benefits when all resources and costs are factored in.	6/1/2016 12:51 PM
32	Common sense and gradual implementation. Americans tend to over-react and over legislate.	6/1/2016 12:49 PM
33	1) I have spoken with many people who simply could not make it to the 1st public forum. They are very interested in having an opportunity to review material and give their input, just as those who were at the event had an opportunity to do so. After each open house we should post a replica of what went on at each open house for a period of time after the public event (including video and ppts of speakers). A website should contain all of the material and a link to a survey for each of the questions brought before the public during the open house and allow others who were unable to attend the meeting to give their input as well. 2) Speakers at the public meetings should have a more dynamic interaction with the audience. Some speakers at the first public meeting presented data in a very dry and possibly overwhelming way. We need lively, engaging speakers when presenting material and data.	6/1/2016 10:53 AM
34	1) I have spoken with many people who simply could not make it to the 1st public forum. They are very interested in having an opportunity to review material and give their input, just as those who were at the event had an opportunity to do so. After each open house we should post a replica of what went on at each open house for a period of time after the public event (including video and ppts of speakers). A website should contain all of the material and a link to a survey for each of the questions brought before the public during the open house and allow others who were unable to attend the meeting to give their input as well. 2) Speakers at the public meetings should have a more dynamic interaction with the audience. Some speakers at the first public meeting presented data in a very dry and possibly overwhelming way. We need lively, engaging speakers when presenting material and data.	6/1/2016 10:48 AM
35	Making a plan is only a first (tiny) step... Then you need to provide funding to support implementation including staffing, public education, compliance, etc.	5/31/2016 7:09 PM
36	Thank you for all the great work you are doing right now.	5/29/2016 7:08 AM
37	SOAR - Save Our Agricultural Resources! Limit importing food.	5/28/2016 10:39 AM
38	Use shorter term targets. 50 years is coming from denial. We are in crisis now. Though most do not know it yet. Be a committee that recommends action and ordinance, not just study, study, study.	5/27/2016 12:47 PM

39	Important to breakout from the total GHG reduction goals in what the city can commit to vs what Ashland citizens need to commit to. Decide if it makes any sense to use carbon offsets.	5/26/2016 11:22 AM
40	Solar Roads	5/26/2016 9:48 AM
41	Mandatory energy assessment at time of sale for residential properties, and for leasing/selling commercial properties. Second step would be a list of mandatory upgrades. All supported by financing (PACE?). Would also like to see a concerted effort to reach kids in schools and start them early in understanding climate issues - I saw a lot of grey hair at the recent open house, need to empower the next generation. Would also like to see social science best practice applied for behavior change programs/initiatives. If you want people to act you can't just 'inform/educate' them and expect change to just happen, it's more complicated than that!	5/25/2016 10:40 PM
42	Hope talk, meetings, consultants, power point presentations, etc. etc. etc. results in ACTION. Not everyone can like every part of the plan.	5/25/2016 3:07 PM
43	Manage the forests, encourage trees and landscape with vegetation. Encourage Solar, LEDS, etc.	5/25/2016 7:10 AM
44	Make it easier for us to do wanted things instead of harder/more expensive to do unwanted things.	5/25/2016 2:57 AM
45	Equity is crucial for our plan so that low income folks are not overly impacted	5/24/2016 8:29 PM
46	All of our climate plan's targets and benchmarks must be made on the basis of the most up-to-date accepted science.	5/24/2016 7:51 PM
47	agriculture agriculture agriculture. If we keep letting all the land go to wine and cannabis, we won't have enough locally grown food!	5/24/2016 7:03 PM
48	Consider having a community parade and involving the local schools.	5/24/2016 7:02 PM
49	Promote more human powered locomotion.	5/24/2016 6:59 PM
50	Require recycling	5/24/2016 6:57 PM
51	It's great and all we have these public meetings with info but it would be nice if some people could start like door to door info and incentives for people to start doing things at home to make differences. Or things that people can do who are willing to help these committees get things moving.	5/24/2016 6:37 PM
52	Recreation and leading the way for holistic "joyful" living. Public spaces for community gatherings and celebration.	5/24/2016 6:30 PM
53	It requires a culture change & creative solutions.	5/24/2016 6:28 PM
54	We need to be sure that our goals are based in science and that our plan is equitable to all Ashland residents. It is important that the solutions our community chooses to move forward do not disproportionately impact low income communities and that there are targeted efforts to get input into the plan from sectors of our community that could be more impacted.	5/24/2016 6:17 PM
55	Action items	5/24/2016 6:06 PM
56	Consider adopting fee and divided legislation	5/24/2016 6:01 PM
57	An ordinance	5/24/2016 6:01 PM
58	Consider adopting fee and divided legislation	5/24/2016 5:58 PM
59	Community lunches	5/24/2016 5:53 PM
60	small implementations	5/24/2016 3:27 PM
61	Who will be paying and what are we truly willing to sacrifice (visitor traffic)	5/24/2016 3:25 PM
62	I like that we are talking about this and have momentum.	5/24/2016 1:45 PM
63	My concern is that extremist activists, truly believing the are saving the world, will drive action that should not be taken. The Plan needs to represent ALL of the citizens.	5/24/2016 9:24 AM
64	I would like you to consider calling a halt to this wealth-transfer charade.	5/23/2016 10:29 PM
65	That we can be model for other cities. What actions have other cities taken. Present them. What can work in Ashland the best.	5/23/2016 9:52 PM
66	Nope	5/23/2016 9:47 PM
67	world class demonstration of solar powered city. world class demonstration of city support organic food production	5/23/2016 9:00 PM
68	Support plastic recycle	5/23/2016 8:24 PM
69	spend no money on it, waste no time on it, move on to something more important	5/23/2016 7:32 PM

Q9 Would you like to be involved in the planning process? (Choose all that apply.)

Answered: 90 Skipped: 14



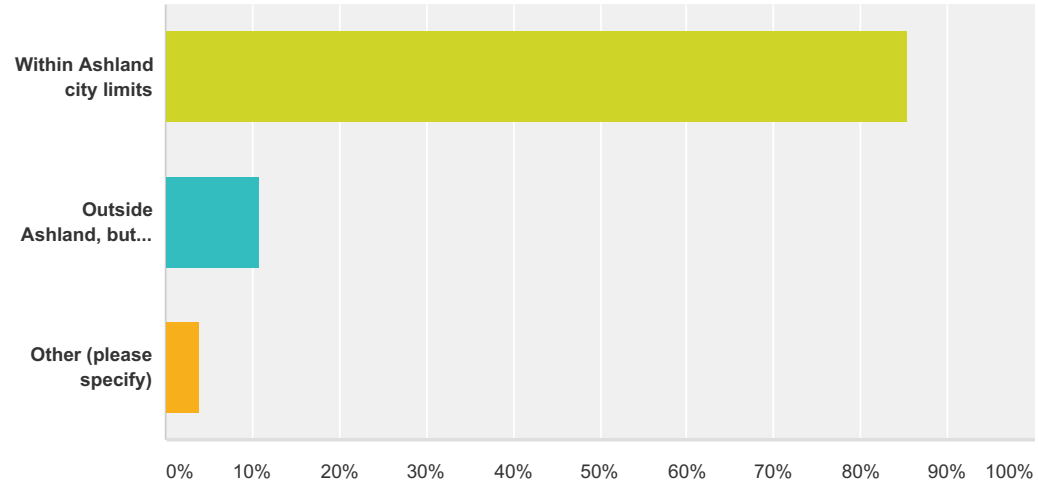
Answer Choices	Responses	
Yes, please sign me up for email updates (please enter email address below)	**55.56%**	50
Yes, I would like to attend an open house	**48.89%**	44
Yes, I would like to attend meetings of the Mayor-appointed committee	**32.22%**	29
No, I am not interested in further involvement.	**26.67%**	24
Total Respondents: 90		

#	If you are interested in email updates, please enter your email address:	Date
1	cynthiaparkhill@gmail.com	9/21/2016 7:46 AM
2	Jumpoffjoe@roguelinkdsl.com	9/19/2016 11:57 AM
3	hani@hajje.com	9/17/2016 9:50 PM
4	supermouse1@mind.net	9/4/2016 7:46 PM
5	darrell@daboldtconstruction.com	6/10/2016 1:07 PM
6	MLMATLPC@hotmail.com	6/9/2016 8:58 PM
7	Friends@anastash.com	6/9/2016 8:37 PM
8	egrush@gmail.com	6/8/2016 11:19 AM
9	openheartdancer@gmail.com	6/7/2016 6:13 PM
10	thatsuecarney@gmail.com	6/2/2016 8:25 PM
11	chrishje@mind.net	6/2/2016 2:57 PM
12	Manju.lyn.bazzell@gmail.com	6/2/2016 9:44 AM
13	karensue@jeffnet.org	6/2/2016 8:54 AM

14	pythpress@sprynet.com	6/2/2016 8:42 AM
15	gardengriotashland@gmail.com	6/2/2016 8:01 AM
16	mkmichelsen@jeffnet.org	6/1/2016 11:13 PM
17	downeyshan@gmail.com	6/1/2016 7:07 PM
18	onlineperson99@gmail.com	6/1/2016 6:08 PM
19	adam@ashland.or.us	6/1/2016 3:17 PM
20	parkershames@gmail.com	6/1/2016 2:22 PM
21	jack@jackwiens.com	6/1/2016 1:27 PM
22	safecircle@gmail.com	6/1/2016 12:51 PM
23	darrencam@gmail.com	6/1/2016 12:38 PM
24	lndncrouch@gmail.com	5/29/2016 7:08 AM
25	tahoe1780@msn.com	5/28/2016 10:39 AM
26	Philmiller@mind.net	5/27/2016 12:47 PM
27	rmmallettes@gmail.com	5/26/2016 11:22 AM
28	eliotcrowe@hotmail.com (on the list already I think)	5/25/2016 10:40 PM
29	juliamsommer@gmail.com	5/25/2016 3:07 PM
30	deb@shimmeringwind.com	5/25/2016 2:57 AM
31	caren9752@yahoo.com	5/24/2016 7:51 PM
32	calliemcrob@gmail.com	5/24/2016 7:02 PM
33	Marinaberny79@gmail.com	5/24/2016 6:37 PM
34	Free2bjammin@yahoo.com	5/24/2016 6:30 PM
35	Rlindleybb@hotmail.com	5/24/2016 6:28 PM
36	Ptrail@ashlandnet.net	5/24/2016 6:02 PM
37	Samhbecker@gmail.com	5/24/2016 6:01 PM
38	Nortonc1@sou.edu	5/24/2016 6:01 PM
39	Samhbecker@gmail.com	5/24/2016 5:58 PM
40	Steph.abrams@icloud.com	5/24/2016 5:53 PM
41	Mcecil mind.net	5/24/2016 5:50 PM
42	bendavidscott@gmail.com	5/24/2016 5:48 PM
43	crawbush@gmail.com	5/24/2016 1:45 PM
44	knoonan@mauilight.com	5/24/2016 9:24 AM
45	mays2458@aol	5/24/2016 9:23 AM
46	kfotheringhampotts47@gmail.com	5/23/2016 9:52 PM
47	shrgrp@mind.net	5/23/2016 9:00 PM
48	Snug97520@gmail.com	5/23/2016 8:24 PM

Q10 Where do you live?

Answered: 102 Skipped: 2

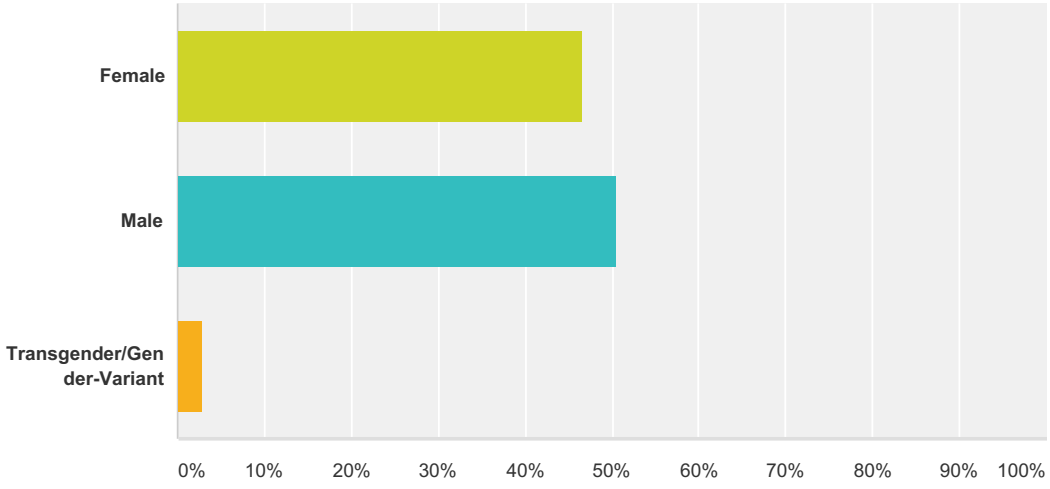


Answer Choices	Responses	
Within Ashland city limits	**85.29%**	87
Outside Ashland, but within Jackson County	**10.78%**	11
Other (please specify)	**3.92%**	4
Total		**102**

#	Other (please specify)	Date
1	Barely outside Jackson Co.	9/19/2016 12:00 PM
2	Moving from short-term rental to short-term rental since last summer wildfire. May have to leave after 35 years here.	5/27/2016 12:50 PM
3	Split time between Dallas TX and Ashland. Will be full time in 18 months.	5/24/2016 1:45 PM
4	I am 8 feet outside Ashland	5/23/2016 9:01 PM

Q11 What is your gender?

Answered: 101 Skipped: 3

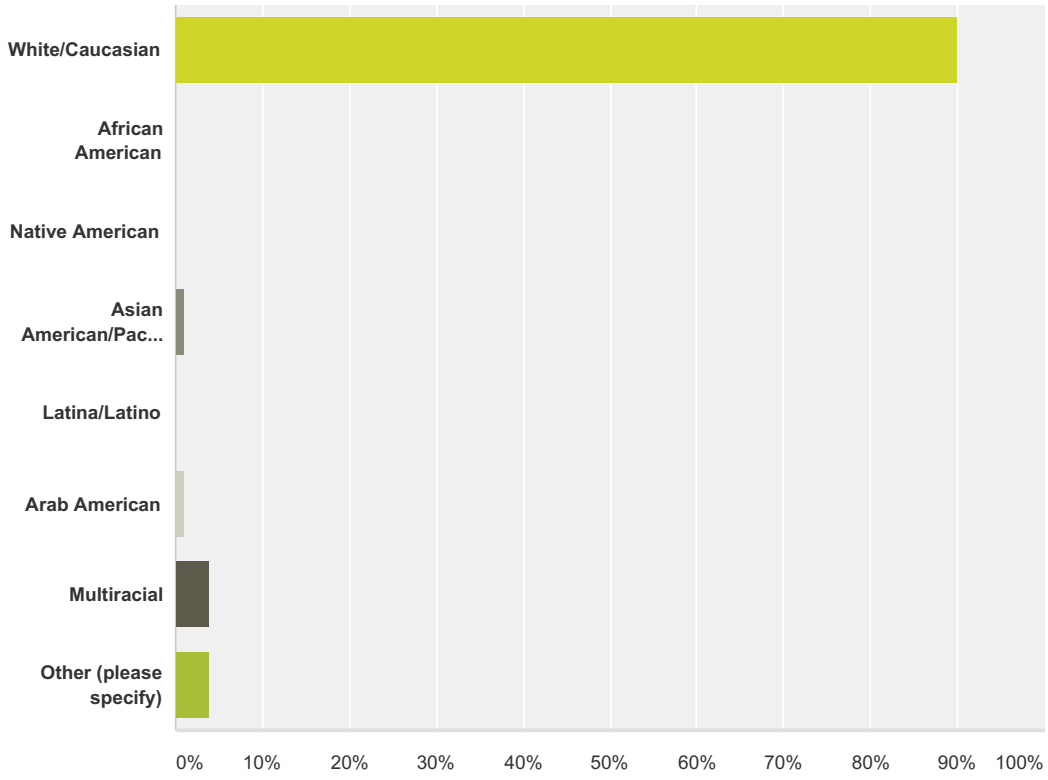


Answer Choices	Responses

Female	**46.53%**	47
Male	**50.50%**	51
Transgender/Gender-Variant	**2.97%**	3
Total		**101**

Q12 Which of the following best represents your racial or ethnic heritage?

Answered: 99 Skipped: 5



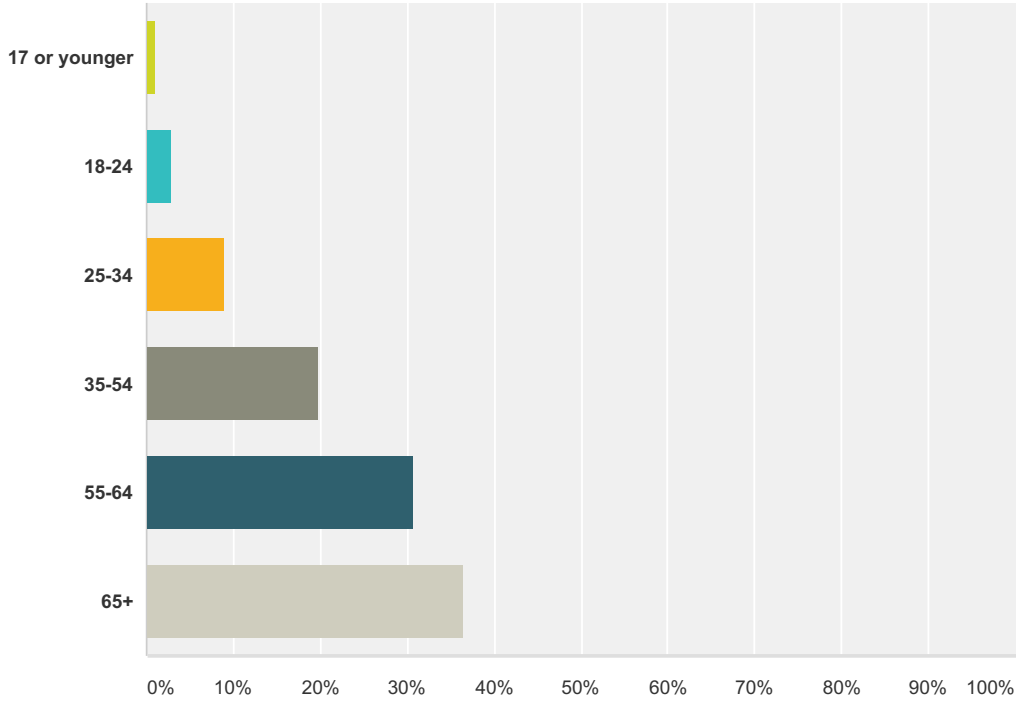
Answer Choices	Responses	
White/Caucasian	**89.90%**	89
African American	**0.00%**	0
Native American	**0.00%**	0
Asian American/Pacific Islander	**1.01%**	1
Latina/Latino	**0.00%**	0
Arab American	**1.01%**	1
Multiracial	**4.04%**	4
Other (please specify)	**4.04%**	4
Total		**99**

#	Other (please specify)	Date

1	what does this have to do with anything?	6/2/2016 2:58 PM
2	does ethnicity matter when we are all in this together?	6/2/2016 8:43 AM
3	Human Being	5/31/2016 7:10 PM
4	X	5/24/2016 6:58 PM

Q13 What is your age?

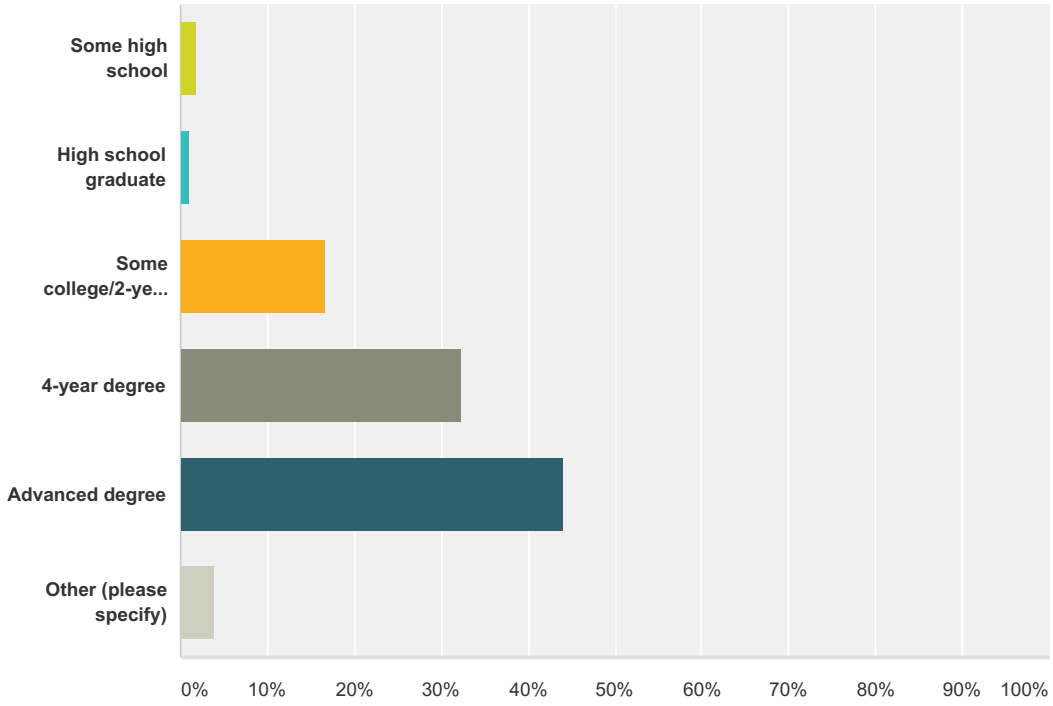
Answered: 101 Skipped: 3



Answer Choices	Responses	
17 or younger	**0.99%**	1
18-24	**2.97%**	3
25-34	**8.91%**	9
35-54	**19.80%**	20
55-64	**30.69%**	31
65+	**36.63%**	37
Total		**101**

Q14 What is the highest level of education you have completed?

Answered: 102 Skipped: 2



Answer Choices	Responses	
Some high school	**1.96%**	2
High school graduate	**0.98%**	1
Some college/2-year degree	**16.67%**	17
4-year degree	**32.35%**	33
Advanced degree	**44.12%**	45
Other (please specify)	**3.92%**	4
Total		**102**

#	Other (please specify)	Date
1	MFA in Art	6/2/2016 8:43 AM
2	Why are these personal questions needed?	6/1/2016 7:46 PM
3	2 yr degree, most of 4 yr engineering, 3 decades of self study	5/24/2016 9:26 AM
4	health practitioner	5/23/2016 9:52 PM

Climate and Energy Action Plan:
Open House #2: Public Input Summary

Cascadia Consulting Group

September 2016

CASCADIA
CONSULTING GROUP

Introduction

Development of the City of Ashland Climate and Energy Action Plan (CEAP) includes an open and inclusive public involvement process with ample opportunities to inform and involve the public. This public input summary document provides a high-level overview of notable trends, opinions, and priorities as revealed through an online survey, in-person comments, and station exercises at the second open house.

The second open house for the Ashland Climate and Energy Action Plan (CEAP), held on September 25, 2016, was intended to capture the community's ideas and priorities for climate mitigation and adaptation action in the city of Ashland. Specifically, objectives of the open house were to provide the public with an opportunity to do the following:

- Learn about the outcomes from modeling Ashland's future greenhouse gas (GHG) emissions profiles.
- Learn about the results of community climate vulnerability workshops.
- Learn about and provide input on potential climate mitigation and adaptation goals, strategies, and actions along the following focus areas:
    - Cross-cutting strategies
    - Buildings and energy
    - Transportation, land use, and urban form
    - Consumption and waste
    - Natural systems
    - Public health, safety, and security

The input compiled from this open house will be used—along with input from City staff and the ad-hoc committee, and together with careful evaluation of potential actions against agreed-upon metrics such as cost, effectiveness, and feasibility—to help identify recommendations for priority actions in the plan. Specifically, the input will be analyzed and considered in devising the overarching emissions reduction targets; sectors of focus; and implementation strategies and actions of the plan.

The public were invited to provide input at the open house through a variety of venues, including the following:

- **Open-ended comment cards:** Attendees were provided with small comment cards that included space for their name, address, email address, and comment.
- **Online survey:** A public online survey that provided space for comments and prioritization of strategies was provided on iPads during the event.
- **SMS poll:** Attendees could vote on the focus area most important to them by text message using a SMS poll that was live at the public open house.
- **Station #1: Ashland's Future Greenhouse Gas Emissions:** Attendees could write their preferences and reactions to the forecast of Ashland's GHG emissions and options for a communitywide emissions reduction target. Attendees used post-it notes to express their vote for the emissions reduction goal they supported the most.
- **Station #2: Ashland's Climate Vulnerability:** Attendees could learn more about the results from Ashland's recent climate vulnerability community workshops and comment on what they see as the most important resources, systems, or populations to pay attention to in preparing for climate change.
- **Stations #3-8: Goals, Strategies, and Action –** Attendees could review potential goals, strategies, and actions across the six focus areas of the CEAP. Attendees were given "dot" stickers with which they could show support for individual strategies. They were also given $1,000 worth of play money with which to "invest" in the strategies they would most want to fund through the plan.

In this document, input is organized by elements of the CEAP, such as the emission reduction target, climate vulnerability priorities, and focus area strategies and actions. Detailed comments and responses are provided in the following appendices:

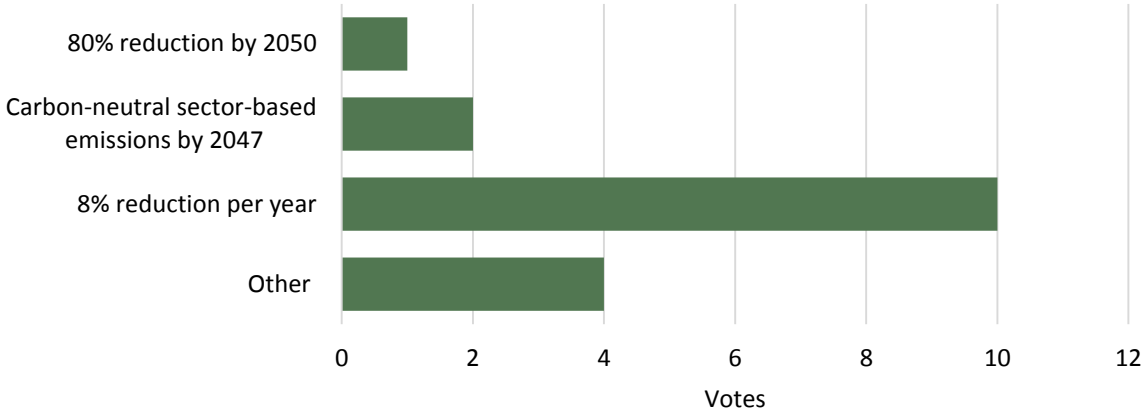
- Appendix A: Open House Station Responses
- Appendix B: Open House Comment Cards
- Appendix C: Public Input Survey Results
- Appendix D: Event Photos
- Appendix E: Visual Boards

By the Numbers

Number of attendees:	45 (33% also attended the first open house)
Number of attendees interested in receiving or already receive email updates:	30
Number of public input survey responses:	6
Number of open-ended comments received:	30

Emissions Reductions Targets

17 attendees at the open house voted on their preferred emissions reductions target scenario. The majority (10 out of 17 votes) **preferred the most aggressive emissions reductions scenario**, an 8 percent emissions reduction target per year.



The votes for "other" target scenarios were more generally focused on reducing consumption and reaching carbon neutrality.

Climate Vulnerabilities

Open house attendees were asked to comment on what they felt were the most important resources, systems, or populations for the City to pay attention to in preparing for climate change. Among the 18 respondents, the following were considered most important:

- **Vulnerable populations**, such as the homeless, those in poverty, and those with mental illness or other health issues. (7 attendees)
- **Water and forest habitat** (4 attendees)
- **Biodiversity** (3 attendees)

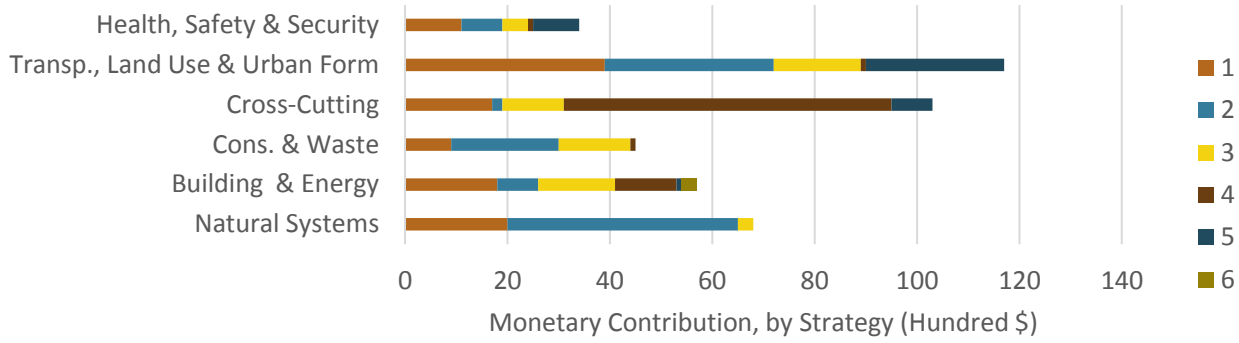
Focus Areas & Strategies

Priority Focus Areas

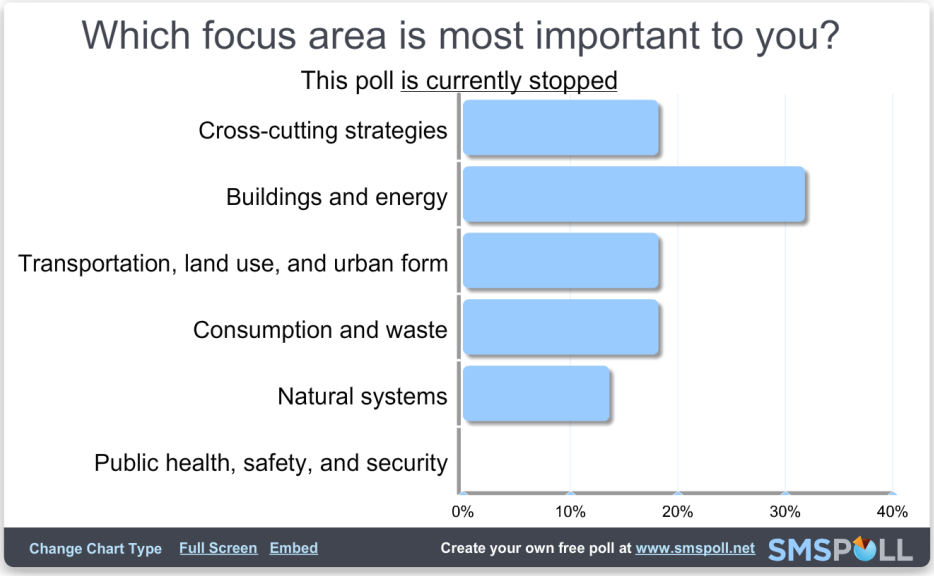
The **Transportation, Land Use, and Urban Form** focus area received the greatest total monetary contribution among all focus areas, followed by **Cross-Cutting Strategies** and **Natural Systems**. Although **contributions to Transportation, Land Use, and Urban Form were fairly well distributed among its strategies**, contributions to Cross-Cutting Strategies and Natural Systems were **dominated by one strategy** within each of these focus areas.

The focus areas listed below received the greatest monetary contribution *per strategy*, each receiving $2,000 to $2,300 per strategy in that focus area by open house attendees.

- **Cross-cutting strategies**
- **Buildings and energy**
- **Natural systems**

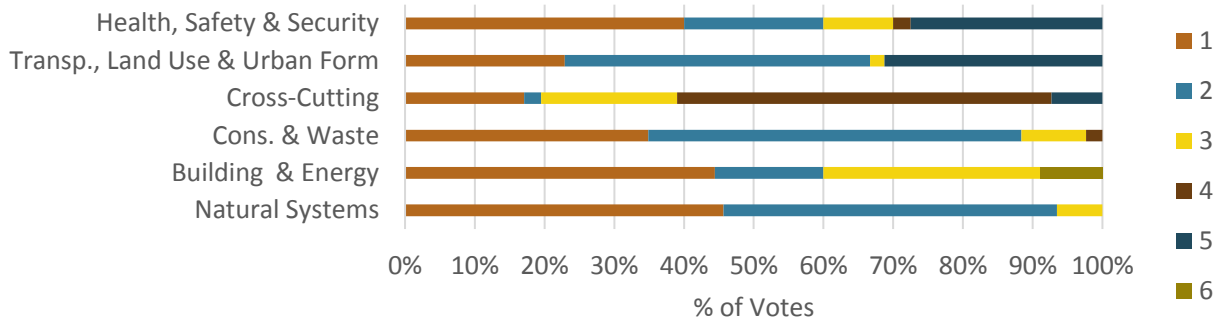


In the live SMS poll, **Buildings and energy** was the focus area voted as most important to attendees (over 30% of 22 votes).



Priority Strategies

The following graph summarizes the proportion of dot votes to presented strategies within each focus area (strategies are listed by number in Appendix E):



High votes and monetary contribution

Looking at individual strategies, attendees contributed the most money towards the following strategies (bolded strategies also received the largest proportion of dot votes within its focus area):

- **Ensure implementation of the Climate & Energy Action Plan** ($6,400)
- **Promote ecosystem resilience** ($4,500)

- Make streets and development more bike- and pedestrian- friendly ($3,900)
- **Support better public transit and ride sharing** ($3,300)
- Support more climate-friendly development and land use ($2,700)

Strategies receiving the majority of dot votes within their focus areas are as follows:

- **Cross-cutting Strategies:** Ensure implementation of the Climate & Energy Action Plan
- **Buildings and Energy:** Support cleaner energy sources
- **Transportation, Land Use, and Urban Form:** Support better public transit and ride sharing
- **Consumption and Waste:** Support sustainable and accessible local production & consumption
- **Natural Systems:** Promote ecosystem resilience
- **Public Health, Safety, and Security:** Manage ecosystems & landscapes to minimize climate-related health impacts

Other strategies that received a large proportion of dot votes include the following:

- Manage and conserve community water resources
- Encourage increased residential & commercial building energy efficiency
- Expand community recycling, composting, & reuse
- Promote a sustainable local economy that minimizes emissions & vulnerability to climate change
- Support more climate-friendly development & land use

Low votes and monetary contribution

In general, strategies that affected only **City operations** were less popular among open house attendees than the other strategies. The following strategies received the least monetary contributions, each receiving only $100 (bolded strategies also received the lowest proportion of dot votes within its focus area):

- **Increase the efficiency of City fleet and employee commuting**
- **Improve sustainability of City purchases & procurement**
- **Optimize City operations and programs to minimize climate-related employee health impacts**
- **Enhance energy reliability**

The following strategies received **no dot votes** from open house attendees:

- Increase the efficiency of City fleet & employee commuting
- Maximize efficiency of City buildings, facilities, equipment, and operations
- Enhance energy reliability

Themes from Public Comments

- **Set ambitious goals**. Voters favored the most aggressive target, 8 percent reduction per year, and several also pushed for carbon neutrality of both sector- and consumption-based emissions.
- **Reduce consumption.** Though the consumption and waste focus area did not receive the most investment or votes among attendees, many write-in comments touched on the importance of consumption reduction goals and education for residents.
- **Support vulnerable populations.** Commenters noted several strategies, such as weatherizing homes, supporting mental health, or banning shut-off of utilities to those who can't pay bills to help support the populations most vulnerable to climate impacts.
- **Develop more transit options and bike- and pedestrian-friendly infrastructure.**
- **Make this information more widely available.** Several commenters suggested making open house materials available in other places, such as online through Facebook, in city libraries, etc.

Appendix A: Open House Station Responses

Station 1: Ashland's Future Greenhouse Gas Emissions

Which emissions reduction goal do you support?

Total responses = 17

Option 1:

- I think option 1 is attainable or at least what Ashland should target. If the CEAP is passed & the city commits to follow up, it might just need this target.

Option 2:

- Sector-based emissions target – more likely to succeed because sector-based are more controllable.
- It's aligned with other cities' goals, so shared resources & ideas. It's measurable and achievable.

Option 3:

- We can measure some things well now – others need to be improved, but the goal needs to be about all emissions.
- We need to set goals based on the best available climate science. Ashland has a responsibility to meet our global contribution to slowing climate change. Ambitious goals are best.
- 8% per year – let's get the consumption emissions down.
- Go for carbon-neutral for sector & consumption. The science will catch up.
- Option 3 is the only ambitious goal to create real change.
- I favor option 3 because that is what is necessary. And I think Ashland has the will to do it.
- (Vote split between Option 2 and 3) Ashland should be a leader and offsets should be local.
- Sector targets should be measured annually on an 8% emissions reduction/year. Consumption goals should be included in ordinance as well and should be integrated into planning.
- 8% per year sounds very ambitious. But I will support and do my part.
- If at all possible. This is too serious to piddle around.

Other votes:

- Household consumption needs to be addressed. People need to be educated about how their behavior adds to climate change. Need to encourage people to buy (and make!) locally and to reduce consumption.
- Zero GHG emissions by 2040 – pedal to the metal.
- Our goal should be carbon neutral.
- The goal should always be 100%. It may be impossible, but we could someday get close.

Station 2: Ashland's Climate Vulnerabilities

What are the most important resources, systems, or populations for the City to pay attention to in preparing for climate change? Why?

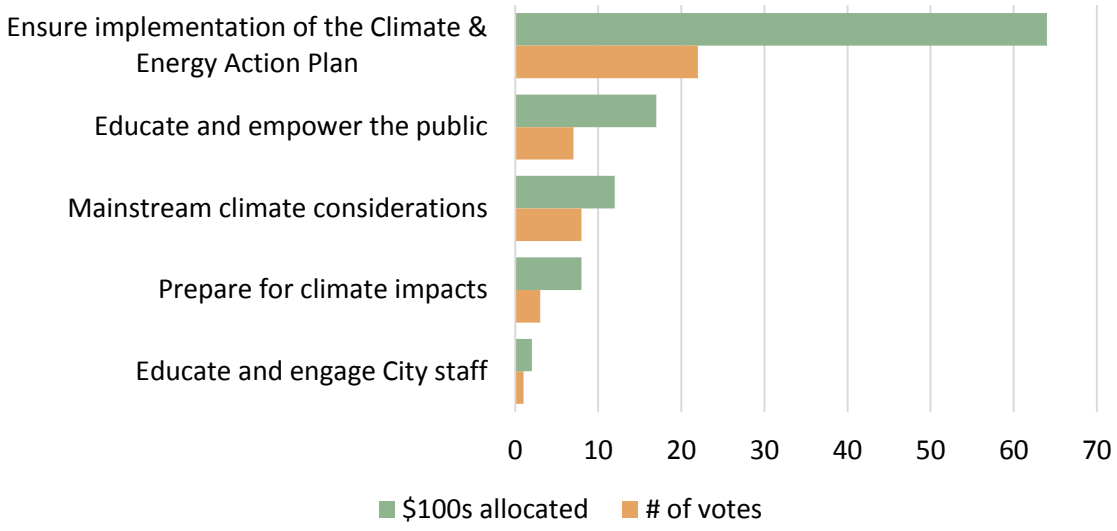
Total responses = 18

- Populations at most risk: homeless, those in poverty, elderly, people with mental illness. All have limited resources and ability to respond.
- Improve public transit. Make it affordable and fun to use.
- Coniferous forests at risk from reduced water availability and increased risk of catastrophic wildfire.
- Water cycle capture, storage, and release
- It is important that historically disadvantaged communities not only aren't harmed, but that they benefit from actions the city takes and are prioritized.
- It is vital that mitigation and adaptation plans are evaluated based on the vulnerability assessment.
- The most vulnerable residents – low-income children, elderly, and disabled. Aid with weatherization and a utility moratorium to protect from shutoffs.
- For our most vulnerable – need to provide protection against utility shutoffs for those unable to pay their bills and weatherization. Also, we need cooling and warming centers, a break in electric rates in summer as well as winter, free air conditioners for low income vulnerable populations, and a system whereby people check in on their neighbors.
- Water! Forest. Caring for the forest, thinning to protect large tees and encourage water getting to the ground. Poor – increasing costs must be subsidized.
- We need to protect our forests and water supply. We should safeguard our food supply by using permaculture based landscaping for homes, businesses, and college.
- Handling stress and other mental health issues is important. Resiliency is higher if people are prepared to help themselves and each other.
- The Trouble Makers
- Puh-leez. This is not wolverine habitat and has not been since the Little Ice Age.
- We need to ensure resources to support the most vulnerable: low income, outside workers, persons with health issues. Persons with more resources need to help those with less.
- Biodiversity (humans move, many plants and animals cannot)
- Protecting biodiversity and natural system function is very important as they define our region and can help buffer against impacts.
- The homeless are first wave of refugees. Build small house communities and pass renter's right 90-day eviction notice. Renters are most vulnerable.
- You seem to have the human populations concern, so I will speak up for the animal/plan populations. Because abundant biodiversity = healthy habitat.

Station 3: Cross-cutting Strategies

Number of votes: 41

Monetary contribution: $10,300



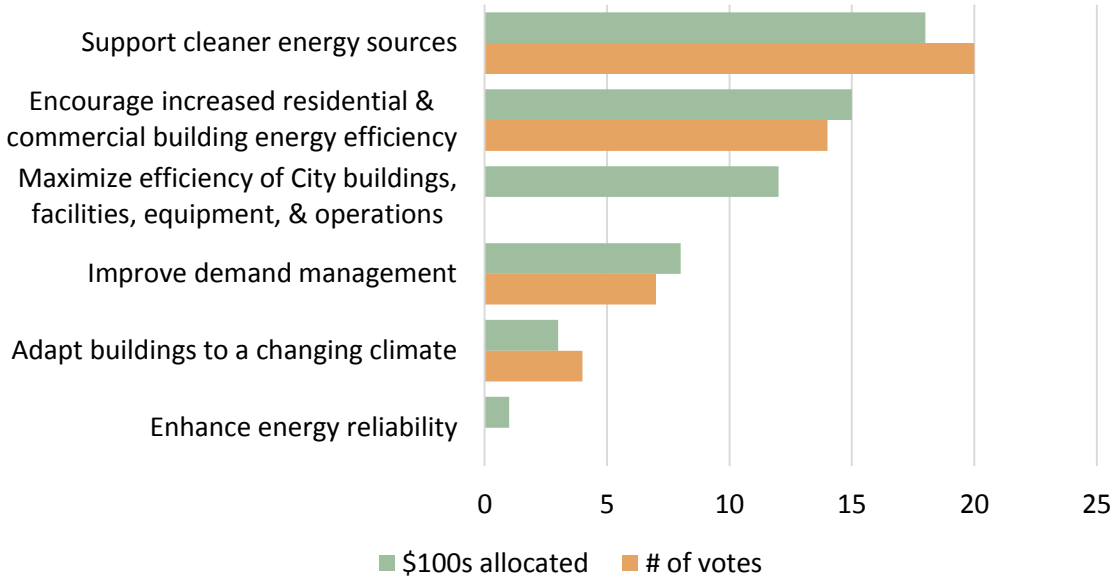
Comments from roundtable discussions:

- Emphasis should be on behavior change, not just public education per se.
- Accountability is important. Perhaps build an online dashboard to track progress against goals in real time and allow the public to hold the city accountable.
- There should be an adaptive management approach or "feedback loop" so that as information and progress changes the city can course-correct and focus accordingly.
- It seems that ensuring implementation of the CEAP is a prerequisite for implementing all other plan strategies and actions, a lot "hangs off of it."

Station 4: Buildings and Energy

Number of votes: 45

Monetary contribution: $5,700



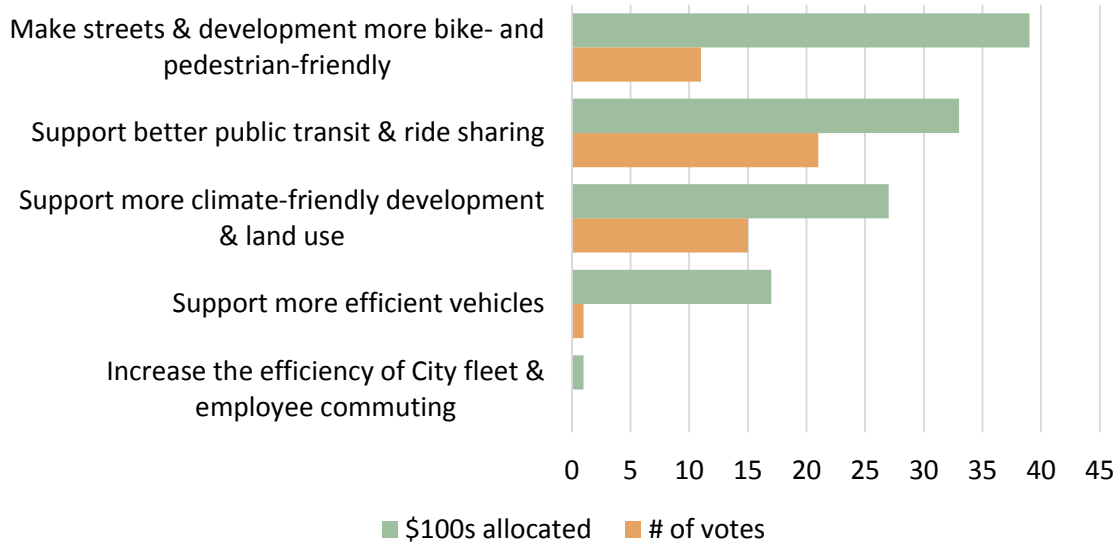
Comments from roundtable discussions:

- Interested in 10x20 initiative, and concern about the costs.
- Concern about hydropower reliability.
- Thought that local is best to avoid lost energy due to transmission.
- Interest in energy efficiency assessments at times of sale; rooftop solar; and vertical-axis wind generators.

Station 5: Transportation, Land Use, and Urban Form

Number of votes: 48

Monetary contribution: $11,700



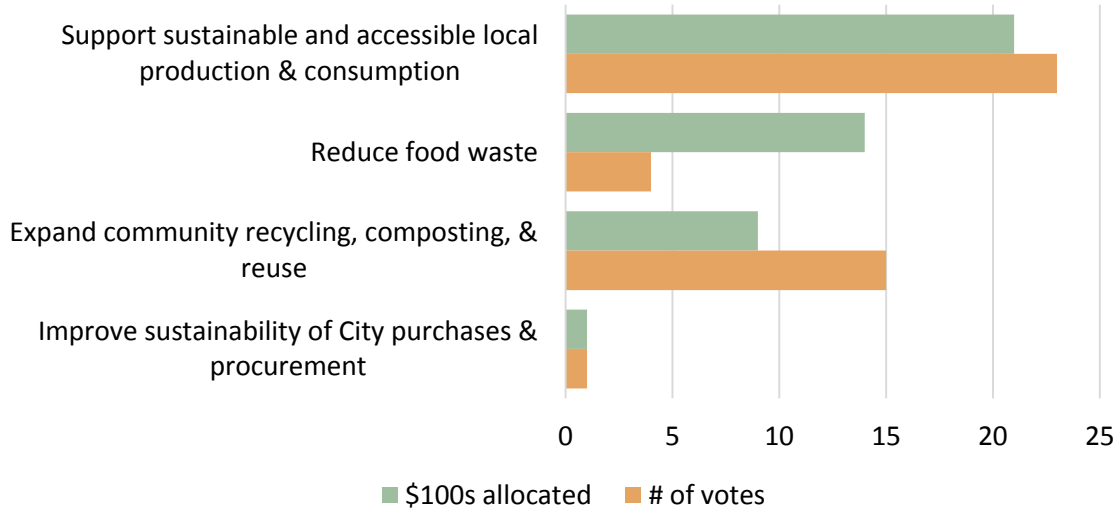
Comments from roundtable discussions:

- Need to make neighborhoods more "people-friendly" and less car-centric (e.g., more speed bumps).
- Two additional strategies: 1) Manage streams for fish passage and maintenance of fish populations and 2) Maintain high levels of air quality for the benefit of humans and other organisms.

Station 6: Consumption and Waste

Number of votes: 43

Monetary contribution: $4,500



There were also two write-in votes for actions at station:

- One attendee allocated $200 for "a program to educate on consumption reduction"
- One attendee allocated "$500 to "provide opportunities (outdoors, music, book clubs, indoor activities, multi-age discussion groups) for all in the Ashland community to "live the good life" that doesn't include obsessive consumption."

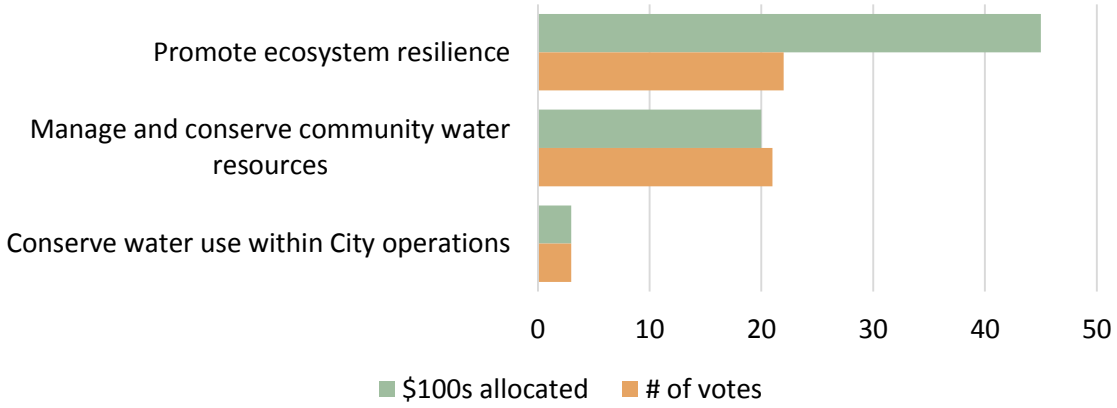
Comments from roundtable discussions:

- Want more focus on waste and consumption reduction.
- Need better education about recycling and waste in the community.

Station 7: Natural Systems

Number of votes: 46

Monetary contribution: $6,800



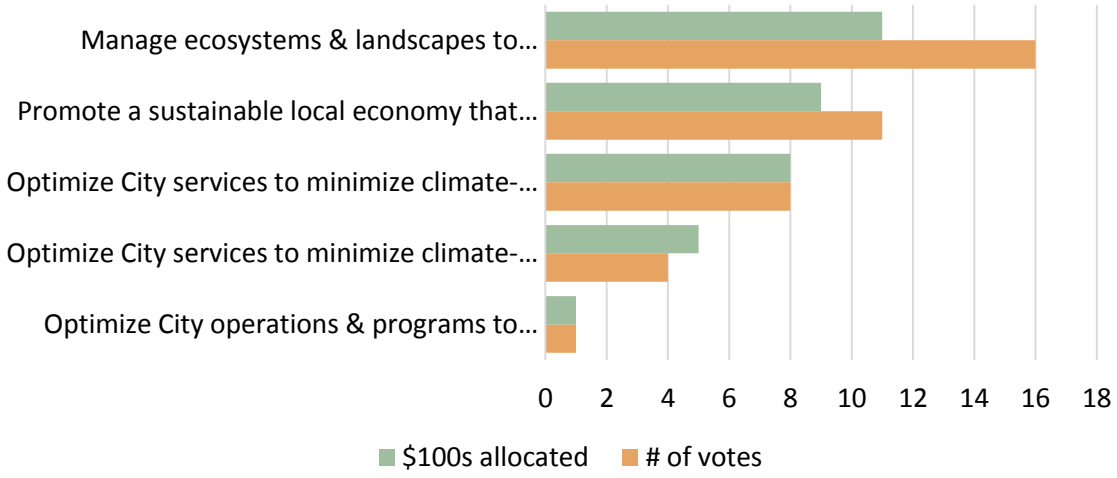
Comments from roundtable discussions:

- City role is minor compared to community role.
- Need for more urban planning regarding open spaces and forested areas.
- Need for more critical examination of water resources and strategies around efficient water use and requirements for water planning when building.

Station 8: Public Health, Safety, and Security

Number of votes: 40

Monetary contribution: $3,400



Appendix B: Open House Comment Cards

Summary

Individual Comments

Comment
A moratorium to ban shutoffs of vulnerable residents who can't pay utility bills
"Health" must include mental health. Climate change affects mental health in many ways, and funding must be commensurate. Resiliency is increased if people are prepared to deal with stress so they can help themselves and each other. Reference: ITRC (International Transformational Resilience Coalition, I think)
Weatherization - coordinate with student and community groups to weatherize people's homes
Composting toilets - legal in Ashland? There is nothing about graywater use mentioned. The city puts too many restrictions on graywater use. It should be encouraged - it keeps water out of the waste system and puts it back in the soil.
Establish a public tree planting strip along the freeway 100 feet at a time with access to it (dirt road) and surface drip irrigation. So people could have a place to go to plant trees they need/want to take out.

Reducing impervious surfaces not only mitigates flooding, but also helps with water capture or storage.
Have the Peace Choir offer some songs at Dec. mtg. I'll speak to the program leader for the choir to see if there is interest.
Biome. All my $ is put in box to purchase influence like a lobbying champ. Until we address the root cause of our social + environmental ilk, we are just treating symptoms. Giving us FRN's (Federal Reserve Notes) is just such a misstep. The Federal Reserve is a tool of the Judeo-Masonic Mafia that must be dismantled in order to make headway at true saving reform.
I suggest volunteer winterization program in low-income neighborhoods.
(1) Make all new neighborhoods walkable/bikeable, (2) bike lane to all elementary schools
Climate and Energy Action Ordinance ASAP!
(1) More local production of food, (2) community gardens, (3) encourage wash lines.
Bring back free bus route in city. Frequent and free. Allow dogs on leash??
I could not join the "dots + money" process because ALL the strategies are important and I am not competent to evaluate them - too complex. (Also, I was fighting personal issues of light + sound in the room - so I may email my comments to the committee instead.) Thanks for holding these public sessions.
I don't live in the city but I've spent a lot of time advancing utility advocacy to prevent shutoffs for low-income area residents. (I also do this in New Jery, my home base - I see a need to aid low-income residents in weatherizing homes to make them more energy efficient, provide adequate protection against shutoffs for those unable to pay their bills due to financial hardship, a system of encouraging people to stay connected and check on neighbors so people are not isolated when problems arise (putting people at risk of freezing to death, or deathly heatstroke while alone + isolated), a break on electric bills/eletctric rate, in summer as well as winter (esp for the low-income) and perhaps free air conditioners for low-income vulnerable populations as well as community cooling nad warming center).
Reduce should be #1 for #6!
There needs to be a station 9 that is education and communication.
City should annually provide curbside recycle directions for residents to post on their refrigerator! Lots of folks can't keep track of specifics.
Wonderful display! Well done! Is it possible to have this up on display at the library? I think many people would love to see this and will learn a lot. Thank you!
Overall reduction should focus on sector if we are serious about setting achievable and measurable goals.
How about these great posters put up somewhere so the public can read them - also post them on the Ashland FB pages. They are filled with good information!
Make sure the ACEAP involves actions that the citizens need to take (not just the city)
Thank you for what you are doing!

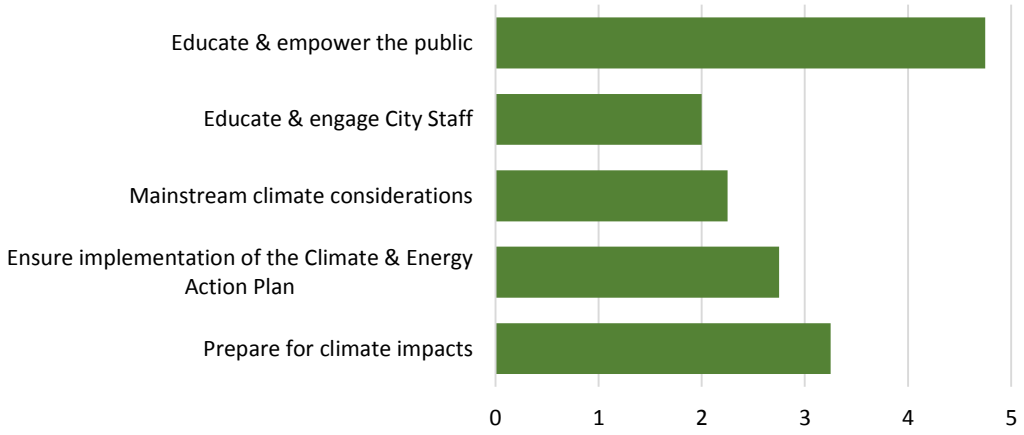
I think it would be a good idea to hire someone to market Climate Action - a weekly article in Tidings "Climate Wise" "Climate Talk" for ex. - with Action Ideas and updates. Social media - constat information on all the local FB pages (I know of 6). Local TV News with the idea we are educating but also making Climate Action popular - a social buzz - so that the whole community is educating each other as well. And can be proud of what Ashland is doing for our future.
The consumption area didn't ever address that going vegan cuts your carbon footrpting 50% - in half + the animal agriculture sector according to UN is 50% of all global warming + destroying the ecosystem. All global warming would be reduced 70% if people just stopped buying meat and dairy. That is a bigger thing than all transportation factors combined. IT's also better for health + more ethical. But the main benefit is environmental crisis. See plantpurenation.com and watch + show the documentary Cowspiracy. Get into your cognitive dissonance phase of acceptance of the science. The protein myth is so yesterday. Live in 2016!
I would like to grow food, but without spending $1000's on a fence, I am only feeding the deer. Consumption + Waste Strategy #2
Let's develop a required health/wellness class beginning @ middle school which emphasizes nutrition, exercise, and self-responsibility. Kids can teach their parents about healthy eating and snacking! We need more bike parking downtown, maybe use some space at Pioneer + Main where the E-fuel stations are. Any ideas to reduce driving and encourage walking, biking, carpooling, and buses!
Need More People
Why is SOU putting in Natural Gas? That seems backwards and a waste of $ given they will have to be $100 renewable. Also the city should pick up kitchen compost! Also a FAQ page on City's website to answer questions about reducing carbon footprint. Like what kind of trees do we plant that will survive climate change, etc.
Talking with people on TID water.. They say they can water all they want to be - cause "it's free"! This encourages, promotes water waste habits. Consider a TID suggestion to charge even up less than city H2O.

Appendix C: Public Input Survey Results

Six attendees responded to the online public input survey. They were asked to comment on and rank strategies within each focus area.

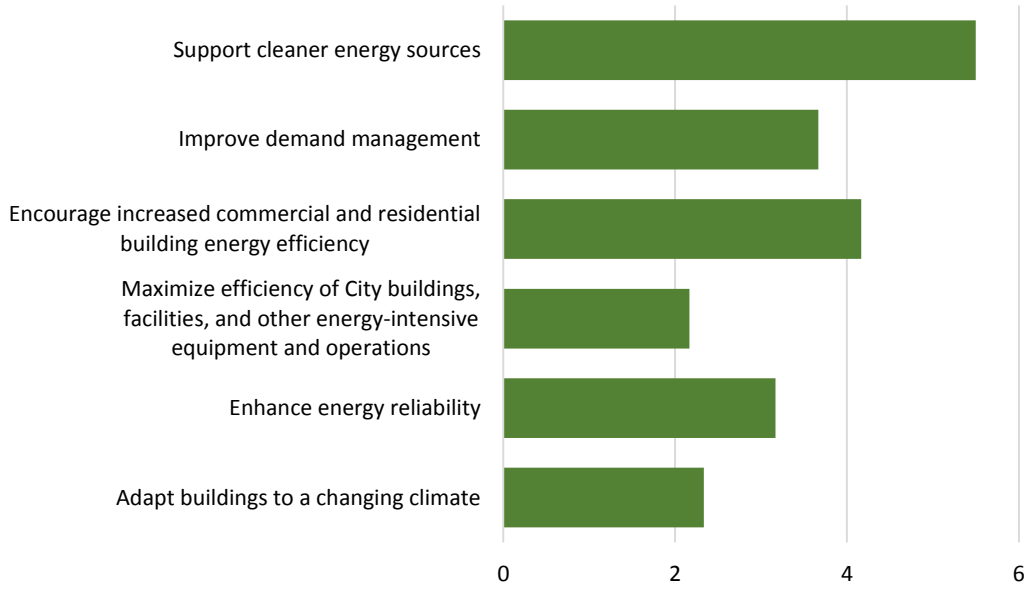
Cross-cutting Strategies

The figure below shows the average respondent ranking of each of the strategies (1 indicates the lowest priority, while 5 indicates the highest priority):



Buildings & Energy

The figure below shows the average respondent ranking of each of the strategies (1 indicates the lowest priority, while 6 indicates the highest priority):

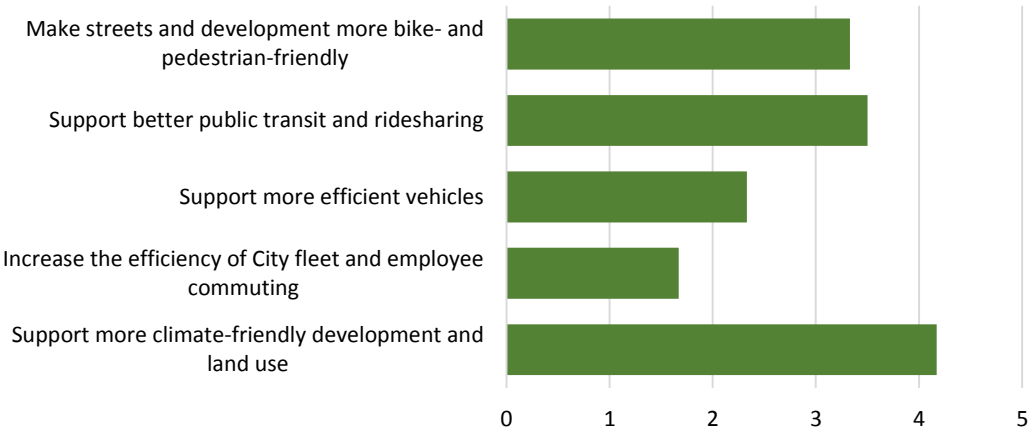


Comments included:

- All of these strategies are important
- Can methane from waste be converted into a usable energy source?
- Is there clean electricity? Reduction of energy use should come first. Many offices (city and other) have lights on all day. There are many ways we could reduce consumption.
- Money saved through demand management could be invested in local renewable wind and solar.
- "Maximize efficiency of City buildings, facilities, etc" – A no-brainer.
- Developing distributed energy (I.e. Rooftop residential) should be part of increased reliability.

Transportation, Land Use, and Urban Form

The figure below shows the average respondent ranking of each of the strategies (1 indicates the lowest priority, while 5 indicates the highest priority):

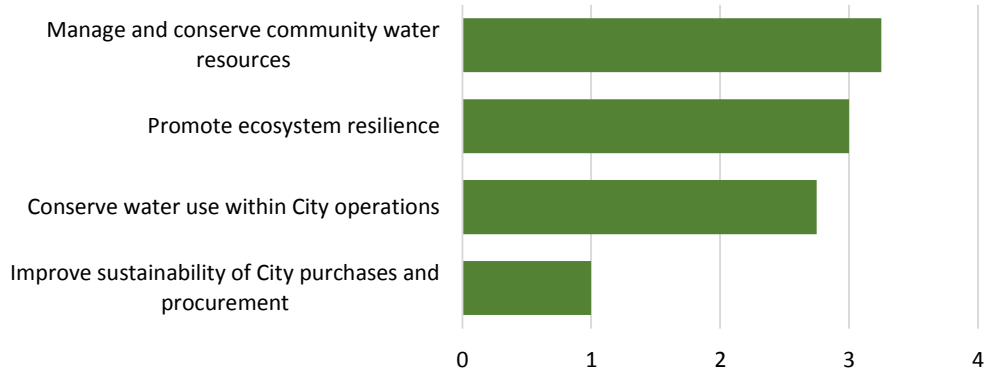


Comments included:

- It has been suggested that there be a shuttle bus (electric) that would go from the hospital to around the hotels near I5. Is there any support for this? I think it would be well-used.
- We should have Uber and Lyft in Ashland.
- City staff should live close to where they work. I think the city should assist their employees in accomplishing this.
- Regarding "support more climate-friendly development and land use":
    - This serves as the foundation for all the other strategies.
    - Make boundary interfaces a priority. Require landowners to take action.
    - Agree with more infill density.

Consumption and Waste

The figure below shows the average respondent ranking of each of the strategies (1 indicates the lowest priority, while 4 indicates the highest priority):

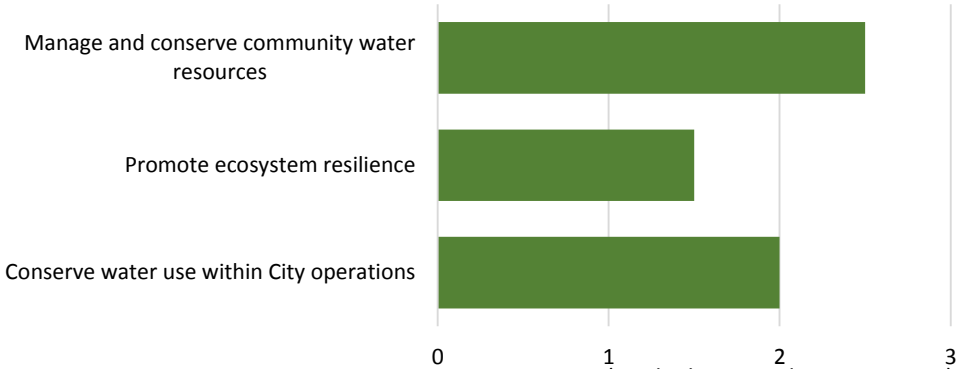


Comments included:

- Require businesses to reduce their wastes i.e. Starbucks and other throw away businesses.

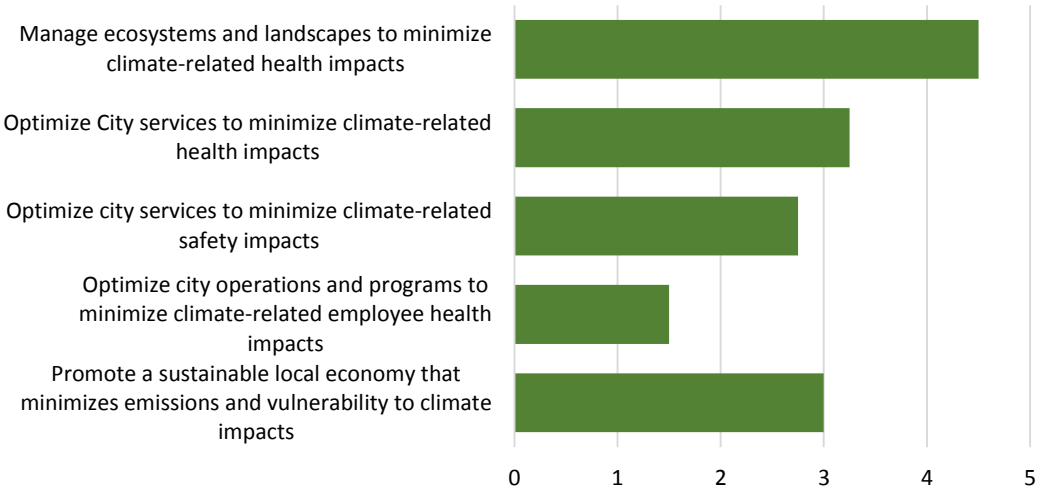
Natural Systems

The figure below shows the average respondent ranking of each of the strategies (1 indicates the lowest priority, while 3 indicates the highest priority):



Public Health, Safety, and Security

The figure below shows the average respondent ranking of each of the strategies. 1 indicates the lowest priority, while 6 indicates the highest priority.



Comments included:

- Need to educate people regarding the trade-offs between Rx fire and wildfire. No smoke is not an option. Controlled fire and smoke is far less harmful than out of control.

Respondent Demographics

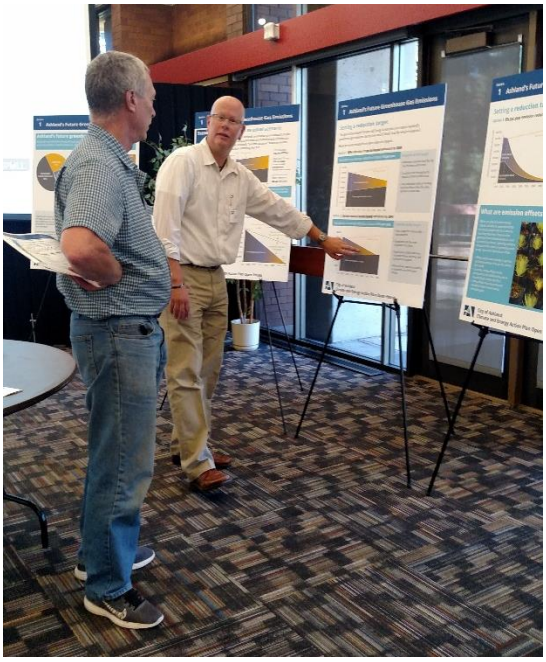
Two of the six respondents declined to respond to demographics questions. Of the four respondents:

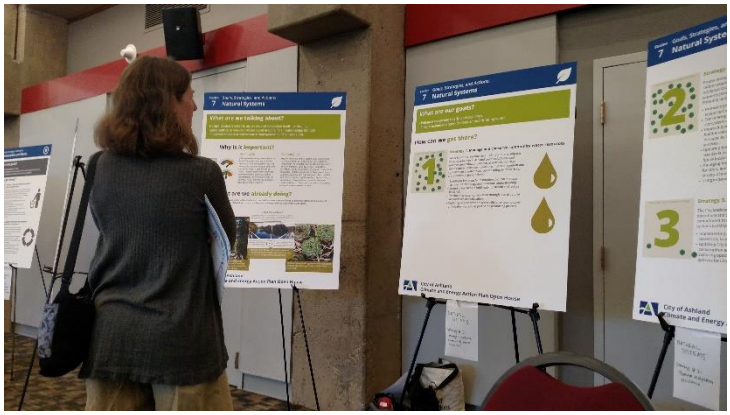
- 3 live within Ashland city limits, and 1 lives outside Ashland, but within Jackson County.
- 2 respondents are female, and 2 are male.
- 3 respondents are of White/Caucasian descent, and 1 declined to answer.
- All respondents are over 35.
- 3 respondents hold an advanced degree, and 1 holds some college or a 2-year degree.

They had the following final comments, concerns, or questions:

- This survey is biased and the outcome is predetermined, restriction of private choice and empowerment of govt. oversight and regulation. It was almost impossible to rank choices since all the options were undesirable.
- There are many options to consider and it is a little overwhelming to keep track of them all. The committee needs to form a priority or Pareto chart to go after the most effective strategies in each area.

Appendix D. Event Photos





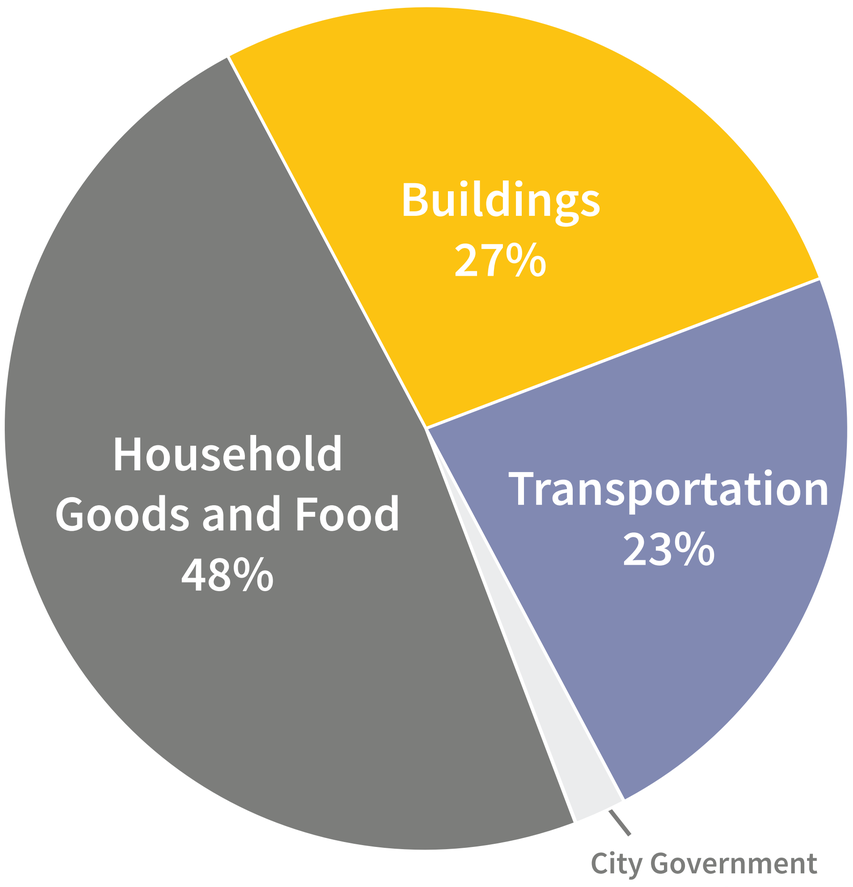
Appendix E: Visual Display Boards

Station

1 Ashland's Future Greenhouse Gas Emissions

Ashland's future greenhouse gas emissions

Ashland's contribution of greenhouse gas emissions is made up of both sector-based and consumption-based emissions. Here is a snapshot of 2015 emissions.



Consumption-based emissions include emissions generated outside of the community to produce the goods and food consumed by Ashland residents.

Level of certainty: **LOW**

What's included?

- Household consumption of food and goods
- City government consumption, including from the production of goods and some purchased services
- Fuel production

Sector-based emissions include locally-produced emissions from buildings, cooling systems, transportation, and water and waste processing.

Level of certainty: **HIGH**

What's included?

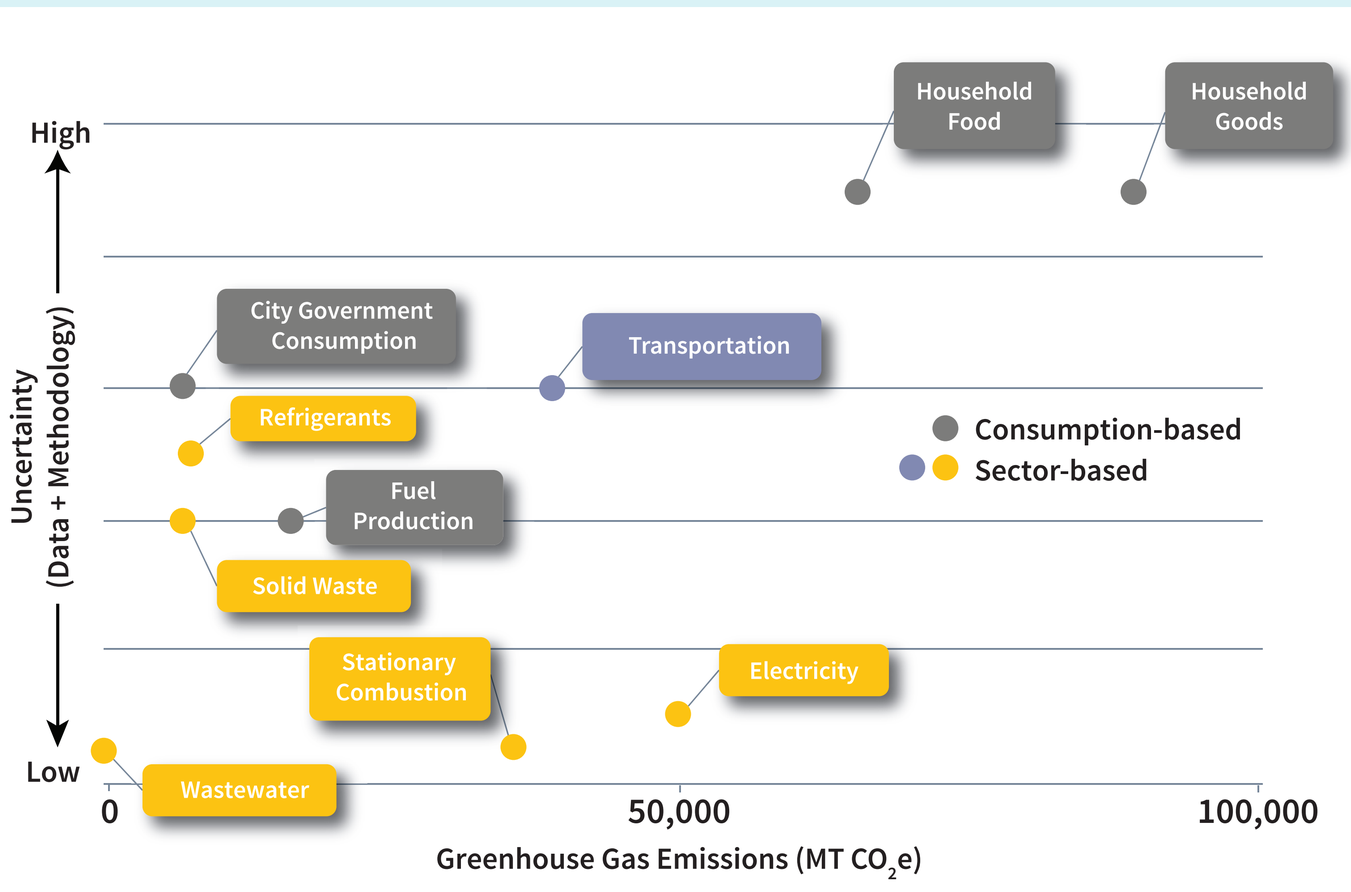
- Building energy use in residential, commercial, and industrial sectors
- Transportation energy use
- Methane emissions from waste disposal
- Wastewater treatment
- Emissions from refrigerants

What's excluded?

- Consumption-based emissions for local businesses

There is some degree of uncertainty in any GHG inventory. This uncertainty can come from incomplete data or uncertainty in translating units of activity into emissions.

Understanding the sources of uncertainty should improve future inventory and reporting efforts, including prioritization of additional data-gathering, framing inventory results, and developing mitigation goals and tracking systems.



City of Ashland
Climate and Energy Action Plan Open House

Station

1 Ashland's Future Greenhouse Gas Emissions

Trends To Date

2011 Emissions:

364,431 $MTCO_2e$

2011-2015 Change:*

6% decrease in total emissions
10% decrease in sector-based emissions

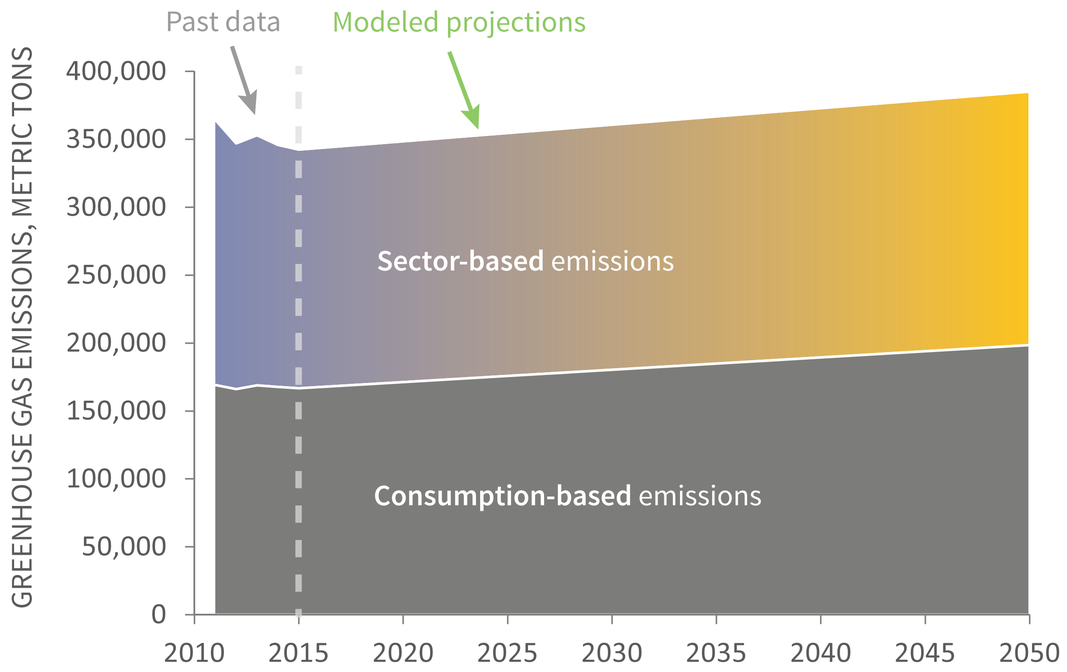
2015 Emissions

342,480 MTCO2e

***Note:** These reductions are largely due to increased renewable energy on the regional electricity grid, decreased use of electricity in the residential sector, and decreased natural gas use due to warmer winters.

Business as usual scenario

Assuming that Ashland's population grows about 0.5% per year and anticipated state and federal energy policies are enacted, Ashland's "business as usual" future emissions would look something like this:



2015 Baseline:
342,480 $MTCO_2e$

2015-2050 Change:
13% increase
in total emissions
6% increase
in sector-based emissions

2050 Business-as-usual Projection:
385,207 MTCO2e

What if? If Ashland were on the trajectory to cut its emissions from buildings, transportation, and waste disposal in half by 2050, it would equate to an average annual emission reduction of about 0.5% per year starting from 2016.

What is Carbon-Neutral?

To be "carbon-neutral" means that the net output of greenhouse gas emissions is zero.

Does that mean no emissions are emitted at all?

Not exactly. Carbon-neutral does not mean no emissions, it means no *net* emissions. Organizations can compensate for remaining emissions by purchasing carbon offsets, which represent emission reductions elsewhere.

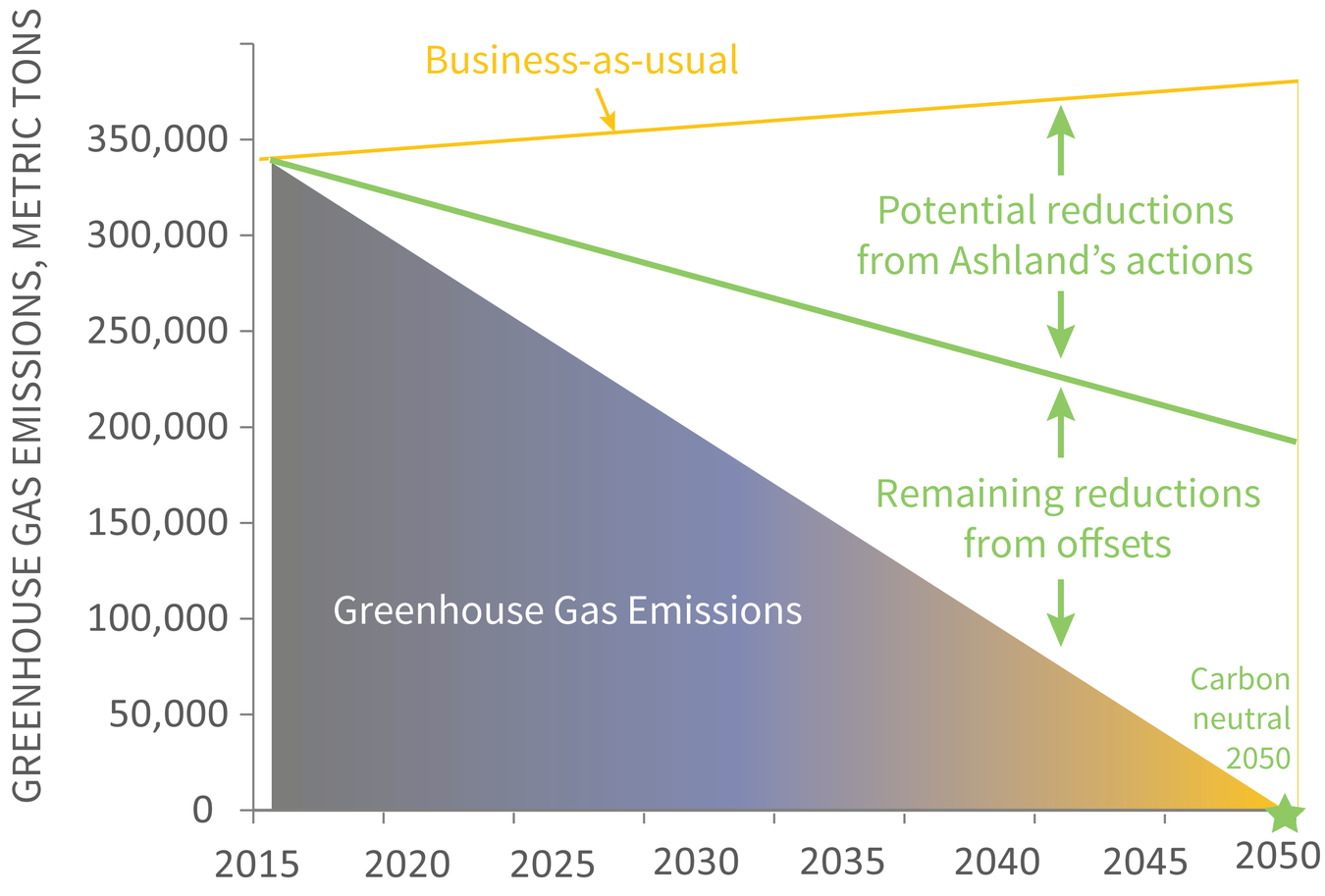
Is net zero really possible?

Technically yes, but it would require drastic action in the energy, transportation, and waste sectors.

For example, Melbourne, Australia recently made its City operations carbon-neutral through a combination of emissions reduction actions and purchasing of offsets. The City is now working toward making the entire community carbon-neutral.

For consumption-related emissions, reaching carbon neutrality is difficult. This difficulty stems from the fact that local governments have little ability to affect emissions associated with the production of food and goods.

What might carbon-neutral look like for Ashland?



City of Ashland
Climate and Energy Action Plan Open House

Station

1 Ashland's Future Greenhouse Gas Emissions

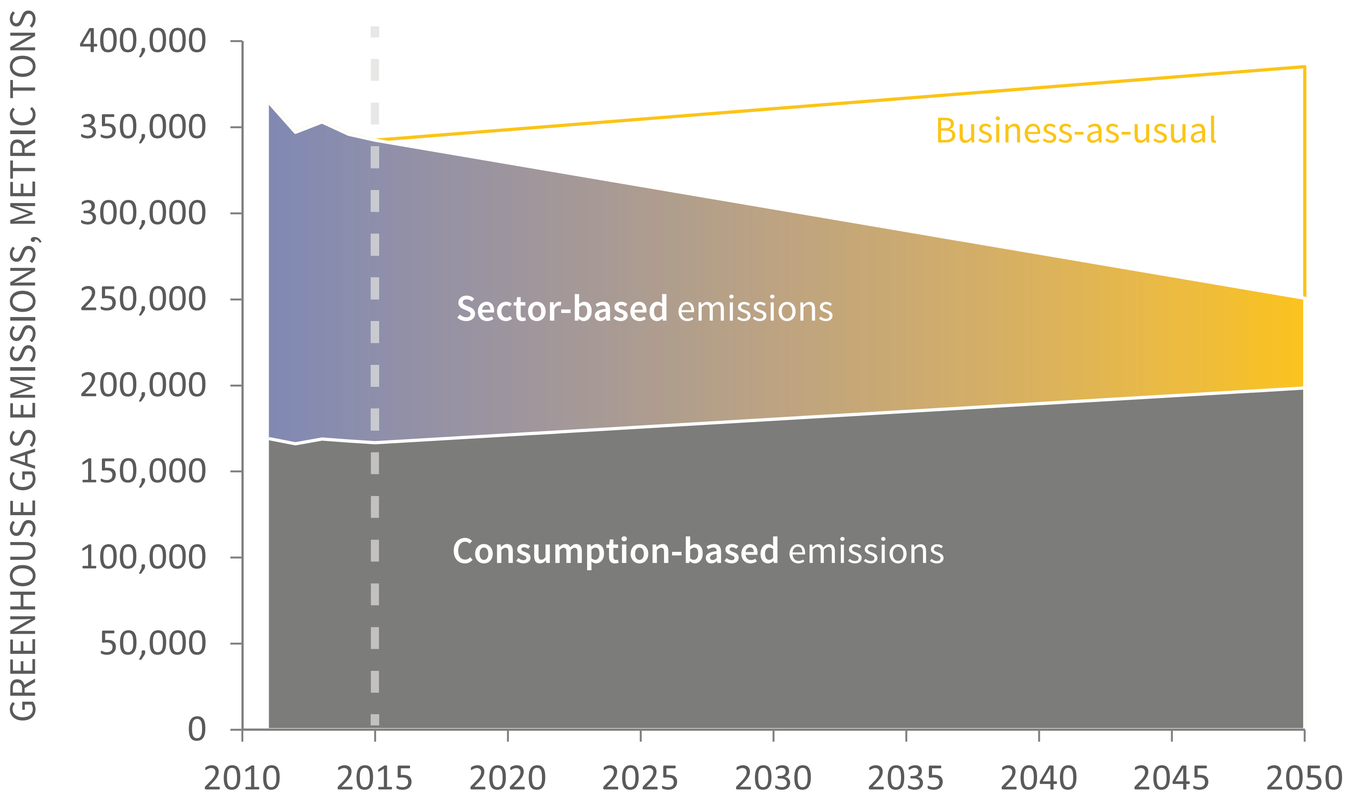
Setting a reduction target

The goal of the Ashland Climate and Energy Action plan is to reduce Ashland's greenhouse gas emissions. But by how much? When? And for which emissions?

Below are some options for emission reduction targets.

Option 1. 80% reduction in sector-based emissions by 2050

Equivalent to an average reduction of about 1% per year

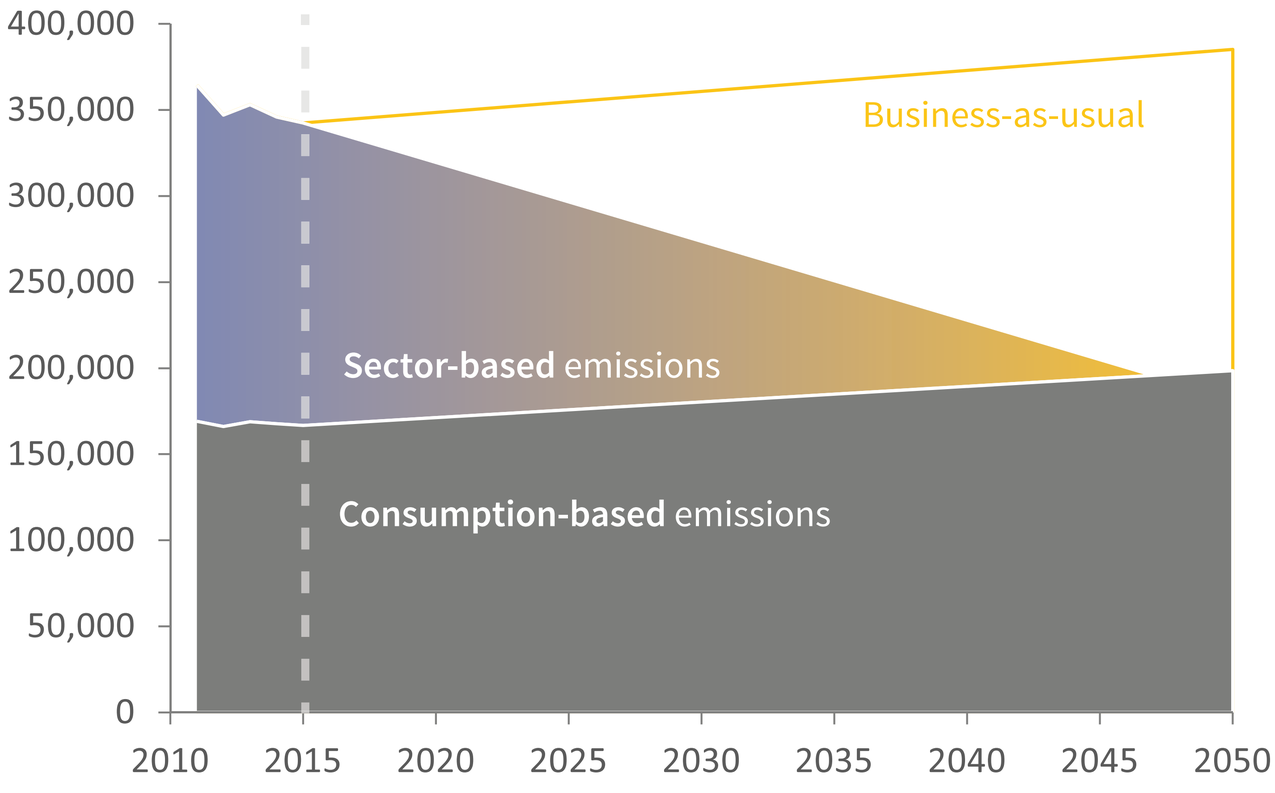


Features of this target

- Addresses emissions that the city has the most control over.
- Consistent with the goal set by majority of other jurisdictions.
- Likely attainable without needing emission offsets if the City takes ambitious action now.

Option 2. Carbon-neutral sector-based emissions by 2047

Equivalent to an average reduction of about 1.5% per year



Features of this target

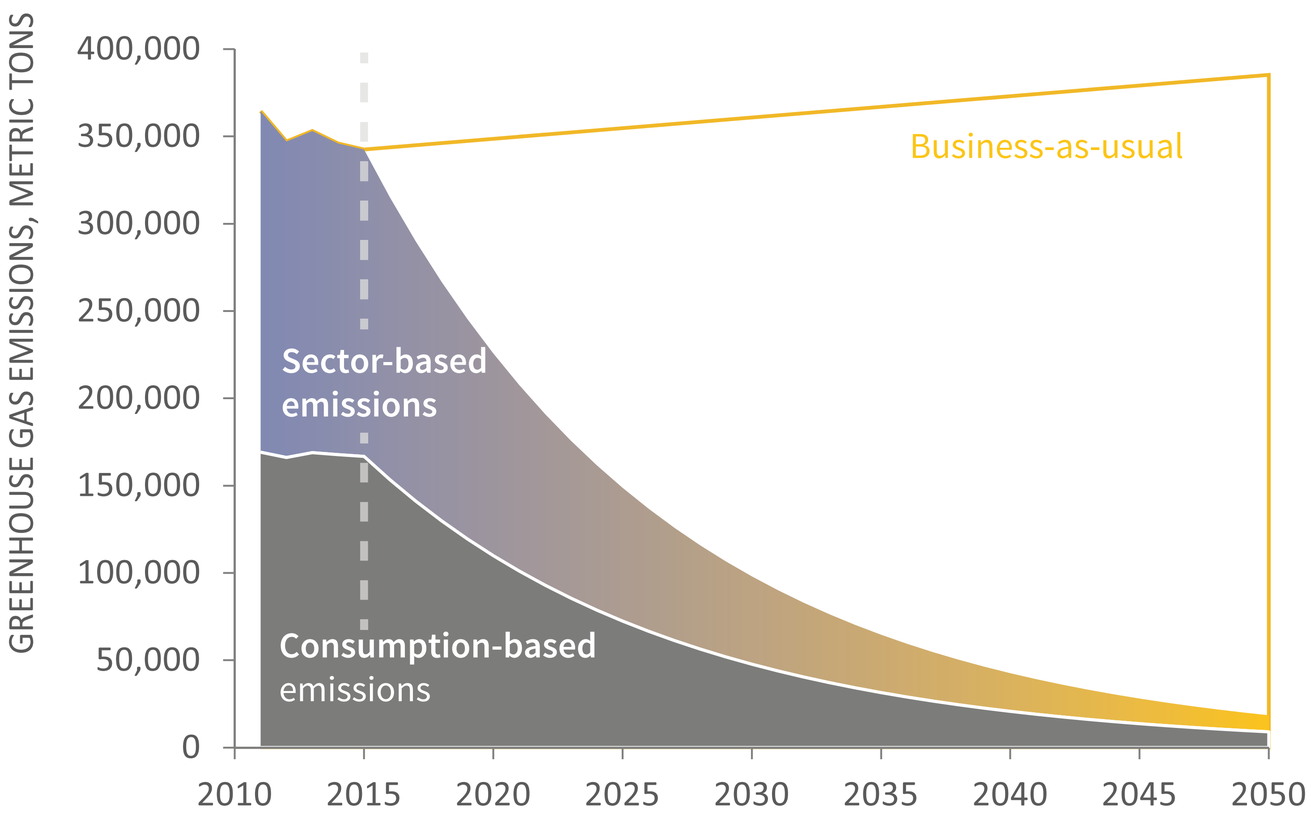
- Sets a target for 30 years after plan adoption.
- Consistent with the most ambitious U.S. cities.
- Would require 100% reduction in transportation, building, and solid waste emissions.
- Will very likely require purchasing or development of emission offsets.

Station

1 Ashland's Future Greenhouse Gas Emissions

Setting a reduction target

Option 3. 8% per year emission reduction in total emissions



Features of this target

- Represents Ashland's proportional global contribution to keeping climate change in check.
- Consistent with current target set by the City of Eugene.
- Cannot be accurately quantified or tracked using current methods due to high uncertainty.
- Will very likely require development or purchasing of emission offsets to attain.

What are emission offsets?

Offsets are units of carbon that are reduced, avoided, or sequestered that are used to compensate for emissions occurring elsewhere. They are often generated from individual projects, such as conserving a forest, capturing methane emissions from a farm, or generating wind energy. Some other facts about offsets:

- Offset projects must undergo a rigorous verification process to be put for sale on the market.
- Currently, carbon offsets can be purchased on the California market at around $13 per metric ton CO_2e.
- Carbon offsets must be purchased annually if used to meet annual reduction goals.

City of Ashland
Climate and Energy Action Plan Open House

Station

1 Ashland's Future Greenhouse Gas Emissions

Which emissions reduction goal would you like to see the City adopt for the Climate and Energy Action Plan? Why?

[Please write your response on a post-it and place it below.]

City of Ashland
Climate and Energy Action Plan Open House

Station

2 Ashland's Climate Vulnerability

Ashland's climate vulnerability

A series of community workshops revealed the following socioeconomic vulnerabilities in Ashland to climate change impacts:

Sensitivity and Exposure

Adaptive Capacity

Adaptive Capacity	HIGH	MEDIUM	LOW
LOW	• **Outdoor workers, elders, and low-income populations** will be vulnerable to severe heat. • **Elders, especially disabled and low-income individuals**, disproportionately affected by severe heat, smoke, and storms. • **People with mental illness** are especially susceptible to impacts from heat and natural disasters. • **Seasonal and service industry workers** at risk from all aspects of climate change that affect their lineup of jobs over the year. • **Hydropower** availability may change due to reduced snowpack and stream flow, drought, and flooding.	• **Low-income residents, especially young children,** at risk from extreme heat, smoke, and increased vector- and food-borne disease. Higher water and electricity costs and need for air conditioning could be significant burden. • **Homeless residents** will have little adaptive capacity when conditions become more extreme than usual. • **Roads bordering rivers and streams, and in valley bottoms**, as well as unstable slopes at risk from increased frequency of large storms.	• **Local reservoirs** exposed to more severe storms and larger precipitation events.
MEDIUM	• **People with asthma, respiratory and heart disease** impacted by smoke and ozone. • **Low-income populations** at risk from heat, smoke, and larger storms. • **Health care providers, emergency response staff** at increased risk with more extreme events. • **Rafting and other river-related recreation** industries impacted by water quality, low flow, and smoke. • **Tourism-based economy** affected by changes in natural beauty, smoke, severe heat, drought, water quality issues, and unpredictable seasons. • **Mount Ashland ski area** may experience reduced snowpack for winter recreation. Will need to consider shifting to other sports and activities.	• **Human health** at risk from smoke, vector- and water-borne disease, and increased use of pesticides due to mosquito spraying and agricultural pests. • **Emergency response and evacuation** to become more difficult and frequent due to increase in natural disasters and closure of evacuation routes during storms. • **Agricultural production** expected to decline with less reliable seasonality and more uncertainty in harvest dates and length of seasons. • **Local agriculture** will become stressed from pests, disease, drought, greater competition for water and land, and lower productivity from climate change. • **Roads, buildings, bridges, and real estate** at risk from wildfires, floods, and heat impacts. With increased temperatures and smoke, biking and walking will become hazardous, making more people rely on vehicles. Culverts and road crossings often not built to sufficient flood standards. • **Municipal water supply** expected to see greater demand and lower supply due to higher temperatures and reduced snowpack.	• **SOU students** highly mobile, connected. Most affected from poor air quality during fall sports, severe heat without air conditioning in late summer, and flooding associated with severe storms.
HIGH	• **Firefighters** at increased risk from fire as more homes are at risk and fires become more frequent. • **Local creeks** already affected by E. coli and algae likely to get worse, but management options exist to reduce impacts. • **Stormwater infrastructure** at risk from larger storms.	• **Landscaping** (SOU, parks, homes, etc.) exposed to changing conditions, water restrictions, extreme temperatures. Over time, trees could die and new types of trees and plants will need to be planted. Drought-resistant and fire-resistant plants not always compatible. SOU's irrigation systems out-of-date.	

Station

2 Ashland's Climate Vulnerability

Ashland's climate vulnerability

A series of community workshops revealed the following natural systems vulnerabilities in Ashland to climate change impacts:

Sensitivity and Exposure

Adaptive Capacity

Adaptive Capacity	HIGH	MEDIUM	LOW
LOW	• **High elevation plants and wildlife** unable to shift in range yet intolerant of warming conditions, loss of snow. • **Wolverine, Brewer spruce, Northern spotted owl, and other sensitive species** at risk from changing conditions. • **Intermittent springs and wetlands** at risk from changes in precipitation and snowmelt.	• **Intact habitats and ecosystems at lower elevations** at risk from climate change, invasive species, and development for housing, agriculture, and renewable energy. • **Connectivity of habitat** that allows species to shift with climate change is at risk. • **Migratory birds** affected by changes in seasonality and timing for food and migration. • **Amphibians** exposed to drought stress and an inability to disperse to new areas	
MEDIUM	• **Anadromous fish populations** affected by warmer water, more sediment and erosion, lower flows, loss of food, ongoing pollution and dams. • **Biodiversity** is expected to decline as climate change accelerates. Some species will benefit, but far more will decline and even go extinct.	• **Mid-elevation coniferous forests** to suffer from disease, pests, and overall change. • **Mid-elevation coniferous forests** at risk from additional stress and loss of moist micro-climate from large-scale thinning. • **Oak woodlands, grasslands** at risk from overall change and stressors such as agriculture, development, and renewable energy.	• **Generalist species** such as raccoons, black bears, black-tailed deer, American robins, and others expected to be more able to adapt to changing conditions.
HIGH		• **Chaparral, grasslands, and shrublands** could increase as coniferous forests contract while also being at risk from development at lower elevations.	• **Invasive and non-native species** benefit from declines in native species and warmer water and air.

Station

2 Ashland's Climate Vulnerability

What are the most important **resources, systems, or populations** for the City to pay attention to in preparing for climate change? **Why?**

[Please write your response on a post-it and place it below.]

Station 3

Goals, Strategies, and Actions: Cross-Cutting Strategies

What are we talking about?

Cross-cutting strategies refers to activities that address climate change more generally or across multiple sectors.

Why is it important?

Addressing climate change requires that we work across sectors to incorporate climate change considerations into all that we do. Only through a coordinated and multi-pronged effort can significant progress be made.

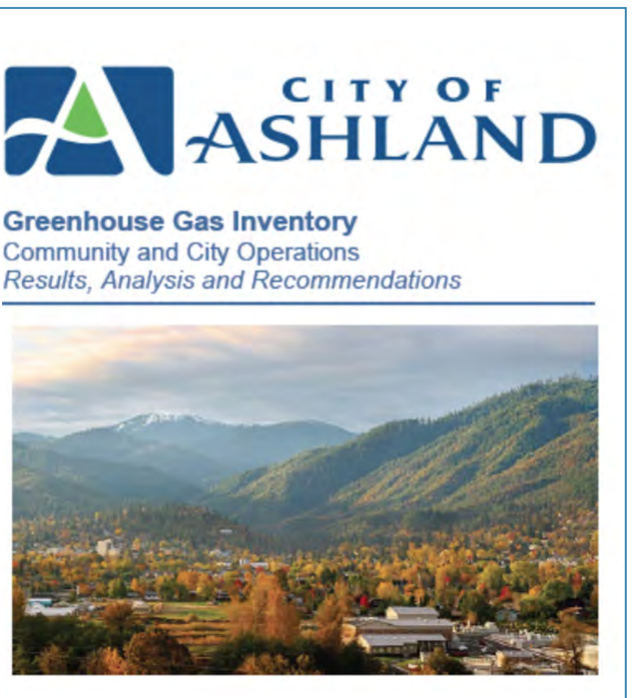
Proportion
of overall emissions

Relevance
to addressing priority climate risks

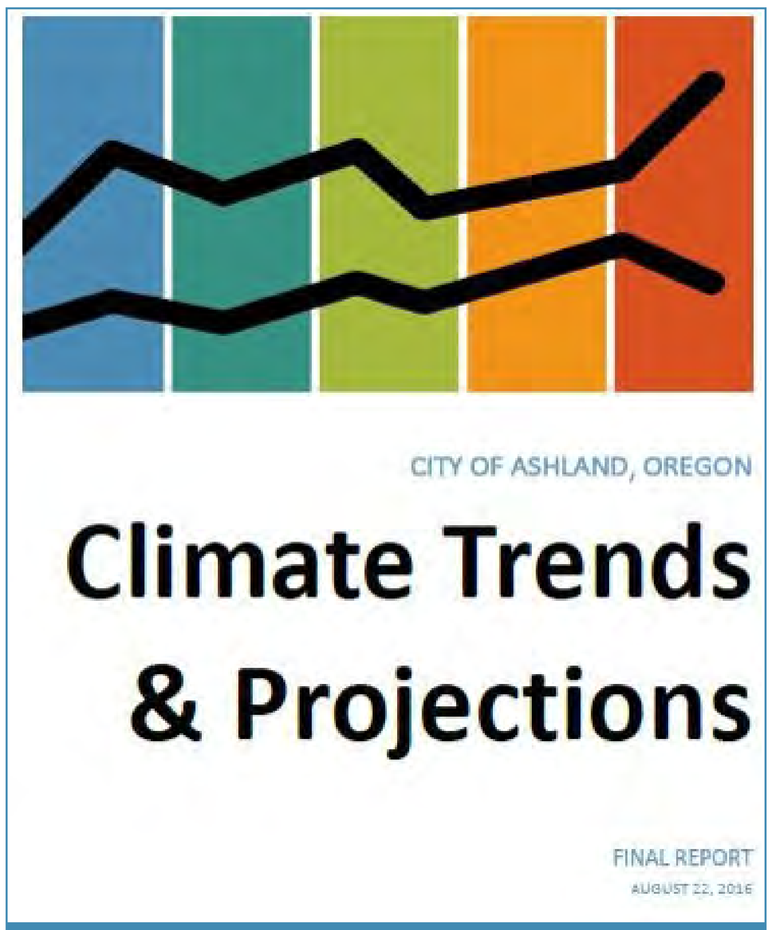
Level
of City influence

What are we already doing?

The City of Ashland has demonstrated a commitment to comprehensive climate action through development of the Climate and Energy Action Plan. Other activities that demonstrate this cross-cutting approach include:



Development of a citywide greenhouse gas emissions inventory.



Analysis of anticipated impacts, trends, and vulnerabilities of Ashland residents, businesses, and resources to climate change through commissioning a Climate Trends Summary from Oregon State University climate scientists.

Public outreach, education, and input through City-sponsored events.

Station 3

Goals, Strategies, and Actions: Cross-Cutting Strategies

What are our goals?

- **Reduce greenhouse gas emissions** from the community and City operations.
- **Increase city preparedness** to climate change impacts.

How can we get there?

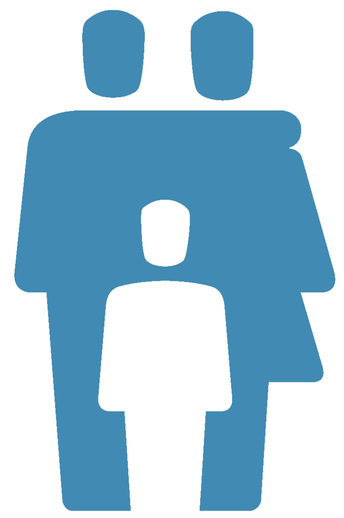
Place "dot" here to support Strategy

1

Strategy 1. Educate & empower the public

Addressing communitywide emissions starts with ensuring that the public understands climate change and what they can do to address the challenge. Potential actions to educate and empower the public include:

- Using multi-media outreach to get the word out.
- Utilizing smart-grid technologies so people know how much energy they are using.
- Supporting the capacity of neighborhood and community groups through grants and tools.



Place "dot" here to support Strategy

2

Strategy 2. Educate & engage City Staff

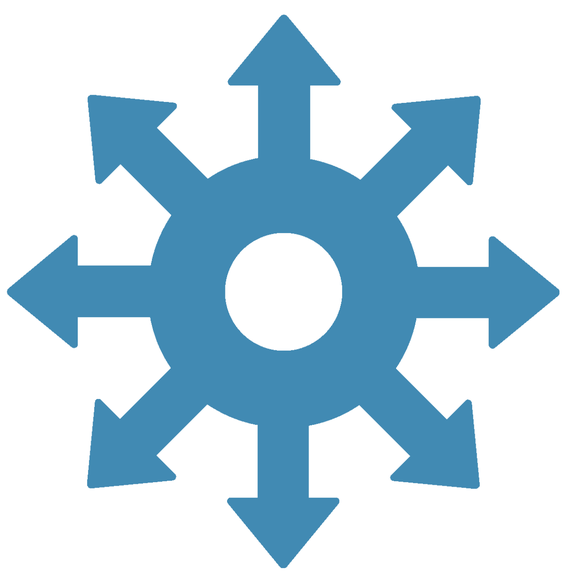
Ultimately tasked with implementing the Climate and Energy Action Plan, City staff and leadership must understand threats and issues related to climate change and actions needed to address it. This strategy deals with ensuring that all City departments educate their staff about the Climate and Energy Action Plan and clarify roles and expectations for its implementation.

Place "dot" here to support Strategy

3

Strategy 3. Mainstream climate considerations

As an inherent cross-cutting issue, climate change should be integrated into all other activities and processes, as relevant. For example, climate change could be considered in all City Council policy, budgetary, or legislative decisions, and as part of regular City Council communications.



Station 3

Goals, Strategies, and Actions:
Cross-Cutting Strategies

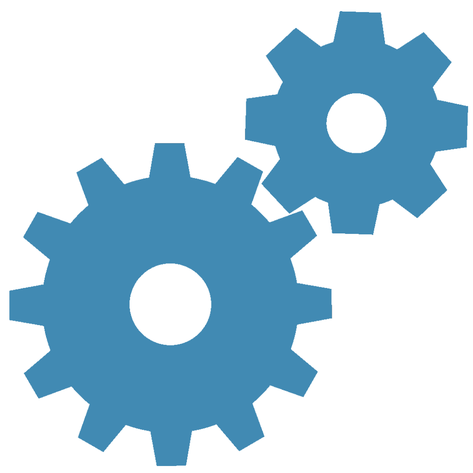
Place “dot” here to support Strategy

4

Strategy 4. Ensure implementation of the Climate & Energy Action Plan

The Climate and Energy Action Plan marks the beginning of a the City’s strategic and coordinated effort towards taking action on climate change and building resilience to climate change impacts. This strategy incorporates clear actions that will ensure that the CEAP is implemented across City and community activities in an effective and timely manner. Actions within this strategy could include:

- Forming a City staff and community leadership advisory team to shepherd plan goals and actions.
- Establishing a full-time position within the City dedicated to CEAP implementation.
- Establishing an ordinance tied to the targets set forth in the CEAP.



Place “dot” here to support Strategy

5

Strategy 5. Prepare for climate impacts

Because climate change impacts will affect the City across its diverse operations, preparing for climate change impacts will require a coordinated City-wide effort. This strategy includes climate preparation actions that cut across City departments and operations, such as updating the City’s emergency response plan to ensure that it recognizes and addresses likely climate change impacts.

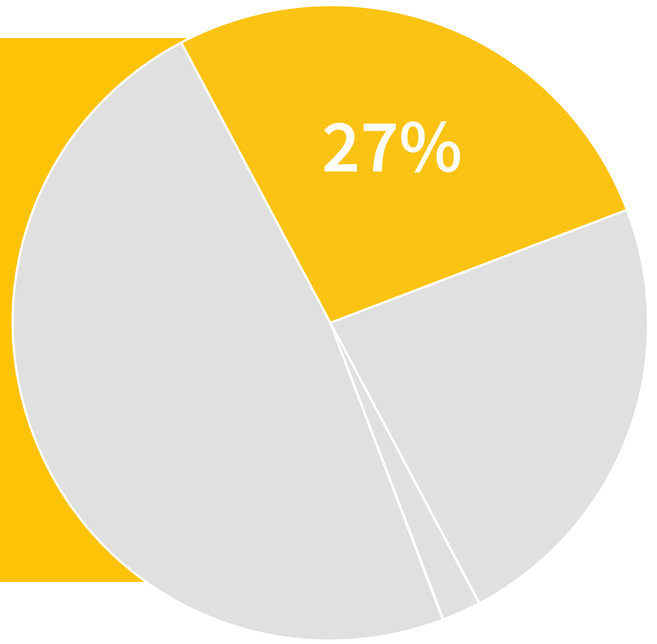
Station 4

Goals, Strategies, and Actions:

Buildings and Energy

What are we talking about?

Buildings and Energy refers to energy used in commercial, residential, and industrial buildings, as well as opportunities to reduce energy use, expand renewable energy production, and prepare buildings for a changing climate.



Why is it important?

Proportion of overall emissions

Relevance to addressing priority climate risks

Level of City influence

For mitigation:

Ashland's commercial, residential, and industrial building energy use accounted for 27% of community greenhouse gas emissions in 2015. These emissions represent a significant decrease from 2011 emissions due to increased renewable electricity in the regional grid, decreased electricity use in the residential sector, and reduced natural gas use from warmer winters.

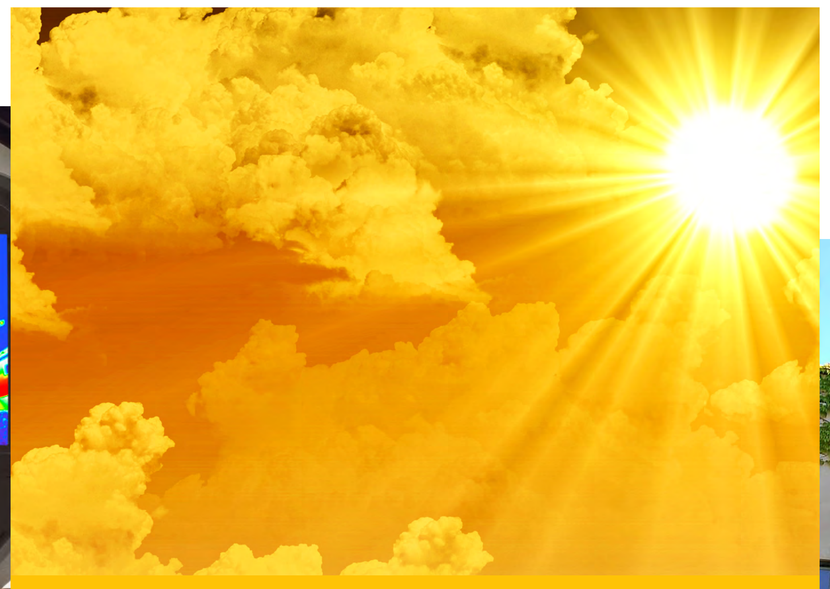
For adaptation:

Ashland's energy sources and building stock will be affected by climate change. Reduced snowpack may affect hydropower capacity, and increased temperatures will increase energy demand for cooling during the dry summer months. Increased wildfire risk may also put transmission lines at risk.

What are we already doing?

Ashland owns its own electrical utility, which means that the City has greater control over its electricity rates and programs than other cities. This arrangement has contributed to the City's great progress in supporting community renewable energy and improving building energy efficiency.

A retro-commissioning incentive program provides financial and technical assistance to tune up energy systems in commercial and residential buildings.



The community solar project Solar Pioneer II gives citizens an opportunity to purchase locally-generated renewable energy.

The City recently completed a City Facilities Energy Audit that identified energy efficiency upgrade opportunities at City facilities.

City of Ashland
Climate and Energy Action Plan Open House

Station 4

Goals, Strategies, and Actions:

Buildings and Energy

What are our goals?

- **Reduce greenhouse gas emissions** associated with Ashland's energy use.
- **Increase energy and water efficiency** in City, residential, and commercial buildings.
- **Maximize resiliency** of Ashland's energy sources to climate change.
- **Maximize protection** of Ashland's building stock from future climate change impacts.

How can we get there?

Place "dot" here to support Strategy

1

Strategy 1. Support cleaner energy sources

Efforts to support cleaner energy sources will minimize harmful pollution associated with energy use and help meet the additional energy needs as climate change causes temperatures to rise. Some potential actions the City can take related to clean energy include:

- Facilitating fuel-switching in residential and commercial buildings from natural gas to renewable energy or clean electricity.
- Developing an energy master plan that evaluates and plans for increased renewable sources as part of Ashland's energy mix.
- Complete current solar assessments at City buildings and incorporate installations into City budgets.

Place "dot" here to support Strategy

2

Strategy 2. Improve demand management

Managing the timing and intensity of energy demand can help make sure that dirtier energy is not needed during peak times of high demand. Some potential actions the City can take related to demand management include:

- Developing an energy master plan that balances energy efficiency, demand management, and renewable energy.
- Expanding the City's current net meter resolution to include and incorporate virtual net metering, which allows consumers to share energy within a group or neighborhood.
- Implement utility systems that give customers the ability to make real time usage and demand response decisions.

Station 4

Goals, Strategies, and Actions: Buildings and Energy

Place “dot” here to support Strategy

3

Strategy 3. Encourage increased commercial and residential building energy efficiency

In addition to changing the energy source, cutting energy use within buildings presents another opportunity to cut emissions. Potential actions include:

- Requiring building audits for the largest or least efficient commercial or residential buildings.
- Encouraging high energy-efficiency standards for new construction.
- Working with property and business owners to identify and address barriers to efficiency in multifamily and commercial rent/lease properties.
- Restarting the energy and green building challenges.

Place “dot” here to support Strategy

4

Strategy 4. Maximize efficiency of City buildings, facilities, and other energy-intensive equipment and operations

This strategy reduces the emissions associated with City operations and promotes water and energy conservation. Potential actions the City can take to maximize its building and facility equipment efficiency include:

- Implementing energy efficiency upgrades at City facilities.
- Pursuing LEED or ENERGY STAR certification for buildings.

Place “dot” here to support Strategy

5

Strategy 5. Enhance energy reliability

Projected climate impacts may make our energy sources less reliable. The City could take actions such as the following to help maximize resilience and reliability of Ashland’s energy sources:

- Explore ways to balance diversity and resiliency of energy sources with technology capabilities, Ashland’s contractual obligations for purchasing energy from Bonneville Power Administration, and cost-effective implementation.
- Explore enhanced energy storage systems to prevent disruptions.

Place “dot” here to support Strategy

6

Strategy 6. Adapt buildings to a changing climate

The City can promote actions that help adapt buildings to climate impacts such as extreme heat and wildfire. Some example actions within this strategy could include:

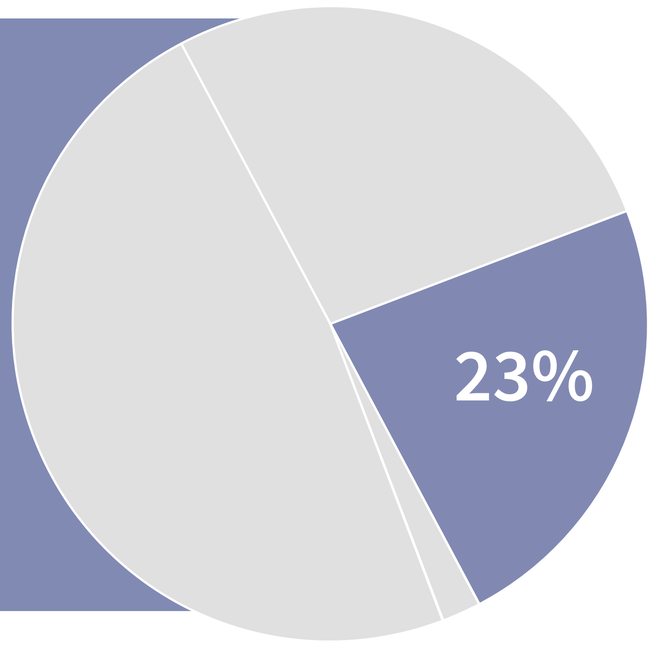
- Promotion of more resilient building techniques, such as white roofs that minimize urban heat effect and fireproof building materials.
- Considering future climate conditions when designing City buildings to incorporate resilience-building elements.

Station 5

Goals, Strategies, and Actions: Transportation, Land Use, and Urban Form

What are we talking about?

Transportation, Land Use, and Urban Form refers to the form and function of land and transportation systems, including ways to reduce greenhouse gas emissions and build climate change resilience through urban planning, design, improved land use practices, and clean and efficient transportation systems.



Why is it important?

Proportion of overall emissions

Relevance to addressing priority climate risks

Level of City influence

For mitigation:

Emissions from the transportation sector made up 23% of Ashland's overall greenhouse gas emissions in 2015. Local, on-road transportation of passengers in residential-owned passenger cars and trucks accounts for the majority of these transportation emissions in Ashland. While emissions from the built environment have declined in Ashland since 2011, transportation emissions have seen no significant change.

For adaptation:

Ashland's roads, bridges, and real estate could be at risk from wildfires, floods, and heat impacts. With increased temperatures and smoke, biking and walking may become more hazardous and increase reliance on vehicles. Culverts and road crossings may not be sized to withstand increased flooding, and roads bordering rivers and streams may be at risk of inundation.

What are we already doing?

Many of Ashland's existing plans and standards address emissions associated with transportation and land use, including the Transportation System Plan, local land use code, and Comprehensive Plan. Some examples of climate-friendly actions and requirements include the following:

Street standards and street classifications in the Transportation System plan that promote shared streets that incorporate bicycle, pedestrian, and mass transit infrastructure.

The Comprehensive Plan and City street standards highlight "connectivity" as a requirement in all new development.

The Land Use Code has a transit-oriented development and "Pedestrian Places" ordinance.

City of Ashland
Climate and Energy Action Plan Open House

Station 5

Goals, Strategies, and Actions:

Transportation, Land Use, and Urban Form

What are our goals?

- Reduce community and city employee **vehicle miles traveled.**
- Improve **vehicle efficiency** and expand **low carbon transport**.
- Support local and regional **sustainable growth.**
- Protect **transportation infrastructure** from climate impacts.

How can we get there?

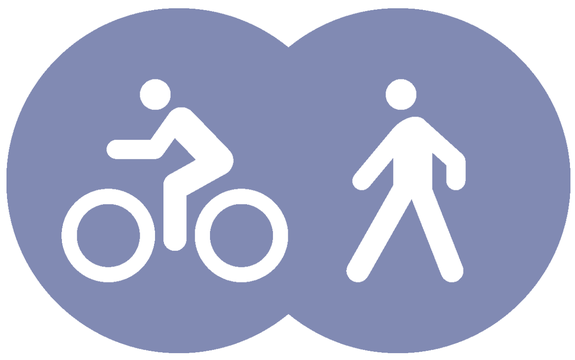
Place “dot” here to support Strategy

1

Strategy 1. Make streets and development more bike- and pedestrian-friendly

This strategy can make it easier for the public to reduce their use of cars and opt, instead, to take more trips by bike or on foot. This supports the City’s goal to reduce vehicle miles traveled, and potential actions include:

- Implementing key actions from the Transportation System Plan, such as installing bicycle intersection safety improvements, increasing bike lane infrastructure, and expanding on-street bicycle racks.
- Conducting a community survey to understand barriers to biking.
- Exploring options for vehicle-free streets to reduce vehicle use and promote pedestrian traffic.



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2

Strategy 2. Support better public transit and ridesharing

Similar to bike- and pedestrian-friendly development, better public transit and ridesharing can help the public reduce its reliance on cars and support the City’s goal to reduce vehicle miles traveled. Potential actions include:

- Working with RVTD to promote expanded and more climate-friendly transit options.
- Providing additional park-and-ride lots to promote public transit and reduce downtown congestion.
- Expanding use of carpooling and car-sharing systems.
- Evaluating the introduction of a city-specific mass transit option, such as a trolley.

City of Ashland
Climate and Energy Action Plan Open House

Station 5

Goals, Strategies, and Actions: Transportation, Land Use, and Urban Form

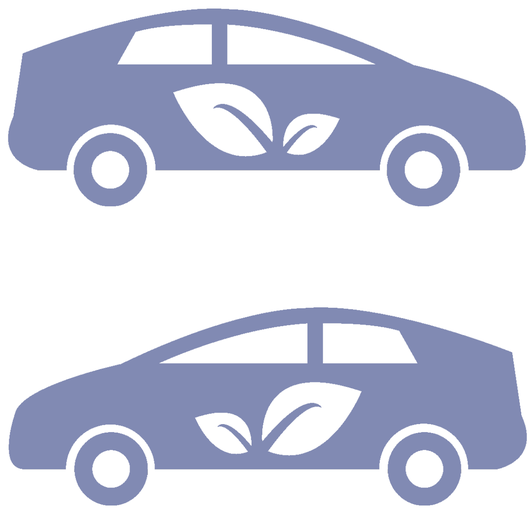
Place “dot” here to support Strategy

3

Strategy 3. Support more efficient vehicles

Improving vehicle efficiency reduces resource consumption and reduces associated emissions, particularly emissions from the combustion of fuels. Potential actions to support more efficient vehicles include:

- Changing land-use code to require electric vehicle charging infrastructure in all multi-family and commercial developments.
- Including information on the City website about the value of electric vehicles and directions for receiving rebates for electric and hybrid vehicles.
- Supporting the transition of taxi, for-hire, and limousine vehicles to low-carbon fuels and technologies.



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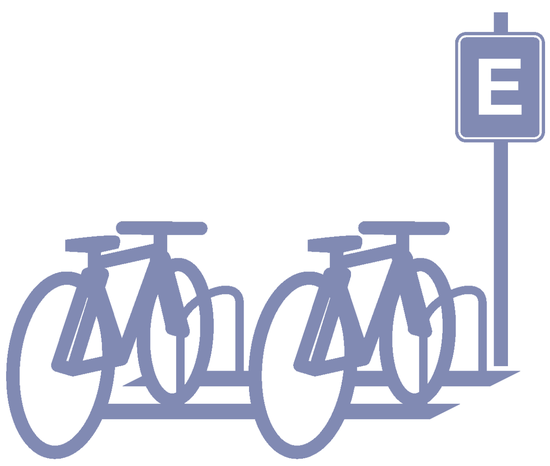
4

Strategy 4. Increase the efficiency of City fleet and employee commuting

Improving the efficiency of City fleet not only supports emissions reductions, but can also reduce operation costs. To further support the City’s goals to improve vehicle efficiency and reduce vehicle miles traveled, this strategy also works to promote more sustainable employee commuting options. Potential actions include:

- Improving City facilities for biking, including showers, lockers, and covered or secured bike parking.
- Conducting a City fleet audit and setting policy and targets for converting City fleet to higher-efficiency vehicle types and increasing vehicle sharing across departments.
- Providing more EV charging stations near City facilities.



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5

Strategy 5. Support more climate-friendly development and land use

Climate-friendly development and land use, such as actions that promote walkability, density, and low-impact development support local and regional sustainable growth and promote reduction of vehicle miles traveled. This strategy also deals with ways to promote land use that minimizes harmful climate impacts. Potential actions include:

- Revising Community Development plans to more strongly favor walkable neighborhoods and infill density.
- Explore introduction of more stringent fire protection measures near the wildland-urban interface to accommodate increased wildfire risk.

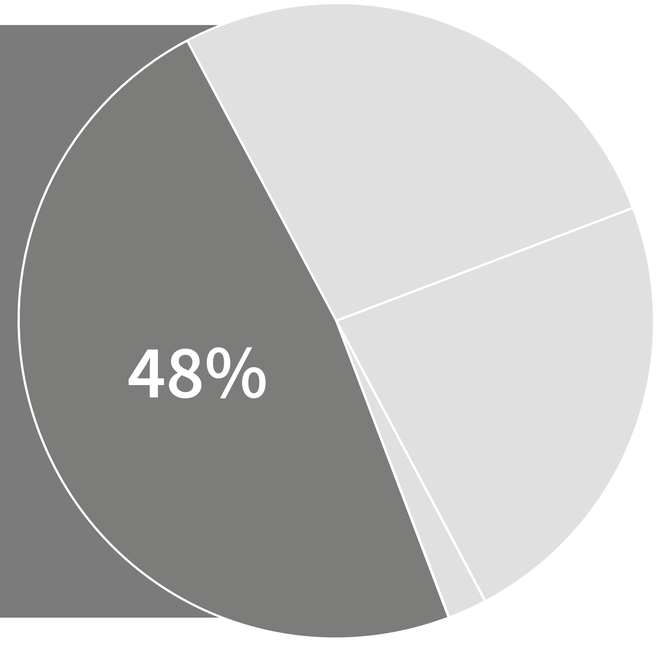
Station 6

Goals, Strategies, and Actions:

Consumption and Waste

What are we talking about?

Consumption and Waste refers to emissions and climate change risk associated with the lifecycle of goods and materials. It includes opportunities to reduce emissions associated with manufacturing, use, and disposal, as well as ways to address risks to supply chains and food availability due to climate change.

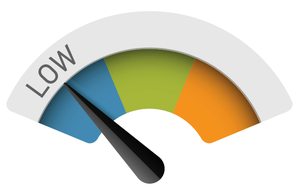


Why is it important?

Proportion of overall emissions

Relevance to addressing priority climate risks

Level of City influence



For mitigation:

The scale of consumption-based emissions as a category is large relative to Ashland's emissions from energy, transportation, and local government. Because Ashland's industrial sector is small and there is no significant agriculture within city limits, the Ashland community relies almost entirely on imported goods, food, and energy products to meet its needs. A large portion of food emissions are from the production of meat. Emissions from household goods are largely from home construction, furniture, clothing, and vehicle purchases.

While these emissions are large, they are "indirect" emissions that are not under the same level of community control as the local, sector-based emissions. While Ashland could change local development codes to address building energy, there is no similar ability to influence production efficiencies for imported goods and services.

For adaptation:

Local agriculture may become stressed from pests, disease, and drought under future climate change, potentially reducing the availability of local food. Climate change may also disrupt global supply chains and thereby affect the cost of household goods and services.

What are we already doing?

Ashland exemplifies its commitment to reduced waste and local sourcing through a variety programs, ordinances, and offerings, such as:

Bans on plastic bags and Styrofoam containers.

Community garden programs, farmers markets, and co-ops.

Residential curbside recycling programs and outreach.

City of Ashland
Climate and Energy Action Plan Open House

Station 6

Goals, Strategies, and Actions: Consumption and Waste

What are our goals?

- **Reduce solid waste disposed** at landfills
- **Increase waste diversion** through waste prevention, recycling, and composting
- **Support locally produced products** and increase their availability

How can we get there?

Place “dot” here to support Strategy

1

Strategy 1. Expand community recycling, composting, and reuse

Recycling, composting, and reuse keep materials out of the landfill and minimize greenhouse gas emissions associated with waste hauling and disposal. Potential actions to expand recycling, composting, and reuse —and through that, increase local waste diversion—include:

- Exploring options for expansion of commercial and residential composting.
- Updating the multi-family recycling ordinance to encourage increased diversion.
- Conducting targeted public education and outreach, especially to the multi-family sector.
- Making recycling easier for people, such as by increasing the number of recycling and composting bins available in city public areas.

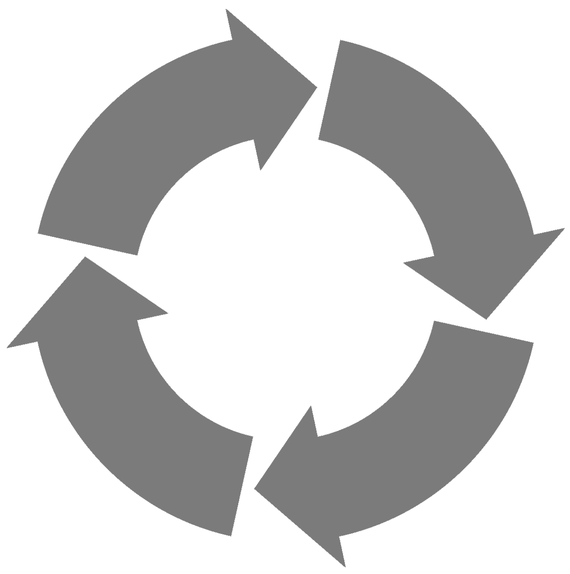
Place “dot” here to support Strategy

2

Strategy 2. Support sustainable and accessible local production and consumption

Robust local production and consumption can reduce consumption-related carbon emissions while promote community resilience, particularly in the face of climate impacts. Potential actions include:

- Working with sustainability organizations to recognize restaurants that feature local produce and products.
- Considering local supply chains in implementation of the economic development strategy.
- Creating in-town farming and educational opportunities for the public using City parks and open spaces.
- Identifying local food sources and their risk of interruption under climate change, as well as researching new crops, technologies, and approaches to minimize disruption to local food supply.



Station 6

Goals, Strategies, and Actions: Consumption and Waste

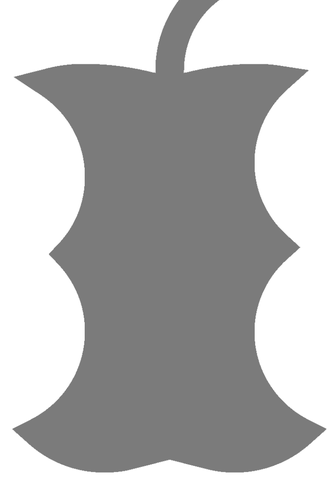
Place “dot” here to support Strategy

3

Strategy 3. Reduce food waste

Food waste nationally is estimated to be 30-40% of the food supply. Reducing food waste reduces methane emissions from landfill and conserves energy and resources associated with the food supply chain. Reducing food waste is a key component in consumption and waste reduction efforts, and potential actions include:

- Seeking federal grant funds for a public education campaign to promote food waste reduction by residents.
- Providing a best practices guide for commercial kitchens to find efficiencies and opportunities to reduce food waste through better planning, purchasing, storage, and preparation.
- Supporting food waste-to-fuel/energy efforts, including locally produced biodiesel and biofuels.
- Working with the food bank to support edible food donations.



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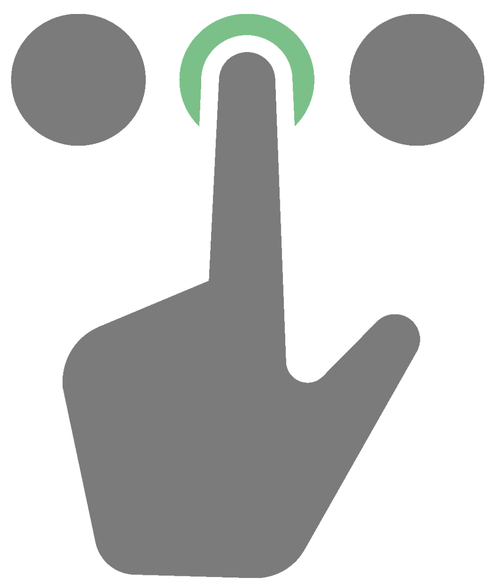
4

Strategy 4. Improve sustainability of City purchases and procurement

The City’s purchasing and procurement activities also result in consumption-related emissions. Sustainable purchasing by the City can support products that increase resource efficiency and reduce waste. Potential actions include:

- Introducing environmentally preferable purchasing (EPP) guidelines for City procurement.
- Conducting a feasibility study at the wastewater treatment facility for co-digestion of food waste and biosolids for power generation.
- Promoting online citizen services (e.g., bill pay) to reduce paper use and car trips to City offices.



Station 7

Goals, Strategies, and Actions:

Natural Systems

What are we talking about?

Natural Systems refers to air, water, and ecosystem health, including opportunities to reduce emissions and prepare for climate change through improved ecosystem and resource management and conservation.

Why is it important?

Relevance to addressing priority climate risks

Level of City influence

For mitigation:

Although not formally accounted for in Ashland's greenhouse gas emissions inventory, natural ecosystems such as forests and wetlands capture and store carbon, acting as a greenhouse gas "sink." Proper ecosystem management can optimize this process of carbon sequestration, as well as minimize the potential risk of greenhouse emissions from catastrophic wildfires.

For adaptation:

Many of Ashland's natural systems and surrounding natural areas will be impacted by climate change, threatening the important services they provide such as water filtration, flood abatement, pollination, recreation, and fire protection. Changes in temperature, snow pack, and the abundance of diseases and pests will stress sensitive and high-elevation plants, wildlife, and ecosystems such as the Northern Spotted Owl, anadromous fish populations, and mid-elevation coniferous forests. Other stressors such as habitat loss and pollution exacerbate this risk.

What are we already doing?

The City of Ashland works within its city limits and with partners outside its limits to promote sustainable management and conservation of its natural ecosystems. Here are some ways the City is currently taking action:

The Ashland Forest Resiliency Project has produced planning documents that consider optimized forest fuel management and wildfire planning in the face of climate change.

A new city Water Master Plan will incorporate future climate risks to water supply and quality into future service planning and activities.

The City promotes drought-tolerant landscaping through education, outreach, and technical assistance.

City of Ashland
Climate and Energy Action Plan Open House

Station 7

Goals, Strategies, and Actions: Natural Systems

What are our goals?

- **Enhance ecosystem health** and resilience.
- **Ensure sustained access** to clean air and drinking water.

How can we get there?

Place “dot” here to support Strategy

1

Strategy 1. Manage and conserve community water resources

Water is a critical resource to all. Climate-related impacts to water resources in Ashland could include reduced summer streamflow and increased potential for large storms and extreme downpours in winter. Management and conservation of water resources can mitigate these risks, and potential actions include:

- Identifying key areas for restoration that can increase summer water storage and moderate winter flooding.
- Restoring key areas to hold water upstream and reduce flood risk.
- Incentivizing water conservation through rate structures and outreach and education.
- Exploring ways to promote water-efficiency technologies on irrigation systems as part of the permitting process.

Station 7

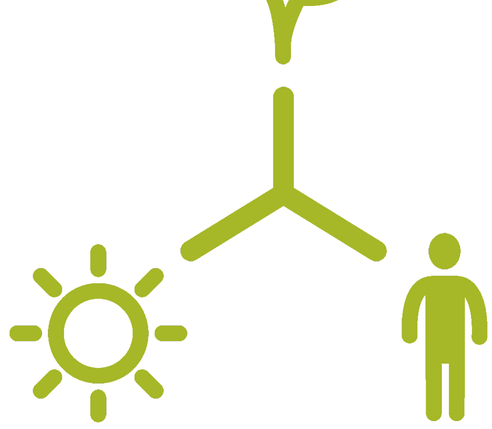
Goals, Strategies, and Actions: Natural Systems

Place “dot” here to support Strategy

2

Strategy 2. Promote ecosystem resilience

Proper ecosystem management can not only optimize carbon sequestration, but also promote ecosystem resilience to changes in the environment. This strategy supports preservation of natural areas and wildlife. Potential actions include:



- Promoting forest fire management and planning that is supported by the best available science.
- Considering climate change projections in forest and ecosystem management.
- Improving public lands management through enhanced habitat restoration and conservation that protects at-risk species and optimizes the provision of ecosystem services.
- Updating the City’s street tree guide and landscape design standards to include tree species appropriate for the future local climate.
- Managing forests to retain biodiversity, ecosystem function, and ecosystem services, and protecting the structural and genetic diversity in forests
- Using impervious surfaces to reduce flood risk.

Place “dot” here to support Strategy

3

Strategy 3. Conserve water use within City operations

The City leads by example. Conserving water in its internal operations and city-provided services demonstrates its commitment to reducing climate impacts on natural systems in Ashland. Potential actions include:

- Implementing efficiency recommendations from the recent City facilities water audit.
- Updating City landscaping standards to reduce water consumption and chemical use.
- Exploring opportunities to install rainwater collection systems for City facilities for graywater and outdoor uses.

Station 8

Goals, Strategies, and Actions:

Public Health, Safety, and Security

What are we talking about?

Public Health, Safety, and Security refers to the ongoing wellbeing and safety of Ashland's residents in the face of a changing climate, including health and assistance programs for disadvantage populations, as well as climate-related risks to Ashland's economy and public safety.

Why is it important?

Relevance to addressing priority climate risks

Level of City influence

For mitigation:

Emissions associated with public health, safety, and security services are encapsulated in other sectors of the greenhouse gas inventory, and therefore are not addressed here.

For adaptation:

Ashland's outdoor workers, elderly, very young, and low-income populations will be especially vulnerable to health impacts from more frequent and severe heat waves. Rafting, skiing, and other outdoor recreation industries may suffer from reduced snowpack and reduced summer flows, affecting workers throughout the local tourist industry. Increased wildfire risk will stress emergency services and increase the number of homes within wildfire risk areas.

What are we already doing?

Although the City of Ashland has limited influence over the health and social services of its residents, the City has made great strides in supporting the local economy and preparing for emergency events. For example:

Firewise Ashland provides residents of the wildland/ urban interface with the knowledge and skills necessary to prepare for wildfires.

The annual Ashland is Ready workshop provides emergency planning assistance and information for residents.

The Social Service Grant and Community Development Block Grant programs support disadvantaged and at-risk populations.

City of Ashland
Climate and Energy Action Plan Open House

Station 8

Goals, Strategies, and Actions:

Public Health, Safety, and Security

What are our goals?

- **Protect public health** from air pollution and climate impacts.
- **Improve community capacity** to understand, prepare for, and respond to climate change impacts.

How can we get there?

Place “dot” here to support Strategy

1

Strategy 1. Manage ecosystems and landscapes to minimize climate-related health impacts

Managing ecosystems and landscapes to reduce air emissions, preserve green spaces, and shelter from urban heat effects can minimize the impact of climate change on human health. Potential actions include:

- Expanding tree canopy on public lands, particularly in urban heat islands or areas that lack air conditioning.
- Incentivizing use of electric instead of fuel-burning mowers, weed-whackers, and blowers.

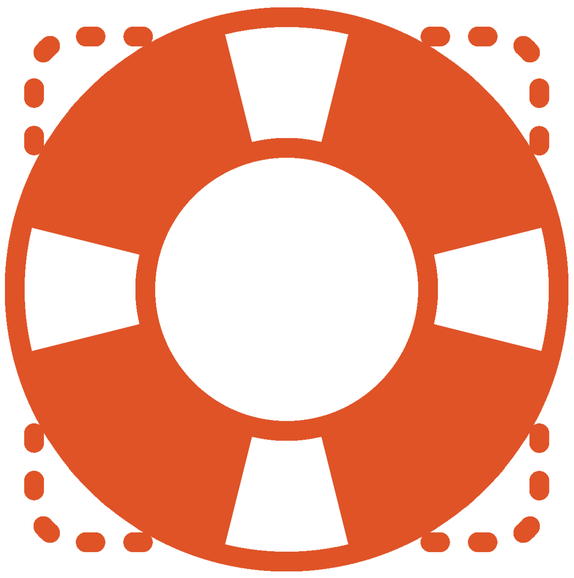
Place “dot” here to support Strategy

2

Strategy 2. Optimize City services to minimize climate-related health impacts

More frequent and intense extreme heat events and wildfire smoke risks with climate change threaten the public health of Ashland’s population. To prepare for these heightened risks, potential City actions include:

- Working with regional partners and stakeholders to identify at-risk individuals and groups and their needs.
- Educating the public and public health officials on the health risks posed by climate change.
- Working with vulnerable neighborhoods through a community planning process to create site-specific adaptation strategies.
- Soliciting innovative ideas for city cooling and other adaptation strategies through community contests or forums.



City of Ashland
Climate and Energy Action Plan Open House

Station 8

Goals, Strategies, and Actions: Public Health, Safety, and Security

Place “dot” here to support Strategy

3

Strategy 3. Optimize city services to minimize climate-related safety impacts

Climate stress can add additional burdens on City services to protect public safety. To adapt to anticipated changes, potential actions include:

- Ensuring that essential City services are not in the 100-year flood zone.
- Adjusting zoning to reduce development in areas at high risk of fire.
- Continuing to educate homeowners on creating fire-defensible spaces around their homes.

Place “dot” here to support Strategy

4

Strategy 4. Optimize city operations and programs to minimize climate-related employee health impacts

Increased heat- and smoke-related health risks also threaten City employees. Potential actions to minimize climate impacts on the City’s employees include:

- Enhancing internal education and understanding of changing wildfire smoke and extreme heat risks.
- Including wildfire smoke health and safety measures in the City’s health and safety policy, ensuring that each department’s guidelines are consistent and adequate.

Place “dot” here to support Strategy

5

Strategy 5. Promote a sustainable local economy that minimizes emissions and vulnerability to climate impacts

The impacts of climate change on the local economy can threaten the economic security of Ashland residents. This strategy involves addressing economic resilience through improved planning and access to critical resources. Potential actions include:

- Supporting climate-dependent workers such as those in winter and summer recreation and farming to arrange reliable and consistent employment.
- Working with businesses to analyze their vulnerability to climate change and plan for the future.

We want to hear from you!

The City of Ashland wants to know your priorities and concerns regarding sustainable City and community practices and policies related to climate change in Ashland.

Your input will help shape the vision, goals, and strategies of the Climate and Energy Action Plan.

1. **How do you think the City and community should address climate change?**
2. **What are your priorities and concerns?**
3. **Do you have questions?**

How can you provide input?

RIGHT NOW Fill out a comment card here!

EMAIL adam.hanks@ashland.or.us

ONLINE Learn more, take our survey, or provide a comment at: **www.Ashland.or.us/climateplan**

IN PERSON At our open house on **December 7th**

City of Ashland
Climate and Energy Action Plan Open House

WELCOME!

Planning for the future of Ashland amidst a changing climate

This is the second of a series of open houses to hear your priorities and concerns. For this open house, you will have an opportunity to tell us which climate and energy strategies and actions you think the City should take. You will have a chance to vote on your top-priority strategies and discuss them with the Mayor-appointed planning committee and others in the community.

What are we doing tonight?

3:00 PM **Open House Begins**
3:15 PM **Brief City and Community Presentation**
3:30 PM **Visit Stations & Share Your Input**
5:00 PM **Open House Adjourns**

What can you do at this event?

- **Learn more** about the city's vulnerability to climate change impacts and future greenhouse gas emissions.
- Tell us which **goals and targets** the City should set for reducing emissions and preparing for climate change impacts.
- Share your **highest priorities for taking action** to address climate change in Ashland.

Climate and Energy Action Plan:
Open House #3: Public Input Summary

Cascadia Consulting Group

February 2017

CASCADIA
CONSULTING GROUP

Introduction

Development of the City of Ashland Climate and Energy Action Plan (CEAP) includes an open and inclusive public involvement process with ample opportunities to inform and involve the public. This public input summary document provides a high-level overview of notable trends, opinions, and priorities as revealed through a question-and-answer period, online survey, in-person comments, and station exercises at the third open house.

The third open house for the Ashland Climate and Energy Action Plan (CEAP), held on December 7, 2016, was intended to provide the public with an opportunity to review the draft plan, ask questions, and submit comments. The input compiled from the third open house was used to refine the CEAP, including an implementation plan for the actions and strategies set forth in the CEAP.

The public were invited to provide input at the open house through a variety of venues, including the following:

- **Open-ended comment cards:** Attendees were provided with small comment cards that included space for their name, address, email address, and comment.
- **Online survey:** A public online survey that provided space for comments and prioritization of strategies was provided on iPads during the event.
- **Panel Q&A:** Following the presentation, attendees had the opportunity to write down and submit questions to the panelists.
- **Pledges:** Attendees were given the opportunity to make pledges to individual actions they could take to reduce their environmental impact.

In this document, the feedback from the comment cards and online survey is summarized, as are the themes from questions to the panelists. Detailed comments and responses are provided in the following appendices:

- Appendix A: Public Comments and Questions
- Appendix B: Public Input Survey Results

By the Numbers

Number of attendees:	123 (22% also attended one of the two previous open houses)
Number of attendees interested in receiving or already receive email updates:	95 (77% of attendees)
Number of public input survey responses:	13
Number of open-ended comments or questions received:	56
Number of pledges made:	76

Summary of Public Feedback

Comment Cards and Questions

Themes of questions during the panel Q&A included:

- **Obtaining buy-in and commitment**. Attendees wanted to know who already supported the plan and who would need to be "won over" (e.g., within City Council).
- **Engaging local businesses and institutions**. Several questions touched on ways to engage businesses in the community, such as partnering with businesses for public education and providing technical assistance to businesses in implementing activities such as carbon offsets.
- **Implementation and accountability**. Several attendees asked questions about implementation timeline, codifying the plan into an ordinance, and specifics about how CEAP implementation would fit in with existing committee work (such as transportation, conservation, and parking). Attendees also expressed a desire for action and accountability in the plan.
- **Walking the talk**. Several attendees asked questions about City efforts to "walk the talk," such as through public events and city parking planning. This indicates a desire to see the types of actions described in the CEAP modeled at the public events and by the City.

Overall, respondents provided positive feedback about the public input process and the plan. Respondent comments included, "You all have done an amazing job," "[the panel presentation] format was very accessible and helpful," and "I greatly appreciate your efforts and welcoming attitude to include Ashland citizens to be informed and part of this process."

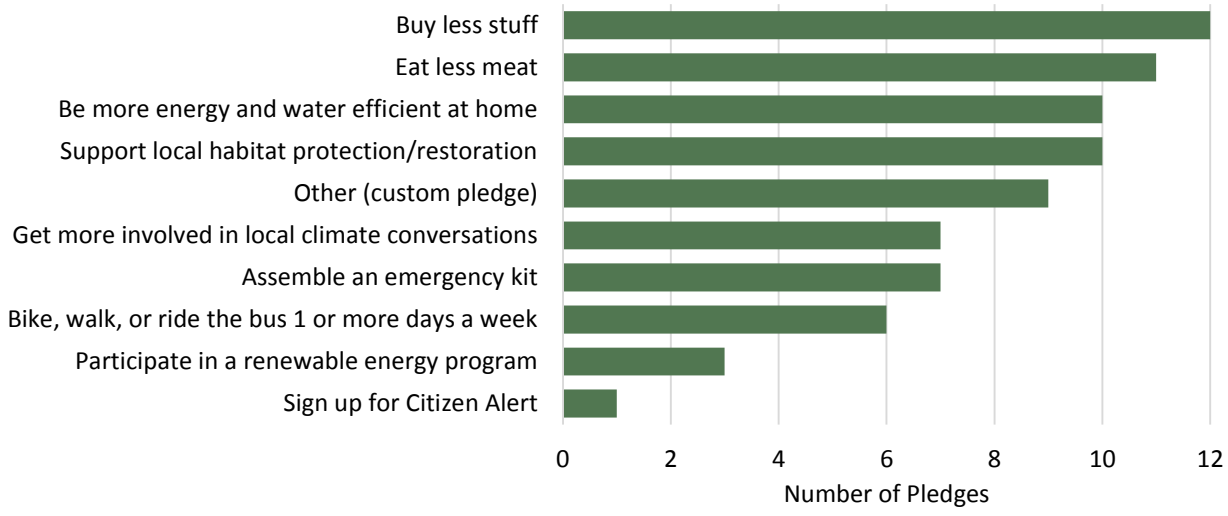
Survey Responses

Themes that emerged from responses to the online survey (13 respondents) included the following.

- Respondents provided generally positive feedback. In particular, respondents liked that the proposed plan is **bold, ambitious, and aggressive**.
- Respondents expressed a desire to see more **specific action items and timelines** associated with the plan.
- All but one respondent (92%) agreed that the City Council **should adopt the plan**. One respondent said the Council should adopt the plan only on the condition that it includes significant key actions in its first year.

Attendee Pledges

The figure below shows the types of pledges and the number of pledges attendees made to take individual actions that would support the CEAP. The most popular pledges (10 to 12 pledges each) were to reduce consumption—buying less stuff, eating less meat, or exploring options to explore utility consumption at home. A few attendees also wrote their own custom pledges, which included to shop more locally, explore electric vehicle options, and get more involved with the local council to support the plan.



Appendix A: Public Comments and Questions

Comments

Comments
Need city to sponsor longer RVTD routes as we do the Ashland branch of the Jackson Co. Library, road, diets and free and open sidewalks, safe from impediments and harassment
Implement 10 x 20
The current plan lacks language protecting intact, carbon-storing ecosystems from sustainable energy developments. We can protect biodiversity and supply sustainable energy to our community. Do not forget commercial buildings, parking lots, and waste places as locations for solar. Please also prioritize the biggest "bang for the buck", namely energy conservation.
Under strategy BE-1-2, I strongly support rooftop solar, but have serious concerns about "the installation of a large-scale community solar project." These concerns are both financial and environmental. I would not support any such large-scale project that would result in the loss of undeveloped land - for example, the Imperatrice property, which is one over Hot has been discussed for a large solar array. The Imperatrice property has outstanding ecological values, including rare bunchgrass grasslands and one of the state's largest populations of the declining grasshopper sparrow. If a large community solar project can be proven to be financially viable and ecologically feasible (i.e. net positive, then all infrastructure and maintenance impacts are calculated), then such a project must be located on land that has already been developed and has little ecological integrity.
Thank you for all your work!
The question of how to hold Ashland citizens accountable was not answered. Please draw up a plan to do that. Even if it holds them accountable in baby steps, little by little. Otherwise I fear that citizens will not do enough, for example; 1) requiring recycling, at least of cans, and 2) withdraw privileges if people don't take alternative transportation at least monthly or weekly. PS. Reward people for what steps they take and announce their rewards.
Show movies WEEKLY re: environmental topics + food justice. i.e. Gaining Ground; Cowspiracy; Eating you Alive; etc. If not in place already, add books like John Jarna's "50 Things you can do to save the world" and/or books like that into the curriculum for K-12 + University level.
CEAP Commission can help businesses become less energy hogs + encourage on-line meeting venues such as joinme.com
I use a woman's urinal to urinate in and put it in my compost outside - or spread in the garden if it's raining.
You all have done an amazing job
I really liked the panel presentations. That format was very accessible and helpful. Nice handling of Q & A also.
Thank you to every member on this committee for their time, talent, and commitment to a huge job well done. I greatly appreciate your efforts and welcoming attitude to include Ashland citizens to be informed and part of this process. I am proud to be an Ashland citizen.

Please consider the full range of ecological impacts of potential development (for solar) on the Imperatrice property - further surveys for rare and threatened species.

Questions

Panel Questions
We are all in this together globally. To be successful, the whole human population must reduce or eliminate the production of greenhouse gases. So why is consumption given such a prominent place in the inventory? Won't the embedded GHG production go down as we all do the right thing?
Q to Rich Rosenthal: Thank you for mentioning Standing Rock water protectors. My Q is would you please ask the city council to head a special public hearing to pass a resolution to stand with Standing Rock? Over 150 other cities across the US have already done it and we have lagged behind.
Will the new position be at an administrator leadership level to ensure they are at the decision/direction table?
Any consideration of a regional waste-to-energy plant to convert kitchen/yard/ag waste to natural gas?
What does reducing ones carbon footprint by 8% a year look like? What does one need to do?
How are you interfacing with Jackson Co. planning for climate change mitigation, along with and federal agencies?
Are those involved going to bring up the issue of the huge greenhouse gas amounts created by the raising of mainly cows and hogs for production of meats? Important to discuss diet and meat consumption.
How does using wood as heating fuel get addressed?
If we've already offered input online to the draft plan, should we do it again tonight?
What is the condition of the ordinance? What is the timeline for when we will know if it will be presented to the city council?
What about partnering with local businesses to get them to help educate the public?
Re: City Investments & Bank Accounts - Have they been reviewed to ascertain that our money is not supporting corporations or activities that are working at cross purposes to our climate change values and commitments?
Couldn't SOU and AHS students do community education (for credit)?
To all: How many walked, biked or took RVTD 4 miles or more to get to this gathering? 4 miles or less most save for a few might have. Thanks to all.
As an owner of a large adventure travel company in Ashland, can offering a carbon offset payment option help Ashland? Can the city assist in setting this up?
How many city council members are very supportive of this plan? Who needs convincing? Which are the champions?
How can we get buy-in from already existing opposition to elements of the plan (people and regulations) - for example: biased influence of chamber of commerce on city council that opposes bike lane creation and AFR practices that are not using best available restoration practices: heli-logging, widespread thinning well beyond the WUI, cutting of 12" diameter trees;

excess energy use/water use, Christmas lights energy, watering systems used during middle of the day; incentivizing high-density and low-income housing
Speaking of the difficulty of tracking the impacts of beef from Argentina, electronics from China, etc… What about the petroleum in the plastic water bottles at this meeting? The paper coffee cups and plates degradable forks are good (also the beef free snacks, yay!) Can we do something along the lines of the plastic bag charge to reduce the use/purchase of plastic… esp. single use cups, plates, packaging, etc.? Maybe first include reduction in the plan. Now, what about the beef? A friend asked, "What can I do?" We said, "Eat less meat!" Support wilderness expansion.
How (%) much food do we grow now in this valley that stays and feeds this valley - NOT wine grapes/Harry & David export - How much can we grow NON GMO SEED SALES BEN. ECONOMY "Resiliency in local food production."
There will be increased need for mental and physical health services. Prevention is better that waiting until the police and hospitals got involved. How can we (City of Ashland) work with JCHHS, churches, and other groups to give attention to this?
Is there any consideration to adjust the City of Ashland photovoltaic rebate program to help make solar more affordable to homeowners and further reduce their carbon emissions? i.e. eliminate the 10 o'clock to 2pm shade rule use total solar resource # only…
If Ashland is serious about climate change, why are we thinking about MORE parking?
Could the City facilitate a quantity purchase of electric vehicles, especially the really efficient (and cute) Elf? - The CEAP Commission could go to neighborhoods to do a CEAP audit to help residents see what they could be doing differently, like CERT does? - How about Climate-wise community designation, like Firewise? - We need more permeable surfaces! - Can City implement a rating system of businesses that are climate friendly? - Ways to rank include insuring or selling no plastic (petroleum products, reduced gasoline, buying local foods, etc. - If AP&Rec switches to organic fertilizers they will reduce petroleum consumption. If City encouraged residents to use organic pesticides and fertilizers (non-synthetic) that would be even better.
I saw a school bus (Ashland) dropping off a single child near the Mt. A access road - Maybe the bus was already full earlier… can we look at city vehicle use and per person fuel efficiency?
Could you talk more about: How will recommendation of CEAP incorporate or integrate with work and recommendations of transportation conservation and parking committee? - How does/will planning commissions work with recommendations?
How is the ordinance going to be specifically incorporated into the plan?
How are members of the community going to be held accountable for doing their part in support of the plan?
With precipitation likely to come in heavy downpours at lower elevation as rain rather than higher as snow, where does floods fit in the strategies and actions? (Maybe strategy PHSS-4 Minimize public safety impacts)
The main short term consequence of climate change is and will continue to be water availability. Where does water shortage-water excess fit?
What strategies will address disadvantaged communities that are directly and disproportionately affected by climate change in Ashland?
How can we get "Before the flood" documentary shown as a requirement to all AHS students?
What about a carbon tax?

Has anyone spoken to local solar companies to see if they will offer a discount to locals?
Can this plan have a place holder for water/food/shelter if inundated with people who are displaced due to climate change (climate refugees)?
Is the target carbon reduction or GHG emissions reductions? Those terms are not synonymous
Under Natural Systems, Who decides what "the best science is?
How will City Council take up the issue of codifying the plan into an ordinance?
I'm trying to understand if the recommended actions in the draft plan will successfully lead to an 8% per year GHG reduction. How much of an impact with they actually have? If not enough, what is next?
How does the plan fit affordable housing for the many lower income service works who work in this community?
What other cities do you admire and copy? Does Ashland want to be exemplary, a copy-able model for rapid, practical change?
How can the strategies and actions be implemented sooner?
Does the plan include strategies and actions regarding lobbying, working toward federal regulations for addressing climate change?

Pledges

Attendees made the following custom pledges at the open house:

- Change light bulbs to LED.
- Continue to eat local.
- Convince my loved ones to eat less meat.
- Save $ to buy an electric car.
- Buy and use more regional products.
- Be encouraged and have hope.
- Reduce my personal carbon footprint by 15% annually and graph it to stay on track.
- Look at solar on my house, look at EV car.
- Get more active with Council efforts to pass and enforce the plan.

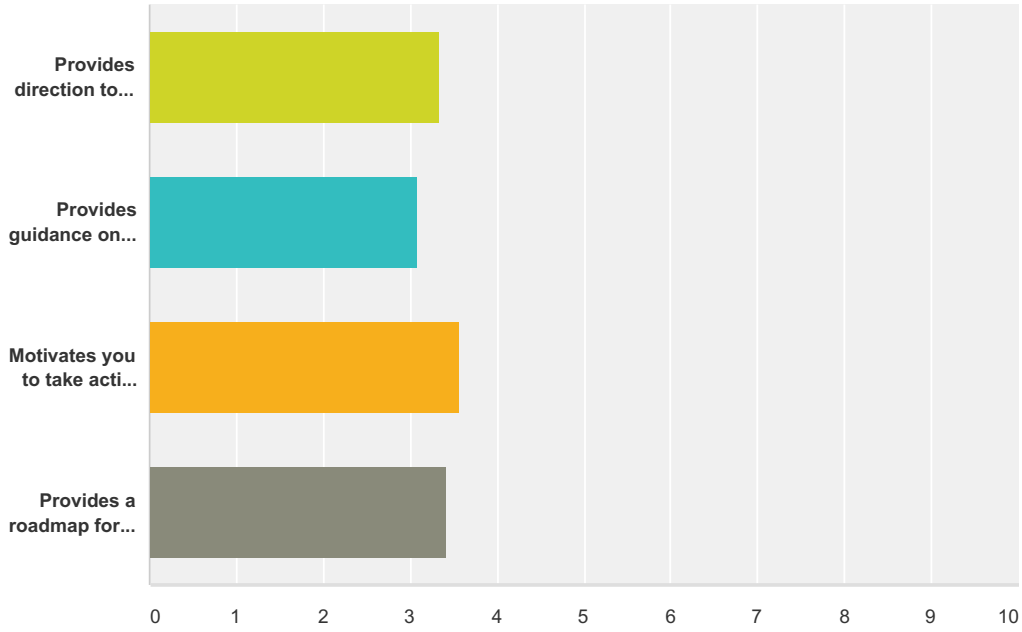
Appendix B: Public Input Survey Results

This section summarizes responses from the online public input survey to the following questions:

- Please rate how you think the draft Climate and Energy Action Plan does the following:
  - Provides direction to the City government and staff on actions to take to address climate change
  - Provides guidance on actions each of us can do in the Ashland community to address climate change
  - Motivates you to take action related to climate change
  - Provides a roadmap for elected officials
- What do you like most about the draft Climate and Energy Action Plan?
- What would you change about the draft Climate and Energy Action Plan?
- How does the draft Climate and Energy Action Plan affect your view of climate change action in Ashland? (Select most relevant option.)
- How does the draft Climate and Energy Action Plan affect your view of climate change action in Ashland?
- Should the City Council adopt this plan?

Q1 Please rate how you think the draft Climate and Energy Action Plan does the following:

Answered: 12 Skipped: 1



	1 (not at all)	2 (slightly)	3 (somewhat)	4 (fairly well)	5 (very well)	Total	Weighted Average
Provides direction to the City government and staff on actions to take to address climate change	**16.67%** 2	**8.33%** 1	**16.67%** 2	**41.67%** 5	**16.67%** 2	12	3.33
Provides guidance on actions each of us can do in the Ashland community to address climate change	**16.67%** 2	**8.33%** 1	**33.33%** 4	**33.33%** 4	**8.33%** 1	12	3.08
Motivates you to take action related to climate change	**16.67%** 2	**8.33%** 1	**16.67%** 2	**16.67%** 2	**41.67%** 5	12	3.58
Provides a roadmap for elected officials	**16.67%** 2	**0.00%** 0	**25.00%** 3	**41.67%** 5	**16.67%** 2	12	3.42

#	Please provide any comments on your ratings above.	Date
1	I think the plan lays out a vision and goals (8%/yr reduction in GHG emissions) but will need more details on specific actions over time to achieve the goal.	12/12/2016 8:34 PM
2	I have been doing everything suggested personally. We need to do more sooner.	12/12/2016 1:41 PM
3	Ongoing education and near constant "reminders" will be needed, less we become complacent!	12/11/2016 6:31 PM
4	Can't evaluate until I see the first year key actions. I was already highly motivated and trust our city will treat this issue as urgent and important.	12/8/2016 4:03 PM
5	Attending the climate change forum on Dec 5th helped me get active and involved in efforts towards community-wide action to reduce carbon emissions in our town. Please do more of these sessions where the community is invited and provided ways to participate. Speakers like Dr Sohl are very convincing and naming personal actions and introducing existing groups to get involved with like 350.org are the most effective interventions for the average citizens.	12/8/2016 3:50 PM
6	It may be time to provide some prescriptive guidance as to how to reach the stated goals. Many large organizations have developed prescriptive guide specifications for designing and renovating buildings Life cycle cost based purchasing practices can provide painless and consequential reductions in resource consumption.	12/7/2016 3:37 PM

7	Please stop spending our much needed tax dollars on these programs. There are so many other worth while and needed causes to spend our hard earned dollars on.	11/29/2016 2:17 PM

Q2 What do you like most about the draft Climate and Energy Action Plan?

Answered: 12 Skipped: 1

#	Responses	Date
1	I like that it is science based and that is is specific to Ashland but still has incorporated learning from other citiy plans like Eugene and Portland.	12/12/2016 8:34 PM
2	I like that the plan will be accompanied by a binding ordinance.	12/12/2016 3:59 PM
3	that it's happening	12/12/2016 1:41 PM
4	That we now have one and it is a bold step. The plan has been done very professionally, to great depth and with outside help. I think it is very objective and gives us a great start!	12/11/2016 6:31 PM
5	I am submitting comments elsewhere	12/11/2016 4:26 PM
6	Ambitous	12/9/2016 1:18 PM
7	It has some good information and sets up a conceptual framework.	12/8/2016 4:03 PM
8	A variety of people in places of power are actually doing something that involves the community in a real way.	12/8/2016 3:50 PM
9	The aggressive target goals -- let's go for it! I'd like to make Ashland an example city of what can be done. Our visitors could take some ideas back to their homes.	12/8/2016 2:31 PM
10	It sells the community,s need to reduce GHGs.	12/7/2016 3:37 PM
11	That it exists	12/7/2016 1:02 PM
12	N/A	11/29/2016 2:17 PM

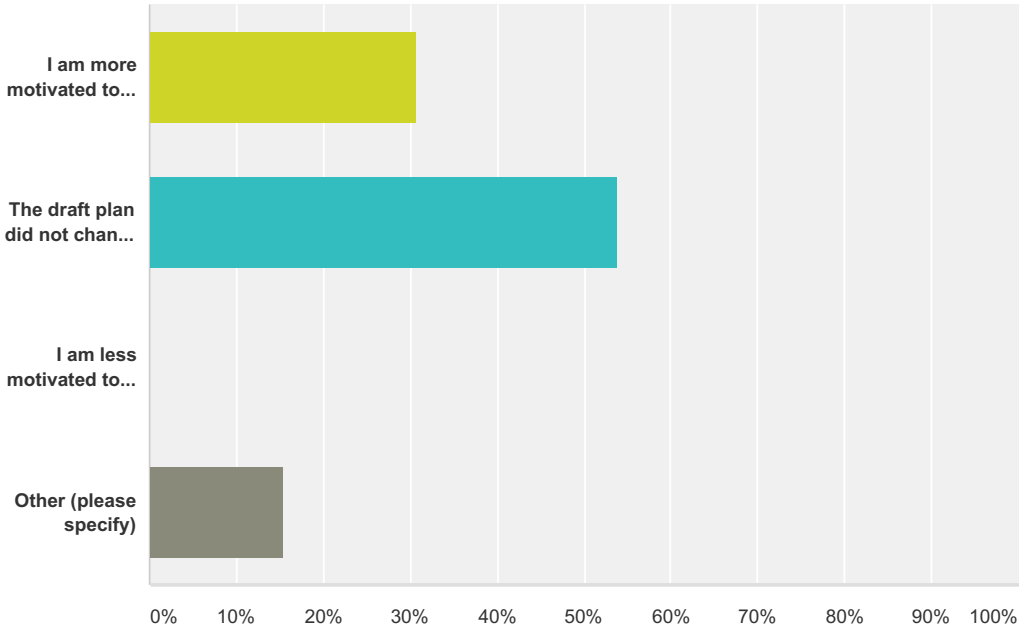
Q3 What would you change about the draft Climate and Energy Action Plan?

Answered: 11 Skipped: 2

#	Responses	Date
1	I would emphasize how much of the GHG reduction goal can be achieved by city action and how much is dependent on citizen action. Look at 3 time periods.	12/12/2016 8:34 PM
2	I am concerned that the goal of social equity regarding the impact of the plan on vulnerable populations seems to lack strategies and actions.	12/12/2016 3:59 PM
3	have it all move along faster	12/12/2016 1:41 PM
4	Could "buying" local be something that can be incentivized? The most difficult piece seems to be of our consumption.	12/11/2016 6:31 PM
5	Finally, the current list is 59 items long. That number is simply way too long to achieve any rational action plan. The following 15 items (25%) could simply be eliminated from your planning process in an effort to reduce your planning resource expenditure with minimal impact on the overall CEAP overall plan. In effect, don't bite off more than you can chew. Eliminate: BE-1-1 BE-3-1 BE-4-1 BE-4-2 ULT-1-3 ULT-3-2 ULT-4-3 ULT-5-2 ULT-5-3 CM-3-1 CM-3-2 CM-4-1 CM-4-3 CC-1-1 CC-3-1	12/11/2016 4:26 PM
6	I am looking for specific immediate actions we will commit to take as a city and community. Impacts on disadvantaged populations should be addressed at every stage in every category.	12/8/2016 4:03 PM
7	Set priorities, involve everyone and include specific actions and deadlines.	12/8/2016 3:50 PM
8	Nothing at the moment.	12/8/2016 2:31 PM
9	Provide OR provide links to prescriptive recommendations.	12/7/2016 3:37 PM
10	More emphasis on Renewable Energy and Community Development	12/7/2016 1:02 PM
11	Eliminate it and move on to more important tasks.	11/29/2016 2:17 PM

Q4 How does the draft Climate and Energy Action Plan affect your view of climate change action in Ashland? (Select most relevant option.)

Answered: 13 Skipped: 0

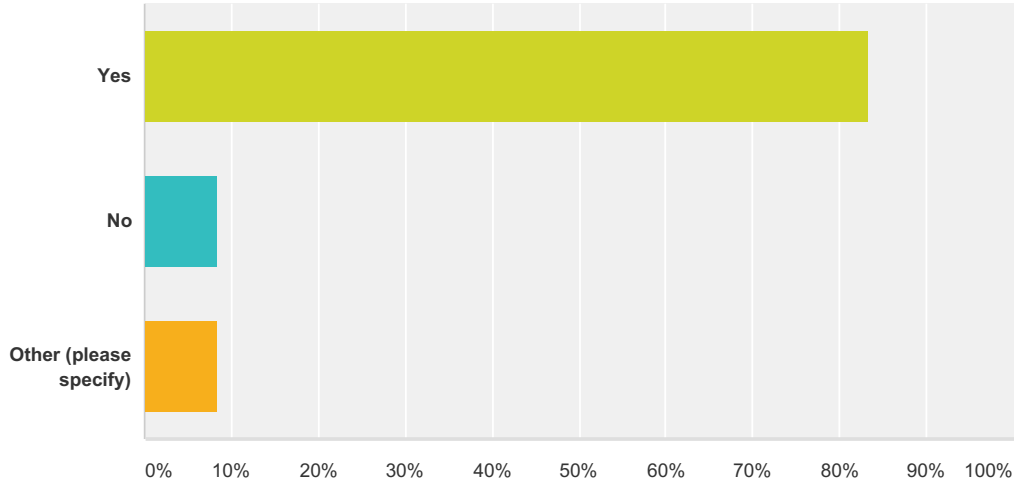


Answer Choices	Responses	
I am more motivated to take action.	**30.77%**	4
The draft plan did not change my view of climate action.	**53.85%**	7
I am less motivated to take action.	**0.00%**	0
Other (please specify)	**15.38%**	2
Total		**13**

#	Other (please specify)	Date
1	I am already highly motivated and look for leadership and example from the city.	12/8/2016 4:03 PM
2	Made me more resolute in fighting wasteful spending	11/29/2016 2:17 PM

Q5 Should the City Council adopt this plan?

Answered: 12 Skipped: 1



Answer Choices	Responses	
Yes	**83.33%**	10
No	**8.33%**	1
Other (please specify)	**8.33%**	1
Total		**12**

#	Other (please specify)	Date
1	Adopt it if it includes significant first year key actions.	12/8/2016 4:03 PM

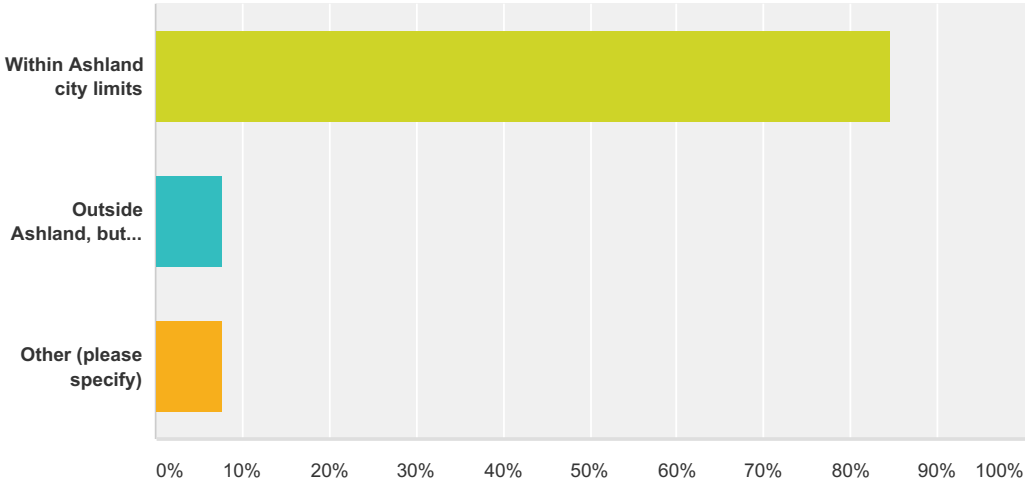
Q6 If you responded "No" to above, what would need to change for you to support the plan's adoption?

Answered: 3 Skipped: 10

#	Responses	Date
1	I would like to see goals, strategies and actions re social benefits that result from implementing the plan. In particular, carrying out the plan will certainly require some expansion of green jobs in the Valley. That benefit should be identified in the plan with stated intentions to hire locally for any jobs created as a result of implementing the plan. We should be able to sponsor job training in an equitable way and set High Road hiring goals for green jobs.	12/12/2016 3:59 PM
2	Need knowledgeable and committed staff person to guide the implementation and the further improvement/effectiveness of the plan.	12/8/2016 4:03 PM
3	Actual evidence that there is a real problem with the climate (note all the snow we are getting this year and last). And evidence that the city can do anything substantial. I believe this is another program wasting tax payers money. Apologize for the straight talk, don't want to waste your time. City needs to get out of the money wasting business and focus on city services (basics) not all these foo-foo politically correct nonsensical programs. Thank you	11/29/2016 2:17 PM

Q7 Where do you live?

Answered: 13 Skipped: 0

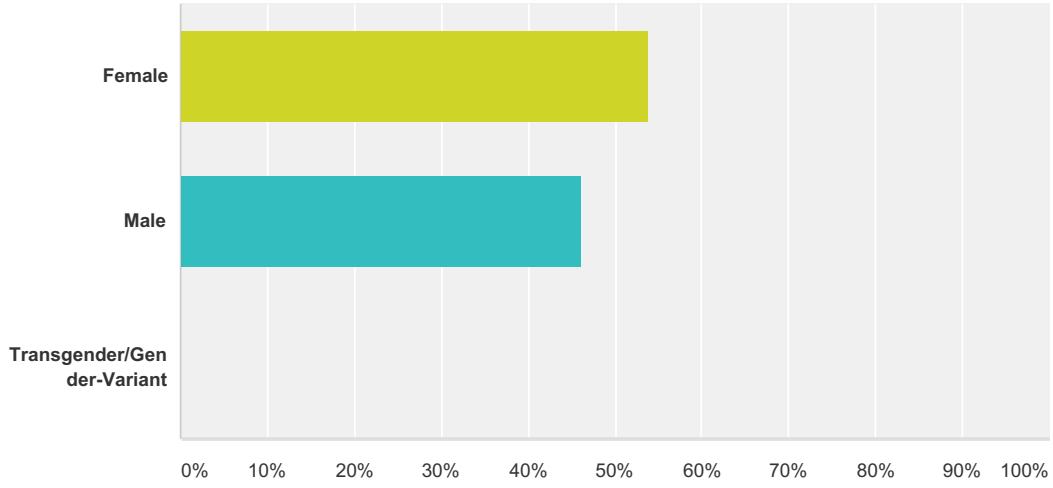


Answer Choices	Responses	
Within Ashland city limits	**84.62%**	11
Outside Ashland, but within Jackson County	**7.69%**	1
Other (please specify)	**7.69%**	1
Total		**13**

#	Other (please specify)	Date
1	in Ashland urban growth area	12/8/2016 2:32 PM

Q8 What is your gender?

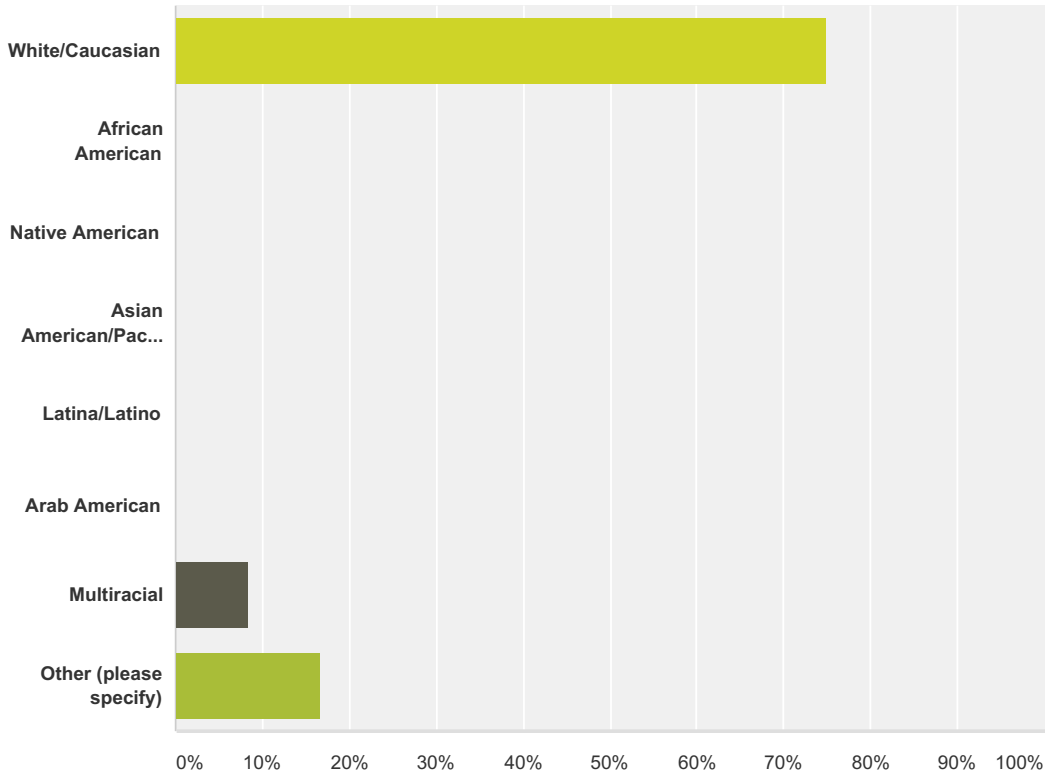
Answered: 13 Skipped: 0



Answer Choices	Responses	
Female	**53.85%**	7
Male	**46.15%**	6
Transgender/Gender-Variant	**0.00%**	0
Total		**13**

Q9 Which of the following best represents your racial or ethnic heritage?

Answered: 12 Skipped: 1

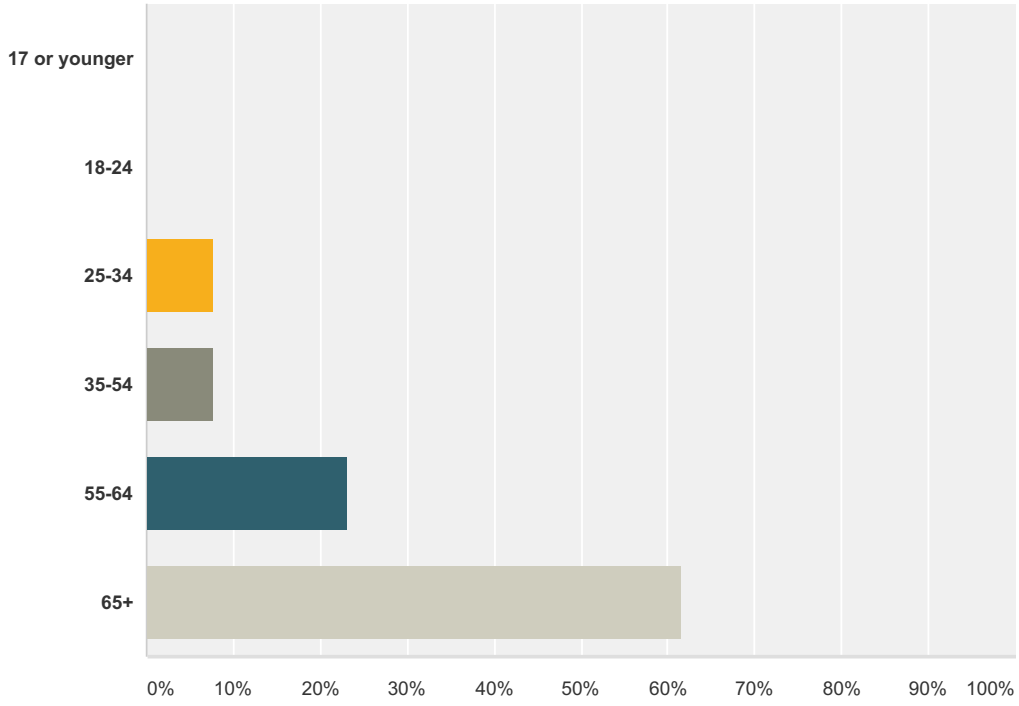


Answer Choices	Responses	
White/Caucasian	**75.00%**	9
African American	**0.00%**	0
Native American	**0.00%**	0
Asian American/Pacific Islander	**0.00%**	0
Latina/Latino	**0.00%**	0
Arab American	**0.00%**	0
Multiracial	**8.33%**	1
Other (please specify)	**16.67%**	2
Total		**12**

#	Other (please specify)	Date
1	Caucasian + Asian	12/9/2016 1:22 PM
2	refuse, why is this important to this topic?	11/29/2016 2:22 PM

Q10 What is your age?

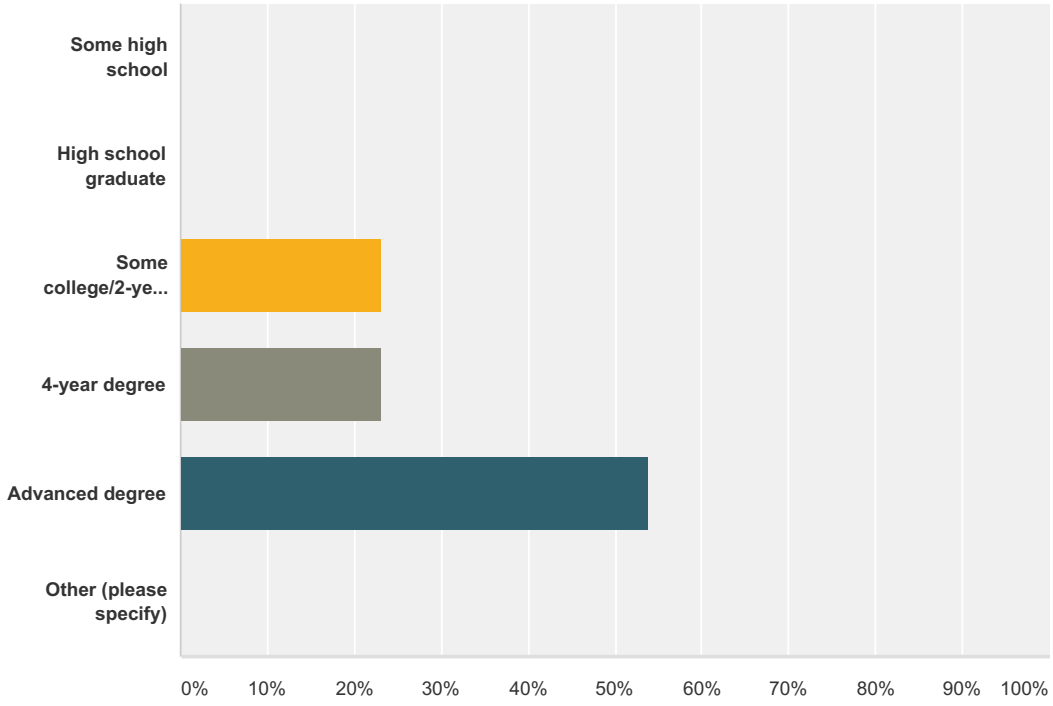
Answered: 13 Skipped: 0



Answer Choices	Responses	
17 or younger	**0.00%**	0
18-24	**0.00%**	0
25-34	**7.69%**	1
35-54	**7.69%**	1
55-64	**23.08%**	3
65+	**61.54%**	8
Total		**13**

Q11 What is the highest level of education you have completed?

Answered: 13 Skipped: 0



Answer Choices	Responses	
Some high school	**0.00%**	0
High school graduate	**0.00%**	0
Some college/2-year degree	**23.08%**	3
4-year degree	**23.08%**	3
Advanced degree	**53.85%**	7
Other (please specify)	**0.00%**	0
Total		**13**

#	Other (please specify)	Date
	There are no responses.	

Q12 Is there anything else you would like us to consider in the Ashland Climate and Energy Action Plan?

Answered: 5 Skipped: 8

#	Responses	Date
1	Liked page 19 which showed example actions we need to take to reach 46% of goal. Maybe add in a realistic assumption on how much carbon offset credits we would need over time to achieve the 8% goal.	12/12/2016 8:37 PM
2	Maybe to consider leaving this open a bit longer, to generate more awareness. Even though it has been ongoing for a year+, I seem to talk to a fair number of Ashlanders that don't know about it. Can the city send out an email blast, a JPR announcement, or special bill insert,etc, to get more people informed and to somewhat "insist" on a reply?! Even in Ashlandia, more awareness is needed!	12/11/2016 6:36 PM
3	While there are many good ideas in the draft, we strongly support focussing on those top tier plan elements that have the highest "bang for the buck." Others may sound good but are likely high cost-low payoff. In summary those elements to prioritize would include: - Achieving energy efficiency in building construction, operation and maintenance and updating codes and zoning policies to achieve that end. - De-emphasizing more parking. We have enough parking already. We should actively move to support ways to eliminate expansion of the number of automobiles in our neighborhoods. (That also means that hiring a "parking czar" should be aggressively viewed as theft from the efforts to address climate change.) - Focusing messaging on lifestyle changes toward younger audiences (K-12 and College. Also use that student base as the amabassadors of the program, rather than hiring more City staff. - Use existing City Commissions by expanding their mission statements to embrace dealing with climate change and the goals of your final plan, rather than adding new staff or commissions. - Focussing on private behaviors and choices while de-emphasizing the focus on City staff operations. The climate imnpacts of City staff and departments are only a small fraction of the problems that are occurring. The fact that they are easy to monitor/measure is not offset by the relatively low inpact on the bigger problem. - Encouraging best practices in private and civic landscaping and horticulture We would support ULT-1-4 for locally owned transit insofar as it ONLY addresses the need for low cost or free interurban shuttle funded by parking fees. Parking a car in Ashland should be an expensive choice. We would support ULT-5-1 only to the point it emphasizes vanpools, and car pool parking. EV charging stations in private parking lots is a luxury item that should be paid by the local landowner.	12/11/2016 4:27 PM
4	Mitigating potential impacts to open space, for example: rare ecology features at the Imperatrice Property Considering how to leverage current technologies, make existing infrastructure more efficient (could save on costs too!) instead of starting from the ground up in creating new things (solar infrastructure) - this was reinforced by a disscussion I had with the consultant (Mark?) from Seattle that was at the last public meeting Financial Incentives for businesses and homeowners to decrease their use of energy. Perhaps a program where people can crowd source with the money that they would have have spent on electric bills to help fund the position mentioned at the meeting (someone to implement the plan).	12/9/2016 1:22 PM
5	Consider focusing on real issues and stop spending money on these politically correct appeasement endeavors. How about cleaning up downtown, planting more trees and landscaping, moving the homeless along and hiring more police? There are some good places to spend out tax dollars. Like our city council but think these special interest groups get you going in the wrong directions and distract you from real issues that negatively impact us daily (downtown crime and nuisances). I mean all of these suggestions in a constructive way, don't misjudge. I am trying to keep it all short, concise and on point. Thank you for reading.	11/29/2016 2:22 PM

APPENDIX C. EMISSIONS MODELING AND TARGET-SETTING METHODOLOGY

Appendix C: Ashland Greenhouse Gas Emissions Projections and Target Setting Methodology

Development of strategies and targets in the Ashland Climate and Energy Action Plan involved completion of the following analyses:

- Business-as-usual greenhouse gas (GHG) emission projections to 2050.
- Quantification of emission reduction scenarios associated with select GHG-reducing strategies.

This document details the methodologies employed to complete these analyses, as well as a brief discussion of the GHG emission reduction target-setting process for the Climate and Energy Action Plan.

Business-as-Usual Projections

The business-as-usual scenario assessed what Ashland's emissions would look like if the city were to take no additional actions beyond current practices. This analysis, built from the existing 2015 community greenhouse gas inventory[1], took into account anticipated changes that would affect Ashland's emissions, such as population changes and changes in federal or state policies. Table 1 below details these anticipated changes.

Table 1. Assumptions for Ashland's business-as-usual greenhouse gas emissions scenario.

Source	By 2030	By 2050
Population increase		
Population increase	0.5% annually	
Policies		
Renewable Energy Standards – Policies to increase renewable energy in states in the region, including WA and OR.	13.8%	23.8%
Federal CAFE Standard – Policy to increase the average fuel economy of cars and light trucks in the US.[2]	35.5 MPG	54.5 MPG
Oregon's Clean Fuels Program – Policy to reduce the average carbon intensity of Oregon's transportation fuels by 10 percent over a 10-year period starting in 2016.[3]	10% reduction in transportation fuel carbon	

[1] Good Company, "City of Ashland Greenhouse Gas Inventory (2011 – 2015)," February 2016.
[2] The White House Office of the Press Secretary, "Obama Administration Finalizes Historic 54.5 MPG Fuel Efficiency Standards," August 28, 2012, https://obamawhitehouse.archives.gov/the-press-office/2012/08/28/obama-administration-finalizes-historic-545-mpg-fuel-efficiency-standard.
[3] Oregon Department of Environmental Quality, "Air Quality: Oregon Clean Fuels Program," http://www.deq.state.or.us/aq/cleanFuel.

In the analysis, we assumed that vehicle miles traveled (VMT) and energy use (including natural gas, electricity, and propane) grow proportionately with population growth, as do emissions from refrigerant leakage, waste disposal, and consumption-based activities. The assumptions regarding CAFE standards are adjusted to reflect the proportional lag in CAFE standards for cars purchased in a given year and the mix on vehicles on the road in that year (proportions based on 2015 data). The Clean Fuels Program is reflected in fuel mix assumptions. The base assumptions, based on the 2015 inventory, for VMT, energy use, refrigerant usage, waste disposal, and consumption are included in Table 2 below.

Table 2. Base Unit Assumptions

Data Type	2015 Base Data	Units
VMT	77,383,279	Miles
Natural gas	5,531,903	Therms
Electricity	165,807	Megawatt hours (MWh)
Refrigerant usage	7,400	Metric tons
Waste disposal	6,923	Metric tons
Consumption	166,731	Metric tons

Based on national data in the Transportation Energy Data Book, 90.5 percent of the VMT is attributed to private vehicles, while the remaining 9.5 percent is associated with commercial vehicles.[4] Additionally, 93 percent of VMT is assumed to be associated with light duty vehicles (cars and light trucks), while the remaining 9 percent is associated with heavy duty vehicles (single and combination trucks).[5]

[4] Stacy C. Davis and Susan W. Diegel, "Transportation Energy Data Book," Oak Ridge National Laboratory and the U.S. Department of Energy Efficiency and Renewable Energy, 26 Edition, 2007, http://web.mit.edu/cron/Backup/project/urban_metabolism/TGOFF/readings%20and%20websites/Edition26_Full_Doc.pdf.

[5] Stacy C. Davis and Susan W. Diegel, "Transportation Energy Data Book," Oak Ridge National Laboratory and the U.S. Department of Energy Efficiency and Renewable Energy, 26 Edition, 2007, http://web.mit.edu/cron/Backup/project/urban_metabolism/TGOFF/readings%20and%20websites/Edition26_Full_Doc.pdf.

Table 3 below describes assumptions for the electricity fuel mix.

Table 3. Electricity Fuel Mix Assumptions

Fuel Source	2015[6]	2030	2050	Explanation
Coal	24.5%	20.5%	24.0%	Remainder based on other fuel sources
Natural Gas	10.7%	14.5%	21.0%	Based on previous amount of natural gas (in megawatt hours or MWhs) plus one third of renewables to smooth intermittency
Nuclear	3.2%	2.2%	0.0%	Assumes existing nuclear with be retired and not replaced
Hydro	52.2%	48.5%	30.7%	Assumes some loss in generation due to changing amount and timing of water flows
Non-hydro renewables	8.8%	13.8%	23.8%	Assumes increase in renewables based on RPS, acknowledging that not all of the RPS applies to Ashland
Other	0.6%	0.6%	0.5%	Kept at 2015 levels (in terms of MWhs)

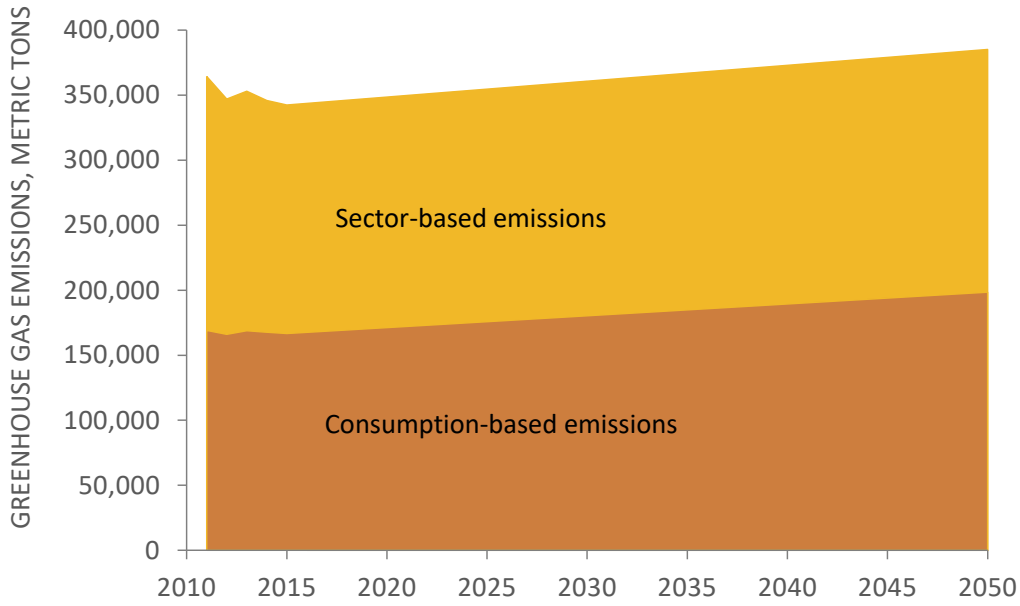
Note: Percentages may not sum to 100% due to rounding.

Under this business-as-usual scenario, which assumes full implementation of both federal and state policies, Ashland's sector-based emissions[7] are projected to increase by 6 percent from 2015 levels by 2050 (see Figure 1). When adding consumption-based emissions to the equation, Ashland's emissions are projected to increase by 12 percent from 2015 levels by 2050 as consumption-based emissions are expected to grow at a faster rate than sector-based emissions due to limited regulatory policies for consumption-related emissions.

[6] United States Environmental Protection Agency, "Emissions & Generation Resources Integrated Database," 2012 data.

[7] Sectors included in this analysis are ground transportation, building and appliance energy use, and waste and disposal (including refrigerant leakage).

Figure 1. Emissions based on BAU assumptions



Emission Reduction Scenarios

To assess how changes in local policies and activities could influence the city's greenhouse gas emissions, we modeled potential emission reductions associated with various infrastructure and behavior changes. Specifically, we estimated emissions reductions associated with the changes listed in Table 4 below.

Table 4. Behavior and policy changes that were modeled for the emission reduction scenarios

<table>
<tr>
<td>Building Energy
Reduced energy use by 50% through energy efficiency and conservation measures.
Shifted 50% of grid electricity consumption to distributed renewable energy generation.
Transitioned 90% of natural gas used in buildings to electricity.</td>
<td rowspan="2">Transportation
Shifted 25% of motorized travel to walking or biking.
For the remaining motorized travel:
Shifted 80% of private vehicles to electric vehicles.
Shifted 50% of commercial vehicles to electric vehicles.</td>
</tr>
<tr>
<td>Consumption
Reduced consumption-related emissions by 30% through activities such as product reuse, reducing meat consumption, or introduction of a carbon tax on products and services.</td>
</tr>
</table>

Note that probabilities were not assigned to the above-listed changes. The changes are intended simply to illustrate the connection between various policy/behavior changes and resulting greenhouse gas emission reductions. The exercise is not meant to predict future emissions reductions or estimate what is achievable in Ashland specifically.

For the purposes of this exercise, the analysis calculated emissions reductions at two time points: 1) 2015 and 2) 2050. In some cases, however, strategy assumptions are determined for 2030 as well as 2050 to facilitate computation.

The analysis did not make assumptions about the timing of strategies, and therefore visual depictions of the emission reduction scenario show a linear decrease between the two time points of 2015 and 2050. We do not attempt to characterize the pathway between those two time points.

Limitations on Attributing Emission Reductions to Specific Strategies

The modeled emission reductions in this section provides a sense of what could be achieved if Ashland took serious action on climate change by implementing actions set forth in the Ashland Climate and Energy Action plan. Reductions are presented as groupings of similar actions, but do not necessarily represent the reductions associated with those actions due to challenges in attributing emission reduction values to individual actions.

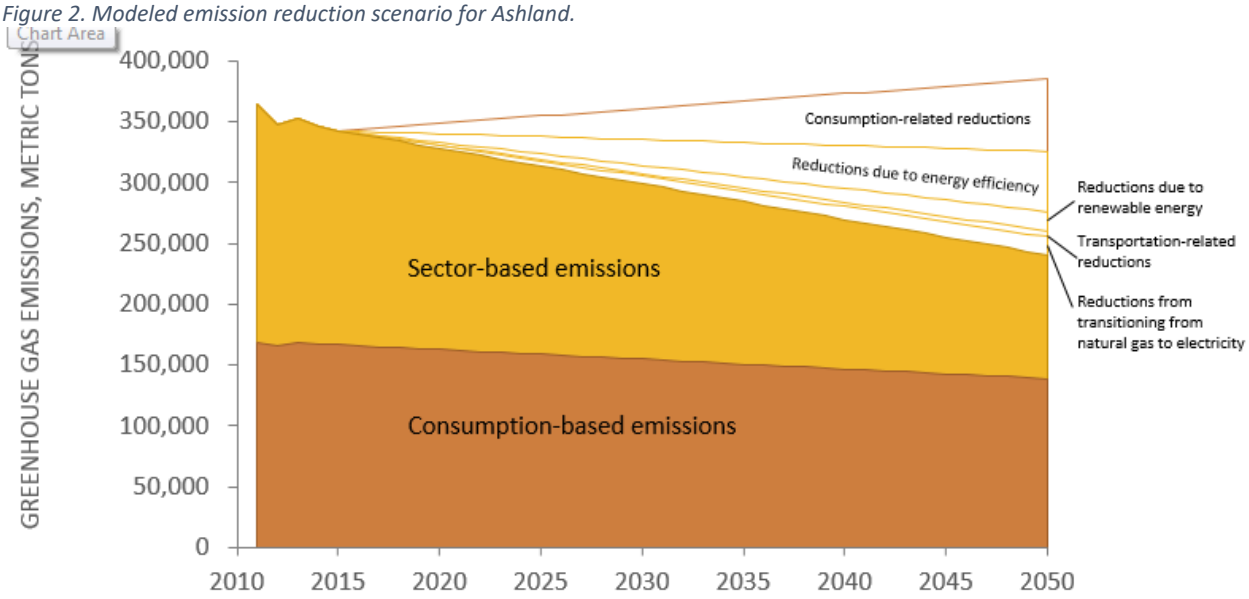
Potential emission reductions associated with individual actions can be difficult to quantify with certainty due to their interdependent nature. For example, reduced emissions associated with switching from gasoline to electric vehicles will depend largely on the mix of energy sources on the electricity grid. Emissions associated with use of electricity from the grid will, in turn, be affected by other actions in this plan, such as increased local renewable energy production. It is therefore difficult to single out reductions associated with any one individual action.

Assessing emissions reductions is also complicated by uncertainty in underlying variables and assumptions. The efficacy of expanded education and outreach efforts around home energy efficiency will depend on many factors, including the populations to which outreach will be conducted, the extent to which to City has already reached existing residences, as well as external factors, such as the state of the economy, which influences people's willingness to take risks and invest in new technologies.

Given these limitations, actions in this plan were not quantitatively modeled for efficacy. Rather, actions were qualitatively assessed relative to other potential actions using a set of criteria that included estimated emissions reduction potential. Qualitative assessment informed the order of priority actions in this plan. It is expected that, at the time of implementation, the City will undertake more detailed modeling efforts to quantify anticipated outcomes.

Figure 2 below illustrates modeled emission reductions associated with the changes listed in Table 4. The top line represents the business-as-usual scenario.

Figure 2. Modeled emission reduction scenario for Ashland.



Strategies listed in Table 4 result in an estimated 38% emission reduction compared to the BAU scenario. The table below shows how that reduction breaks down by sector, presented in the order by which actions were integrated into the model:

15%	Consumption
13%	Energy Efficiency
4%	Renewable Energy
1%	Transportation
4%	Transitioning from Natural Gas to Electricity
38%	**TOTAL**

The specific assumptions underpinning the analysis are presented in Table 5 on the following page. These assumptions are based on a perceived reasonable level of improvement across the difference strategies and emission sources. Percentages are relative to 2015.

Table 5. Emission Source Reductions and Assumptions

Source	By 2050
VMT Reductions/Changes	
Displaced by walking/biking	25%
Increasing electric vehicles	78% of remaining VMT
Reductions in Building Energy Use (Natural Gas)	
Displaced due to fuel switching	90%
Due to efficiency	50% of remaining usage
Reductions in Building Energy Use (Electricity)	
Decreased load due to local renewables	89,344 MWh
Increased load due to fuel switching	2,964 MWh
Increased load due to elec. vehicles	19,451 MWh
Due to efficiency	50% of usage (including fuel switching, but excluding renewables and electric vehicles)

Communitywide GHG Emission Reduction Target Setting

Greenhouse gas emission reduction targets are an important part of climate action planning. Targets hold communities responsible for addressing global climate change, and allow communities to track, assess, and compare progress against other communities and jurisdictions.

Communities can consider a number of approaches for setting greenhouse gas emission reduction targets:

- Peer-based targets can be established that set goals similar to those of peer communities, or of entities of which the community is a part (e.g., State of Oregon). Often these targets are based on those pursued at national or international levels, such the United States' commitment to an 80% reduction by 2050 under the United Nations Framework Convention on Climate Change Paris Agreement.[8]
- Analysis-based targets can be set that reflect analysis of potential emission reductions given achievement of modeled strategies and actions.
- Science-based targets set emission reduction targets based on reductions needed to prevent the worst impacts of climate change.[9]

The target-setting approach taken by a community will depend on a variety of factors, including the community's' level of commitment to climate action, available resources, and risk tolerance. Some leading communities have taken very aggressive greenhouse gas emission reduction goals, such as carbon neutrality by 2050 or a 7.6% annual reduction, while others have set goals to reduce their emissions by 80% or less by 2050 compared to a baseline year. Examples of other targets set by jurisdictions within Oregon are summarized in Table 6.

[8] http://unfccc.int/files/focus/long-term_strategies/application/pdf/mid_century_strategy_report-final_red.pdf

[9] The 2016 Paris Agreement from the United Nations Framework Convention on Climate Change sets a goal to keep global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. Achieving this goal will require aggressive emission reductions.

Table 6 Targets set by other Oregon jurisdictions

City of Eugene
• Targets in Climate Action Plan:[10]
  ○ Reduce community-wide greenhouse gas emissions 10% below 1990 levels by 2020
  ○ Reduce community-wide fossil fuel use by 50% by 2030
• A 2014 Climate Recovery Ordinance[11] sets a goal to reduce community emissions by 7.6% annually

City of Corvallis[12] • Reduce overall community fossil fuel use 30% below 2012 levels by 2020 • Reduce overall community fossil fuel use 55% below 2012 levels by 2030 • Reduce overall community fossil fuel use 85% below 2012 levels by 2050
City of Portland/Multnomah County[13] • Reduce local carbon emissions 40% from 1990 levels by 2030 • Reduce local carbon emissions 80% from 1990 levels by 2050
State of Oregon (House Bill 3543) [14] • Reduce greenhouse gas emissions 10% below 1990 levels by 2020 • Reduce greenhouse gas emissions 75% below 1990 levels by 2050 • Targets derived from IPCC recommendations at the time

The Ashland Climate and Energy Action plan sets a communitywide goal consistent with that of the city of Eugene (OR), which is to achieve a 7.6% annual reduction in communitywide greenhouse gas emissions. This target was developed by Eugene using a carbon budget approach that calculated reductions needed to achieve a global atmospheric carbon dioxide concentration of 350 ppm by 2100.[15] The emissions reduction associated with this carbon budget approach is based on an analysis by Hansen et al. that requires global emission reductions of approximately 7.6% per year beginning in 2016.[16] In Ashland, this represents an average reduction of approximately 9,000 metric tons per year.

[10] Community Climate and Energy Action Plan 2013 Progress Report; http://www.eugene-or.gov/ArchiveCenter/ViewFile/Item/2385.
[11] http://thrivingearthexchange.org/wp-content/uploads/2016/03/Rice-McRae-AGU-2016.pdf
[12] City of Corvallis, "Climate Action Plan for Corvallis, Oregon," 2015, http://corvalliscap.org/wp-content/uploads/2016/04/CORVALLIS-CAP-041416.pdf
[13] City of Portland/Multnomah County, "Climate Action Plan for City of Portland and Multnomah County," https://www.portlandoregon.gov/bps/article/531984.
[14] State of Oregon (House Bill 3543): Oregon Global Warming Commission Biennial Report to the Legislature," 2015, http://www.keeporegoncool.org/sites/default/files/ogwc-standard-documents/OGWC_Rpt_Leg_2015_final.pdf.
[15] Council Ordinance No. 20567, An ordinance concerning climate recovery, City of Eugene, Oregon, August, 2106.
[16] Hansen et al., Assessing "Dangerous Climate Change": Required Reductions of Carbon Emissions to Protect Young People and Future Generations and Nature, PLoS ONE 8(12), 2013. http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0081648

Target Implications

Achievement of the 8% annual emission reduction target will require serious and substantial action by the Ashland community. Emissions reductions that are not achieved directly by community activities could be achieved through purchase of Renewable Energy Certificates (RECs) and/or greenhouse gas (GHG) offsets. GHG offsets are carbon-reduction certificates created through verified carbon-reducing actions by one organization—such as tree planting—that can be sold to another organization, usually on an annual basis. RECs are similar to GHG offsets, but can only be applied to energy-sector emissions. While carbon offset prices can vary greatly, California Carbon Allowances have been trading around $11-$13 per metric ton since 2014.[17]

[17] http://calcarbondash.org/

APPENDIX D. ASHLAND GREENHOUSE GAS INVENTORY

Greenhouse Gas Inventory

Community and City Operations

Results, Analysis and Recommendations

Report prepared by Good Company, February 2016

Table of Contents

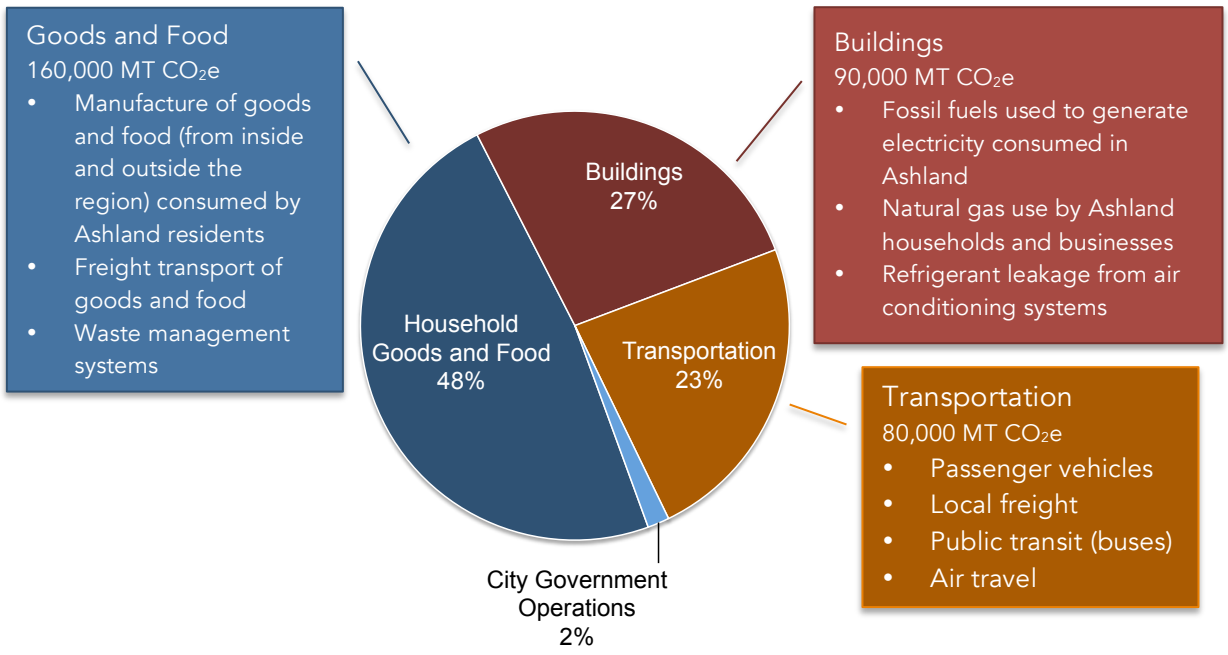
EXECUTIVE SUMMARY

The Intergovernmental Panel on Climate Change (IPCC), the United Nations body that regularly convenes climate scientists, has identified human activity as the primary cause of the climate change. The IPCC suggests that human-caused emissions must be reduced significantly – perhaps more than 50% globally, and by 90% in wealthier, developed nations – by mid-century in order to avoid the worst potential climate impacts on human economies.

The Community GHG Inventory presented in this report follows internationally recognized protocol and accounts for all significant sources of GHG emissions that are supported by locally available data or credible estimation methodologies. This report also includes detailed inventories for City Government Operations (a subset of Community Emissions) and the Municipal Electric Utility's Supply Portfolio (to provide context about the community's electricity supply). Additional detail may be found in the following sections of this report.

Figure 1 shows the scale of four categories of greenhouse gas emissions for the City of Ashland: Buildings, Transportation, Goods and Food, and City Government Operations. The total emissions associated with these activities comprise Ashland's 2015 community carbon footprint, which is estimated at about 300,000 metric tons of carbon dioxide equivalent (MT CO2e). This total represents 0.5% percent of Oregon's total GHG emissions (~60 million MT CO_2e per year[1]). An average household in the Ashland area has a footprint of approximately 32.5 MT CO_2e per year, less than the average Oregon household footprint of 42 MT CO_2e.

Figure 1: Ashland's 2015 Total GHG Emissions, by Category.



[1] Oregon Department of Environmental Quality (2012). For details visit http://www.oregon.gov/deq/AQ/Pages/Greenhouse-Gas-Inventory-Report.aspx#inventory.

Findings in Brief

Community GHG Inventory

- Ashland's largest sources of community emissions include residential and commercial energy use by buildings (24% of total); residential on-road transport (17%); and emissions from the production of residential goods (22%) and food (15%).
- **Ashland's Community GHG emissions have decreased by 6% between 2011 and 2015**. This is the result of decreases in electricity and natural gas use in the residential sector, decreases in natural gas use in the commercial sector, and increased hydro electricity generation on the regional electricity grid. These effects lower the average carbon intensity (CI) of grid electricity and the emissions from its use.
- Ashland Community GHG Emissions *intensities* also declined between 2011 and 2015. On a per capita basis, emissions have declined by almost 8%. In 2015, the average Ashland resident's carbon footprint is 16.6 MT CO2e / person. In 2015, average household emissions equal 36.8 MT CO_2e and have declined nearly 6% since 2011.

City Government GHG Operations

- City government operational emissions represent roughly 2% of community emissions.
- The largest emissions sources include production of goods and services purchased by the City (60%), electricity use in buildings (19%), fuel use in vehicles and equipment (8%), and landfill disposal of wastewater biosolids (7%).
- City Government's overall emissions have *increased* by 10% between 2011 and 2015 due to increases in purchasing. During the same time period building energy related emissions have *decreased* by -15% due to warmer winters and the lower carbon intensity of electricity.

Electric Utility Supply Portfolio

- Ashland's contracted and owned-electricity generation supply is very low-carbon compared to the regional electricity grid. This is overwhelmingly the result of Ashland's long-term power contract with Bonneville Power Administration (BPA), which is served by hydro and nuclear resources that do not produce GHG emissions during generation.
- From a community perspective, Ashland's electricity supply is from low-carbon resources, but the Utility and, by extension, the community *does not own the contracted resources or the associated environmental benefit*. Ownership of the environmental benefits associated with renewable electricity is conveyed contractually with Renewable Energy Certificates (REC), which are not produced or bundled with contracted BPA electricity. However, in 2015, the Utility, and to a lesser extent, the community voluntarily purchased RECs equal to 5.7% of community grid electricity use from BPA and Bonneville Environmental Foundation. Therefore the climate impacts of Ashland's grid electricity use are best represented by the carbon intensity of the region electricity grid, the Northwest Power Pool, adjusted by community REC purchases.
- From a Utility perspective, this inventory provides a public accounting of the greenhouse gas emissions associated with Ashland's owned electricity-generation (2% of total) and the upstream emissions from the community's contracted supply from BPA (remaining 98%). The Utility's electricity supply is generated almost entirely from low-carbon resources and therefore risk related to future GHG regulations is likely low.

1. INTRODUCTION

The Intergovernmental Panel on Climate Change (IPCC), the United Nations body that regularly convenes climate scientists, has identified human activity as the primary cause of the climate change that has occurred over the past few decades and quickened in recent years. Consensus statements from the IPCC suggest that human-caused greenhouse gas emissions (GHG) must be reduced significantly – perhaps more than 50% globally, and by 80% in wealthier nations that are the largest emitters – by mid-century in order to avoid the worst potential climate impacts on human economies and societies that have been projected. The common international goal often referenced, to mitigate the worst climate impacts, is to limit average global average temperature increases to no more than 2°C relative to temperatures at the start of the industrial revolution. As of 2015 – we've already passed the halfway point – average temperatures have increased by 1°C since the industrial revolution.

It's with this understanding and urgency that the City of Ashland has undertaken its first-ever suite of greenhouse gas (GHG) inventories. A GHG inventory quantifies the GHG emissions associated with a specific boundary – such as operational control within and organization or the geographic boundary of a community – for a specific period of time. By conducting inventories at regular intervals, GHG inventories can be used to understand trends and manage emissions from specific emissions sources and activities. The results of the GHG inventories will be used to support development of Ashland's Community Climate and Energy Action Plan and provides the foundation for a long-term GHG emissions tracking and management system.

Project Description

Good Company was contracted by the City of Ashland, Oregon to assist the City staff in completion of a suite of three (3) annual greenhouse gas (GHG) inventories for the period of 2011 through 2015. The boundaries of these inventories include the Ashland Community; City Government Operations; and Ashland's Municipal Electric Utility's owned and contracted electricity supply. This work began in September 2015 and concluded in February of 2016.

Structure of This Report

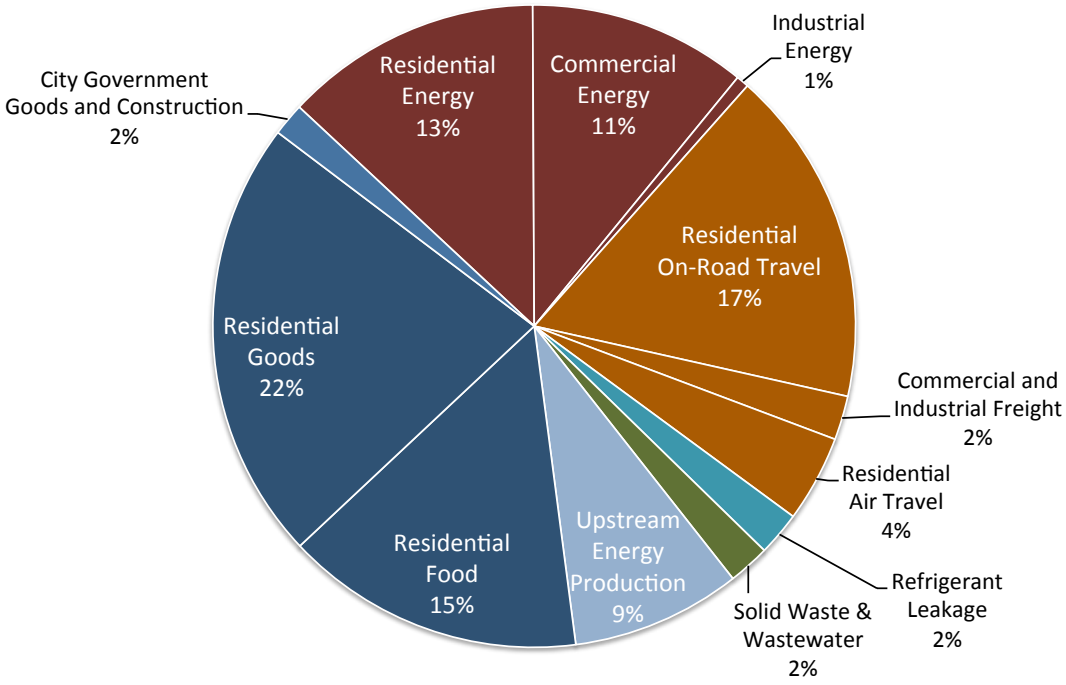
Following this Introduction, Section 2 details the results of Ashland's Community GHG Inventory; and Section 3 focused on the detailed results of the City's Government Operational Inventory. In addition to the primary Sections of the report, there are 3 Appendices. Appendix A discusses the detailed results of Ashland's Municipal Electric Utility's Supply Portfolio GHG Inventory. Appendix B and C provide additional details on data, emissions factors and methodology used in the Community, City Operations, and Electric Utility Portfolio GHG Inventories. In addition to these Appendix B and C, there is an Audit Trail for each type of inventory, for each year, which documents in detail the data, calculations, and methodology.

2. COMMUNITY INVENTORY

The City of Ashland, Oregon has a population of 22,700 and is located at the southern tip of the Rogue Valley, approximately 15 miles north of the Oregon-California border. Nestled in the foothills of the Siskiyou Mountains, Ashland has a nationally recognized and Tony Award-winning repertory theater company, the Oregon Shakespeare Festival (OSF), and the nearby Mount Ashland Ski Area provide abundant outdoor recreational opportunities in the region. Ashland is also home to Southern Oregon University (SOU), with close to 6,000 students.

Figure 2 provides a summary of Ashland's 2015 emissions, by source and sector. As can be seen the largest sources of emissions include Residential and Commercial Energy use by buildings and other facilities (24% of total); Residential On-Road Transport (17%); and emissions from the production of Residential Goods (22%) and Food (15%). Upstream Energy Production represents the "upstream" energy use and emissions associated with the extraction and production of final fuel products that used in Ashland's buildings and vehicles.

Figure 2: Summary of Ashland's 2015 Community GHG Emissions.



Ashland's community greenhouse gas (GHG) inventory includes both "sector-based" and "consumption-based" emissions. Sector-based emissions include local emissions from building energy use in residential, commercial and industrial sectors, transportation energy use, methane emissions from solid waste disposal, wastewater treatment, and fugitive leakage of refrigerants from cooling systems. Consumption-based emissions are generated outside the community in order to produce the goods and food consumed by Ashland residents. Together, they make up a community's total emissions. The community has greater control over the

sector-based emissions sources, as well as better data, which is why these emissions are typically the primary accounting methodology used to set emissions mitigation goals. While the community does not control the means of production for the majority of goods and food it consumes, there is local control and choice in the quantity of demand; the types of products; and vendors who supply the products.

Ashland's sector-based emissions decreased -10% between 2011 and 2015. This decrease is the result of decreases in electricity and natural gas use in the residential sector, decreases in natural gas use in the commercial sector, and increased hydro electricity generation on the regional electricity grid which in turn lowers the average carbon intensity of northwest grid electricity and the emissions from its use.

Figure 3: Sector-based emissions by year.

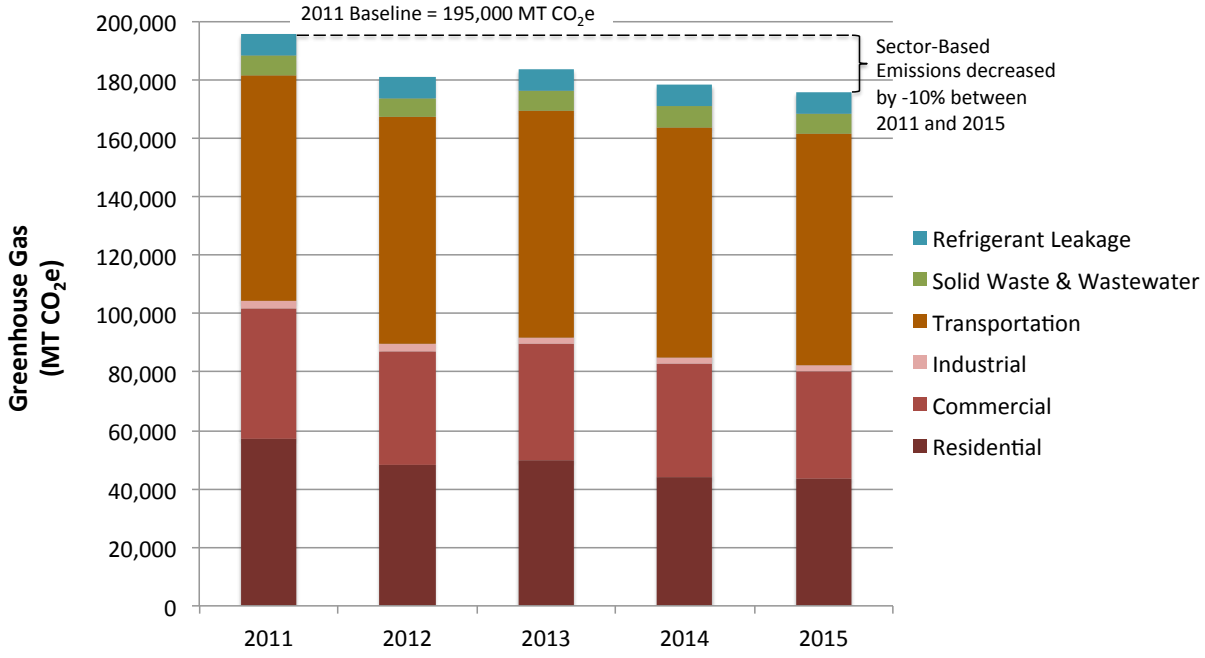


Figure 4 shows the change in total emissions (sector + consumption-based emissions) from 2011 through 2015. Consumption-based emissions double the community's total emissions, compared to a sector-based only view. Between 2011 and 2015 Ashland's total emissions decreased by -6%. See Figure 6 for tabular results and additional details about emissions change over time.

Figure 4: Sector-based plus consumption-based emissions, or Total Emissions, by year.

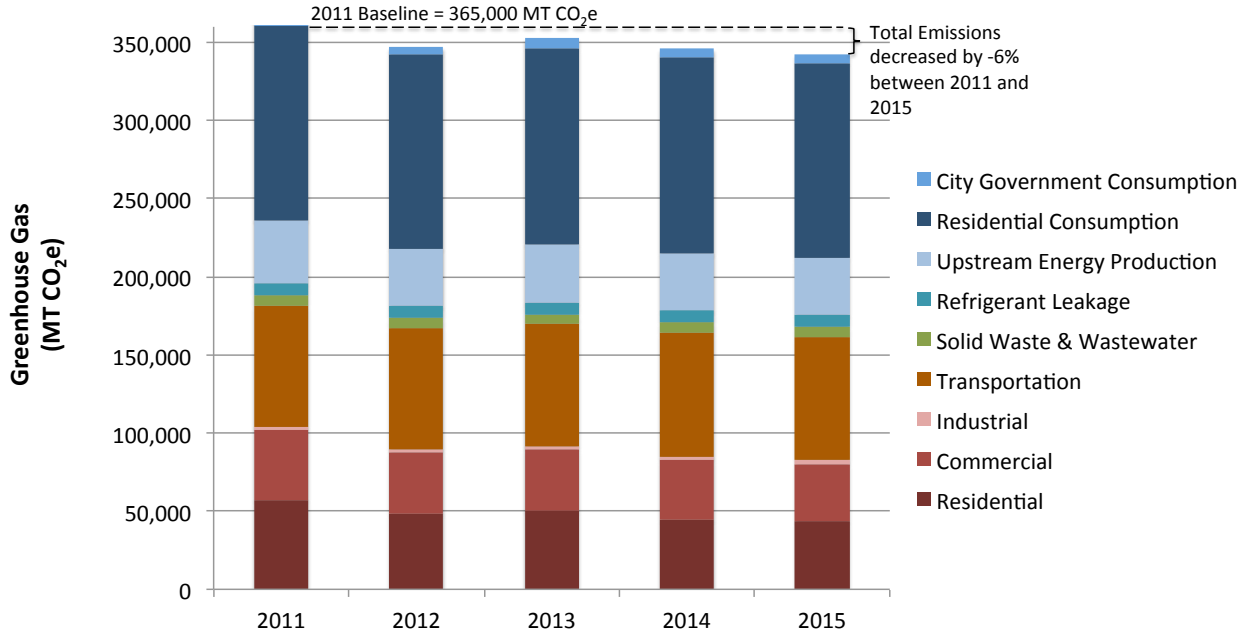


Figure 5 shows Sector-based and Total Emissions intensity per capita and per household. Sector-based emissions per Ashland resident decreased by almost 12% between 2011 and 2015; while total emissions per capita decreased by almost 8%. Sector-based emissions per Ashland household decreased by almost 10% between 2011 and 2015; while total emissions per household decreased by almost 6%.

Figure 5: Emissions intensity per capita and per household for sector-based and total emissions.

Emissions Intensity Metric	2011	2012	2013	2014	2015	% Change 2011 - 2015
Per Capita Emissions						
Ashland Population	20,314	20,465	20,510	20,684	20,684	1.8%
Sector-Based Per Capita (MT CO2e	***9.6***	***8.8***	***9.0***	***8.6***	***8.5***	***-11.6%***
Total Per Capita (MT CO2e / person)	***17.9***	***17.0***	***17.2***	***16.7***	***16.6***	***-7.7%***
Per Household Emissions						
Ashland Households	9,339	9,325	9,292	9,311	9,311	-0.3%
Sector-Based Per Household (MT C(	***20.9***	***19.4***	***19.8***	***19.1***	***18.9***	***-9.7%***
Total Per Household (MT CO2e / HH	***39.0***	***37.2***	***38.0***	***37.2***	***36.8***	***-5.7%***

Figure 6: Detailed summary of sector-based and consumption-based emissions, 2011 - 2015.

Emissions Category	2011	2012	2013	2014	2015	% Change 2011 - 2015	Factors in change between 2011 to 2015
Built Environment	104,337	89,636	91,871	84,879	82,426	-21%	Decrease is the result of three primary factors - increased renewable electricity on the regional electricity grid; decreased use of electricity in the residential sector; and decreased natural gas use due to warmer winters.
Residential	*57,333*	*48,459*	*49,869*	*44,230*	*43,490*	*-24%*	
Commercial	*44,614*	*38,835*	*39,680*	*38,410*	*36,808*	*-17%*	
Industrial	*2,390*	*2,342*	*2,322*	*2,239*	*2,128*	*-11%*	
Transportation	77,300	77,800	78,400	79,000	79,000	2%	No significant change over the time period.
Residential On-Road	*56,000*	*56,200*	*56,500*	*57,000*	*57,000*	*1.8%*	
Commercial Freight	*4,500*	*4,600*	*4,600*	*4,600*	*4,600*	*2.2%*	
Industrial Freight and Equipment	*2,600*	*2,600*	*2,700*	*2,800*	*2,800*	*7.7%*	
Residential Air Travel	*14,200*	*14,400*	*14,600*	*14,600*	*14,600*	*2.8%*	
Refrigerant Leakage	7,300	7,300	7,400	7,400	7,400	1%	No significant change.
Solid Waste & Wastewater	6,368	6,222	6,523	6,923	6,923	9%	Increase in the quantity of landfill solid waste disposal.
Sector-Based Total:	195,305	180,958	184,194	178,202	175,749	-10%	
Residential Consumption	124,200	124,600	125,200	125,200	125,200	0.8%	No significant change.
Goods	*73,500*	*74,200*	*74,700*	*74,700*	*74,700*	*1.6%*	
Food	*50,700*	*50,400*	*50,500*	*50,500*	*50,500*	*-0.4%*	
Upstream Energy Production	40,826	37,105	37,376	36,530	36,031	-12%	Increased renewable electricity on regional grid.
City Government Consumption	4,100	4,400	6,300	6,000	5,500	34%	Increase due to construction and vehicle purchases.
Consumption-Based Total:	169,126	166,105	168,876	167,730	166,731	-1%	
Total Emissions:	364,431	305,649	309,485	303,493	342,480	-6%	

Note: Values reported in metric tons of carbon dioxide equivalent (MT CO_2e).

Methodology and Approach

Protocols and Tools

This inventory follows ICLEI's U.S. Community Protocol for Accounting and Reporting Greenhouse Gas Emissions in conjunction with the more recent Global Protocol for Community-Scale Greenhouse Gas Emissions Inventories by World Resource Institute and ICLEI. The most notable deviation between these two protocols is the guidance on use of electricity emissions factors. This inventory follows the guidance of the Global Protocol and uses the regional emissions factor (i.e. location-based emissions factor) to represent the emissions from community adjusted by voluntary, community purchases of Renewable Energy Certificates (RECs).

ICLEI'S web-based ClearPath Community-Scale Emissions Management Software was used to calculate or catalog all greenhouse gas (GHG) emissions for the Ashland's Community Inventory. All data and calculation files used in the inventory can be found in the Community Inventory Audit Trail 2011 – 2015. This audit trail is provided to clearly document data sources and methods for replication in future inventories.

All community GHG emissions presented in this report are represented in metric tons of carbon dioxide equivalent (MT CO_2e). Quantities of individual GHGs are accounted for in the ICLEI's ClearPath carbon calculator and include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), CFCs, PFCs, and sulfur hexafluoride (SF_6) per the Kyoto Protocol. All GHG calculations use the global warming potentials (GWP) as defined in the International Panel on Climate Change's 5th Assessment Report (IPCC AR5).

Inventory Boundaries

There are a core group of emissions sources and activities required by ICLEI's Protocol (see *items on Figure 7). ICLEI's community protocol encourages communities to "report on all GHG emissions sources and activities over which they have significant influence, as well as community interest, and emissions associated with consumption activities of community households." Ashland's community inventory follows this guidance and goes beyond the basic requirements to include all emissions sources and activities that are under the community's influence and interest that can be calculated or estimated with publically available data, models, and tools.

Community Protocol asks the user to account for emissions from various emissions sources

Figure 7: Crosswalk of emission and Scope categories.

Emissions Type	Protocol Required Emissions	Scope 1	Scope 2	Scope 3
Residential Energy				
Electricity	•		✔	
Stationary Combustion	•	✔		
Comercial Energy				
Electricity	•		✔	
Stationary Combustion	•	✔		
Industrial Energy				
Electricity	•		✔	
Stationary Combustion		✔		
Refrigerant Leakage	•			
Transportation				
On-Road Passenger Vehicles	•	✔		✔
On-Road Freight Vehicles	•	✔		✔
On-Road Transit Vehicles		✔		
Off-Road Vehicles and Equipment		✔		
Air Travel		✔		✔
Solid Waste, Potable Water, and Wastewater				
Solid Waste	•			✔
Potable Water Use Energy	•		✔	
Wastewater Treadment	•		✔	
Consumption-Based Emissions				
Household Consumption				✔
City Government Consumption				✔
Upstream Energy				✔

and activities and groups emissions into like categories such as built environment, transportation, etc. This is a departure from the Scope categories used in Operational GHG Protocol, described in Section 3 of this report. The reason for this inconsistency between protocols is that community emissions often cross politically defined geographic boundaries and therefore do not fit neatly into Scope classifications based on operational control. Examples of this include transportation, solid waste landfill disposal, and wastewater treatment emissions. Figure 7 provides a summary of the emissions sources and activities included in this inventory and a crosswalk to categorize emissions into Scope categories. Those emissions sources or activities that cross inventory boundaries are those that are applicable to multiple Scope categories in Figure 7. For example, emissions from on-road transportation are considered Scope 1 for emissions within the community boundary, while emissions that happen outside of the community boundary are considered Scope 3.

Exclusions from the Community Inventory

- Consumption-based emissions for local businesses. Like households, businesses consume materials and, in the case of restaurants, food in order to serve their customers. Those emissions are not accounted for in this inventory due to a lack of available data from which to estimate emissions.

Data Collection

Good Company worked with Adam Hanks, Project Manager for the City of Ashland to collect the data required to calculate emissions. Primary data collection for the 2011 - 2015 inventories was completed in September 2015 through January of 2016.

Primary, accurate data is available for the Ashland Community's use of electricity, natural gas, gasoline, and landfilled solid waste quantities. Primary data for all other emissions sources included in the community inventory required either scaling down state-level data or using Jackson County-level data within models to estimate primary data per protocol guidance. See Appendix B for more details.

Two data models were used in the course of Ashland's community inventory to estimate primary data using methods and guidance provided in ICLEI's Community GHG Protocol. These include: Oregon Department of Transportation's (ODOT) Regional Strategic Planning Model and Oregon Department of Environmental Quality's (ODEQ) Oregon Household Carbon Calculator. The ODOT model is used to estimate on-road passenger and freight transport vehicle-miles traveled and associated GHG emissions. ODOT model results are compared to alternative data sources and emissions calculator methodology. ODEQ's Oregon Carbon Calculator was used to estimate household consumption-based emissions for the Ashland community.

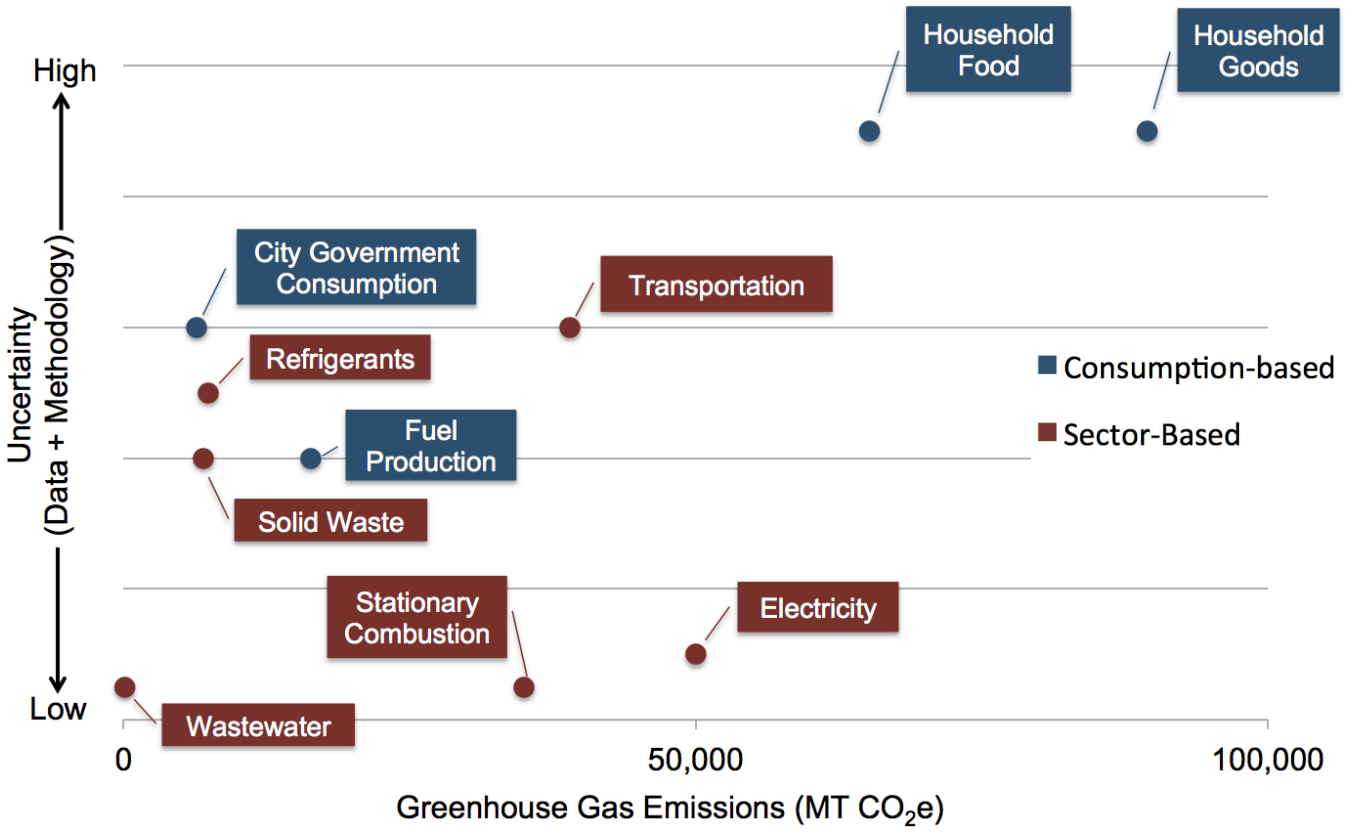
Emissions Calculations and Uncertainty

As the previous discussion makes clear, there is some degree of uncertainty in Ashland's community inventory results. This uncertainty comes from a variety of sources including lack of publically available data sources or other data issues, but uncertainty can also stem from the calculation methodology or emissions factors used to calculate emissions from activity data. The relative scale of uncertainty can be used to inform the reading of the results. It can also helpful in planning the approach to future inventory

and reporting efforts, including prioritization of additional data gathering. The relative scale of uncertainty may also be useful for goal setting and prioritization of climate actions.

Figure 8 provides a subjective assessment of this uncertainty by emissions source for sector-based (red) and consumption-based (blue) emissions. Sector-based emissions trend towards lower uncertainty and have mid-to-low scale while consumption-based emissions trend toward higher uncertainty and are larger scale. The emissions sources that have mid-to-high levels of uncertainty are rounded in the presentation of results to convey a higher degree of uncertainty. For example, note the rounded values in Figure 8.

Figure 8: Assessment of emissions calculation uncertainty for the Community Inventory.



Suggestions for Future Inventories

- **Household Consumption Data and Methodology:** Consumption in this inventory was calculated using the Oregon Carbon Calculator, but in the near future ODEQ will be able to support communities in completing community household consumption inventories, as they did for Eugene, by scaling down Oregon's State-Level Consumption Based Model. That approach was explored for this inventory, but ultimately not used due to project timing and resource limits. We recommend contacting David Allaway at Oregon Department of Environmental Quality about a potential collaboration for future updates to the community inventory.
- **Refrigerant Data:** Establish process to collect more accurate, local refrigerant data. Invite cooling equipment vendors and services to join the Climate Action Planning process with a primary goal of establishing voluntary, anonymous data collection methods.

Detailed Results for Significant Emissions

Built Environment

Electricity and natural gas use by the residential and commercial sectors are the leading sector-based emissions. Ashland's residents' homes have a slightly larger impact than their commercial business. Industrial energy is small in comparison.

By energy type, electricity had a larger impact (~60% of total building energy) in 2015 than natural gas (~40%). As can be seen in Figure 9, Ashland's residential electricity demand declined over 9% between 2011 and while commercial and governmental demand increased slightly.

Use of natural gas decreased 13% between 2011 and 2014 in all sectors[2]. Most of this decrease occurred between 2013 and 2014 driven by warmer than average winter temperatures leading to lower space heating. This can be seen in the declining number of heating degree-days (HDD)[3] over the same time period (dashed line in Figure 10).

Other stationary combustion fuels (fuel oil and propane) are included in the inventory, but represent a very small source of community emissions. The remaining significant emissions source related to buildings is escaping refrigerant gases from air conditioning and refrigeration units. This source represents 5% of Ashland's sector-based emissions. These refrigerants have global warming potentials that are hundreds to thousands of times that of carbon dioxide. In other words, losing a little can add up quickly.

[2] 2015 natural gas data is not available. Available data spans from 2011 – 2014.

[3] Heating degree days reflect the energy required to heat a building when average outdoor temperatures drop below 65°F.

Figure 9: Ashland electricity use (in MWh), by sector. Percent (%) change, 2011 – 2015.

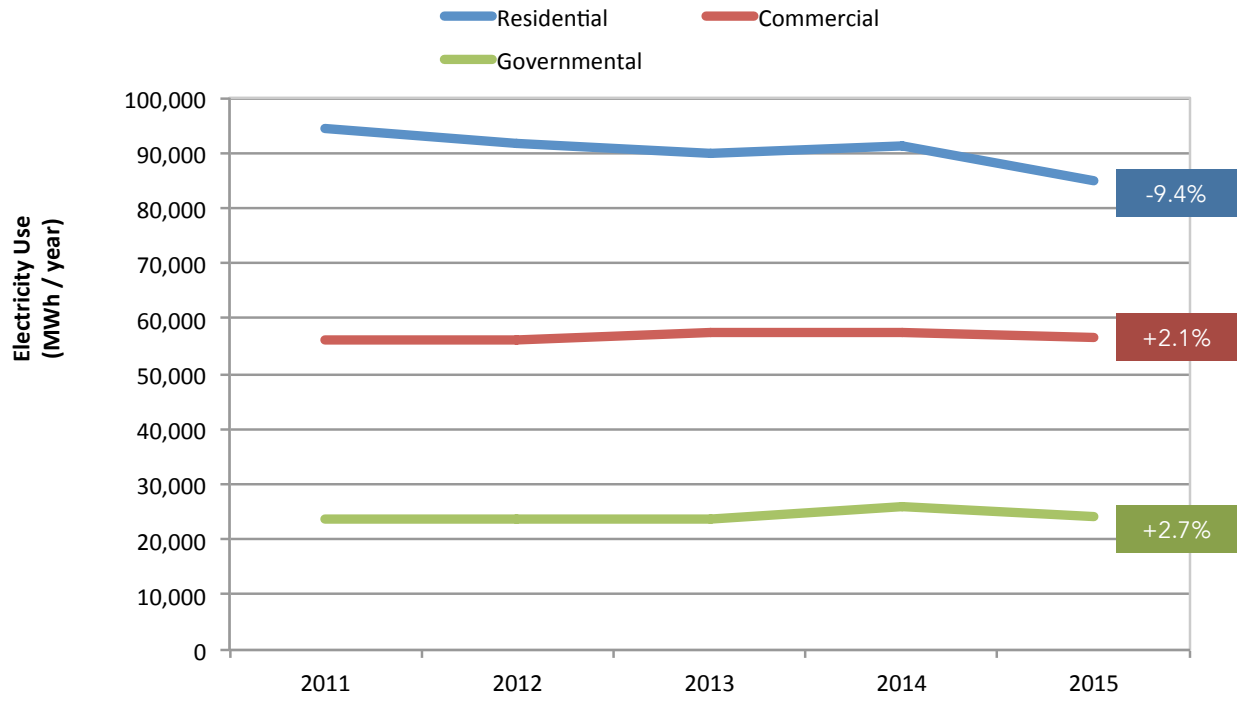
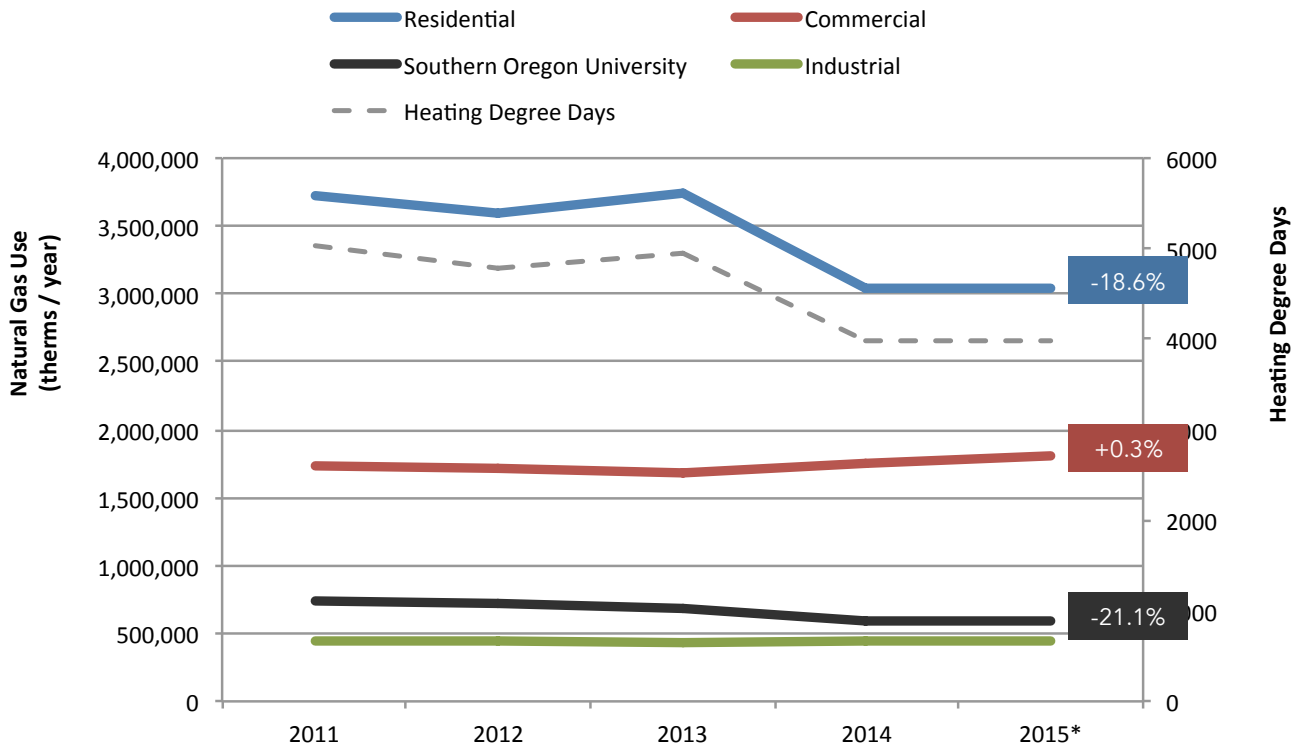


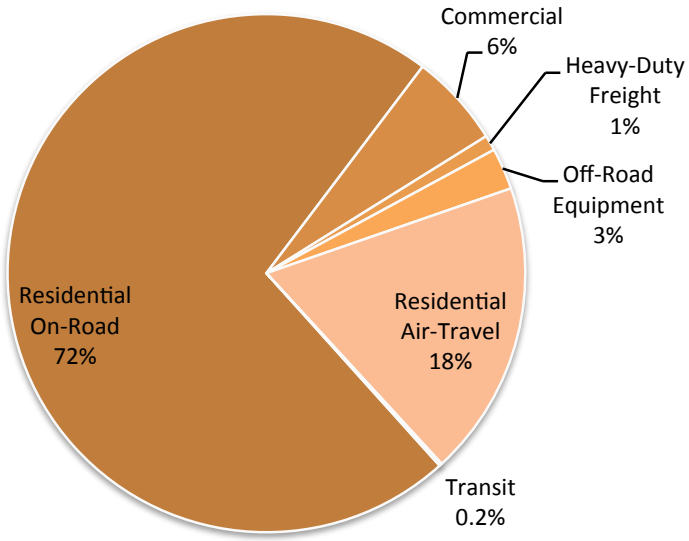
Figure 10: Ashland's natural gas use (in therms), by sector. Percent (%) change, 2011 – 2015.



Local, on-road transportation of passengers is Ashland's leading source of transportation-related emissions. These emissions originate from residential-owned passenger cars and trucks and which primarily use gasoline (E10) and relatively small quantities of diesel (B5). Roughly half of these emissions are the result of trips inside the City's boundaries, while the remaining half originate inside the City's boundaries, but have a destination outside the City.

The next largest source is air travel by Ashland households. While Ashland does have a small airport, the majority of these emissions are from plans departing from airports outside of the Ashland community.

Figure 11: Distribution of On-Road transport emissions, by vehicle category, as estimated by RSPM.



Commercial freight vehicles are the next largest source of emissions. These vehicles include local freight, restaurant delivery, and service providers such as electricians, plumbers, etc. Off-road vehicles and equipment represent about 3% of transportation emissions for local construction. Heavy-duty freight vehicles operating within the City limits represent only 1% of transportation-related emissions. The majority of long-distance freight emissions are accounted for within the consumption-based emissions for the Goods and Services consumed by Ashland households.

It is acknowledged that Ashland is one of Oregon's premier tourist destinations and that travel-related emissions may be significant relative to Ashland's other emissions sources. That said, data is not readily available to calculate or scale these emissions, and this emissions source falls outside the boundaries of Community GHG Inventory.

Consumption-based GHG emissions are produced outside of Ashland to manufacture and transport products and services to meet local consumption of goods. As was previously noted, Ashland's industrial energy use is small and there isn't any significant agriculture within the City limits. Therefor, it is reasonable to assume that the Ashland community (i.e. businesses within Ashland city limits) does not locally produce a significant portion of the goods and food it consumes. Instead it relies almost entirely on imported goods, food, and energy products to meet the community's needs.

As can be seen in Figure 12, the scale of consumption-based emissions as a category is large relative to Ashland's sector-based emissions. Consumption-based emissions are also large for City Operations (presented in the next section). While these emissions are large, they are "indirect" emissions and not under the same level of community control as the local, sector-based emissions. For example, the Ashland community could change local development codes to increase the energy efficiency of built space to address residential or commercial energy emissions. The Ashland community does not have a same ability to influence production efficiencies or fuel choices for imported goods and services.

The consumption-based emissions are split into four high-level categories in Oregon's Carbon Calculator, which include[4]:

- **Household Goods:** Emissions from extraction, manufacture, and transportation of raw materials into final products such as construction, automobile, furniture, clothing, and other goods.
- **Household Food:** Emissions from agricultural (energy for irrigation, production of fertilizers, methane emissions from livestock, etc.), transportation of raw materials and finished products emissions. Categories included are cereal, dairy, meat, produce, and other foods.
- **City Government Consumption:** Emissions from the production of goods (as described above) and some services purchased in the course of City operations.[5]
- **Energy (Fuel Production):** Process and energy emissions from the extraction and production into usable fuel products (e.g. electricity from household outlets, gasoline pumped into cars, natural gas combusted by furnaces, etc.). These upstream emissions are considered at the community-scale for electricity, natural gas, gasoline, diesel, propane, and fuel oil.

In 2011 – 2015, the largest source of consumption-based emissions for Ashland – household consumption of goods and services - remains relatively stable, increasing by only 1% over the period. Fuel production emissions for the energy consumed in Ashland decreased by -11% as a result of increased availability of hydropower on the regional electricity grid, The Northwest Power Pool, as well as decreased demand for residential electricity and natural gas and commercial natural gas. City Government consumption represents only a small fraction of Ashland's consumption-based emissions.

[4] Please note, services are also included as a category in Oregon's Carbon Calculator. They are not included here because they are assumed to be equal to commercial energy use and therefore would represent double counting.

[5] Note: These supply chain emissions are presented in detail in the next Section of this report, specifically Figure 13. For the community purposes of including these emissions in the community inventory, energy and community services emissions are excluded to avoid double counting.

Figure 12: Upstream emissions from the production of the Goods, Foods and Services

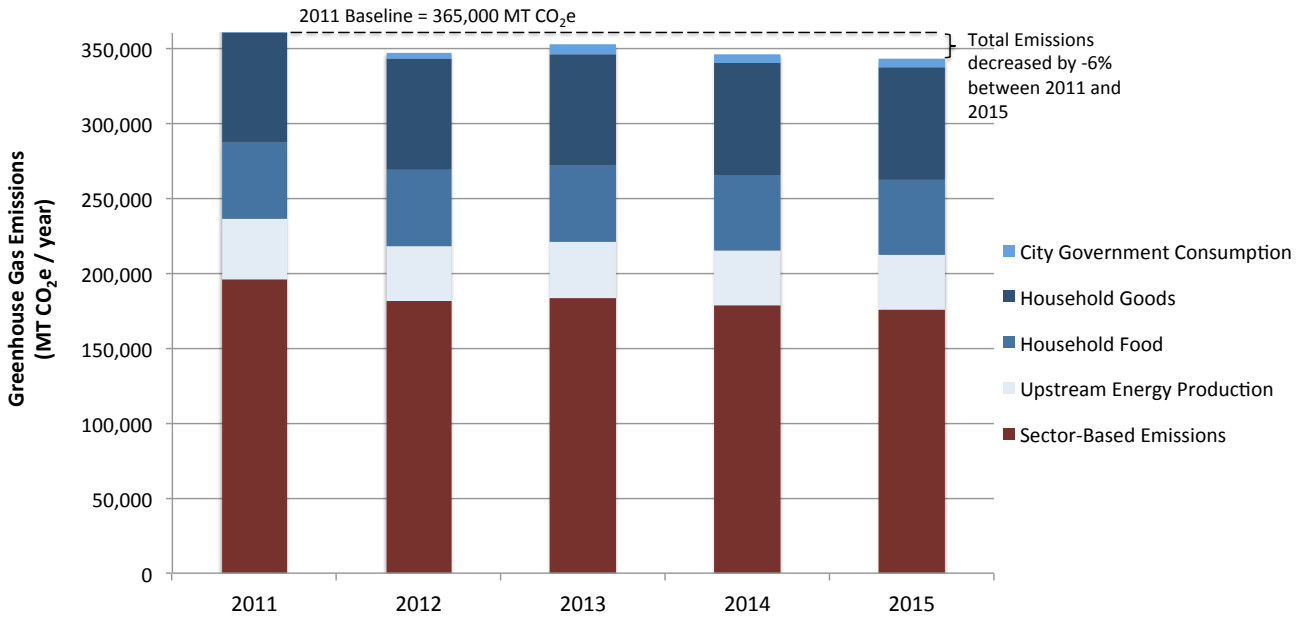
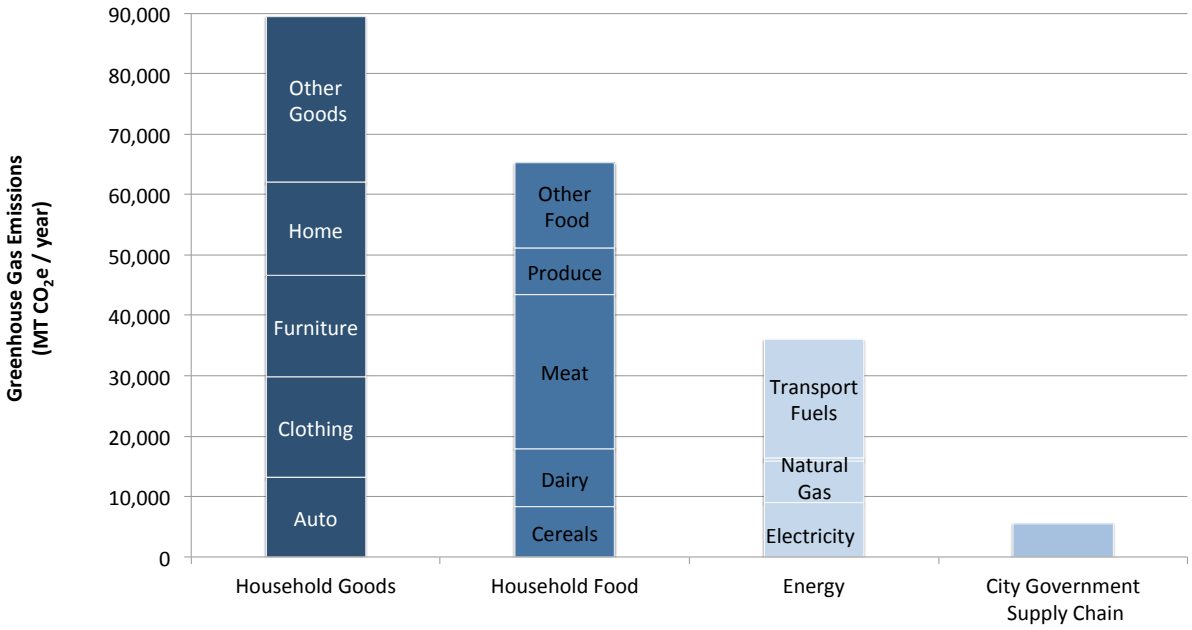


Figure 13 provides additional detail for each of the consumption categories. Emissions from household goods are dominated by home construction, furniture, clothing, and vehicle purchases. For the average Ashland resident, a large portion of food emissions are from the production of meat, with lesser contributions by dairy, produce, and cereals.[6] Upstream energy production emissions are dominated by the production of transportation fuels (gasoline and jet fuel), electricity, and natural gas. See Section 3 of this report for details about City Government Supply Chain emissions.

Figure 13: FY 2015 consumption-based emissions by category.



[6] Goods and food consumption-based emissions were adjusted to exclude in-state transportation emissions. It is assumed that 100% of the on-road diesel included in the Transportation sector-based emissions is going towards transportation of goods and foods consumed in the City of Ashland.

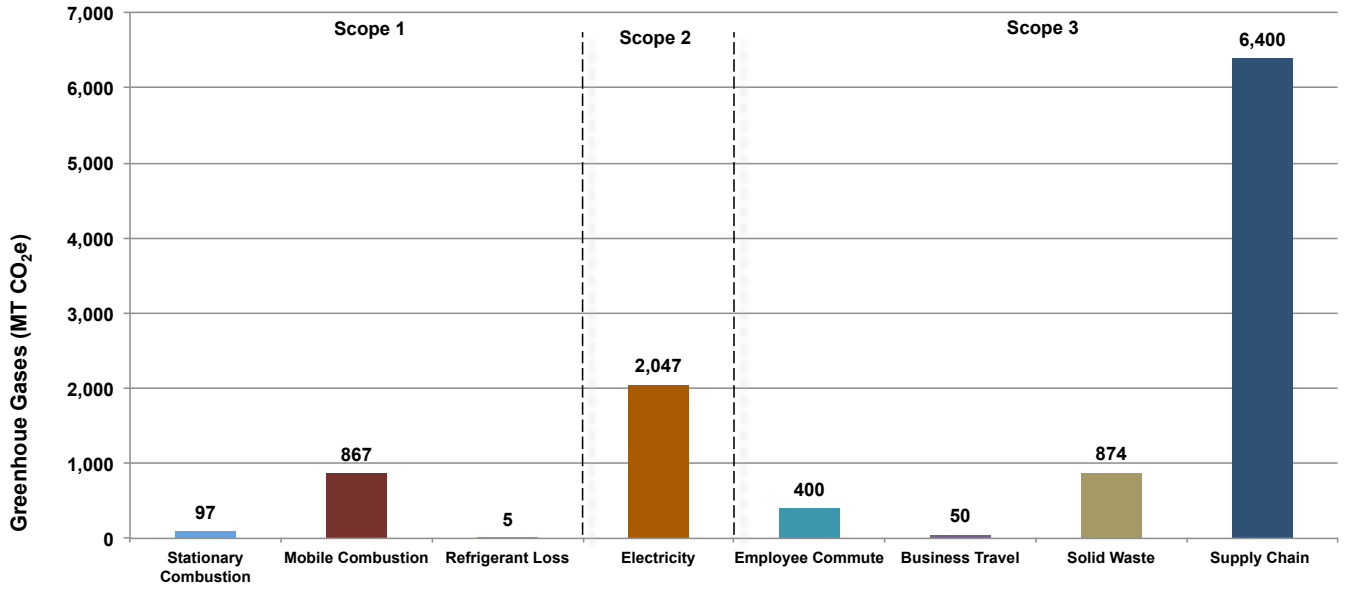
3. CITY GOVERNMENT OPERATIONS

The City of Ashland's government provides a full range of municipal services including police and fire protection, parks and recreation facilities and activities, streets, airport, planning, zoning, senior programs, and general administration services. The City also operates the water, wastewater, and electrical utility systems.

The City of Ashland's (City) operational emissions from buildings and fleet transportation total 3,016 MT CO_2e, categorized in Figure 14 as Scope 1 and Scope 2. These emissions sources are under the operational control of City staff and are somewhat comparable to sector-based emissions in a community inventory. Scope 1 and Scope 2 emissions are typically the basis for organizational goal setting and tracking over time. Scope 3 emissions are more difficult to track, but are large in scale and serve mission critical activities - and therefore should not be ignored. This inventory includes 7,700 MT CO_2e from Scope 3 emissions sources.

The largest emissions sources in 2015 are electricity use, fuels combustion in vehicles and equipment, landfill disposal of biosolids, and supply chain (i.e. upstream emissions from the production of mission-critical goods and services). Operational emissions are a subset of community commissions.

Figure 14: City of Ashland Greenhouse Gas Emissions, FY 2015.

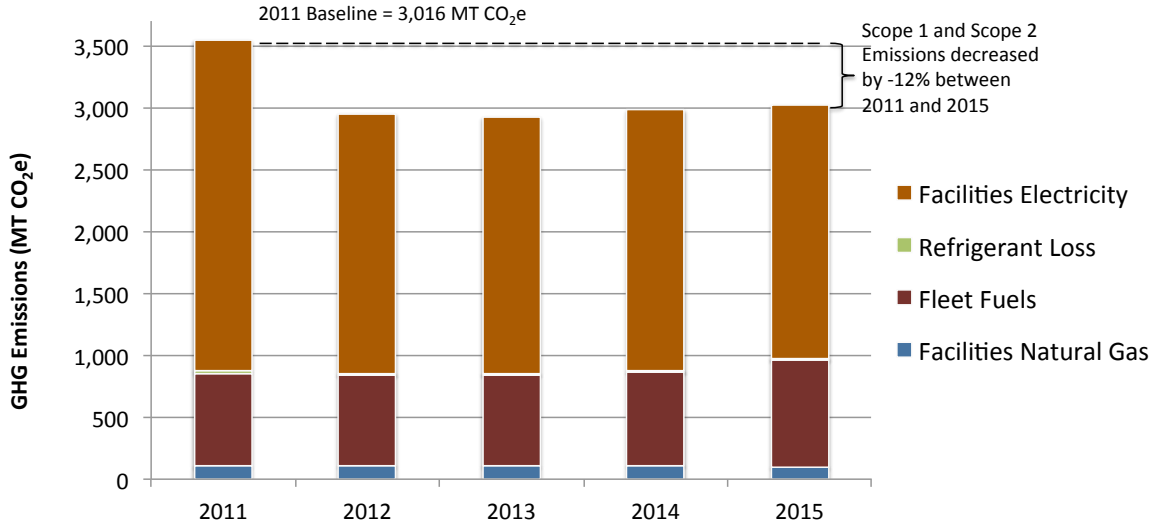


Scope 1 and Scope 2 emissions total 3,016 MT CO_2e. This is equivalent to any one of the following[1]:

- $30,160 for purchase of voluntary carbon offsets (at $10 / MT CO_2e)
- Annual emissions from the energy consumed by 275 average U.S. homes
- Annual emissions from 635 passenger vehicles
- 77,333 tree seedlings grown for 10 years

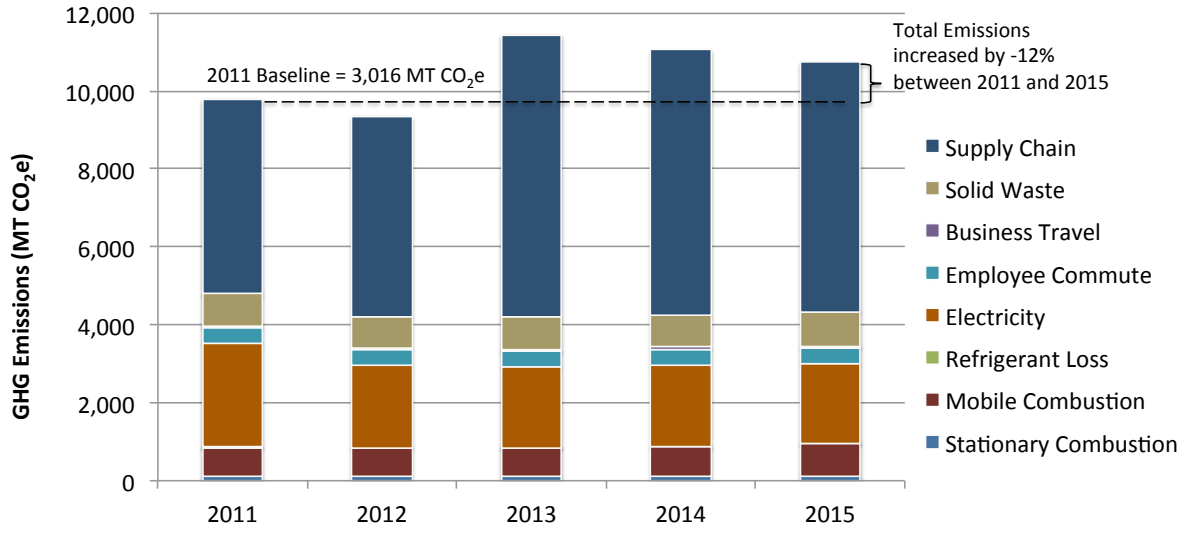
Figure 15 compares Scope 1 and Scope 2 emissions over time. Combustion (fleet) has increased 16% from 2011 and 2015. This increase can be attributed to increased fuel use by the Police and Parks departments. Electricity emissions declined by -23% in 2012 due to increased low-carbon electricity availability on the NWPP grid resulting from a particularly good "water year" for hydro power. The carbon intensity of NWPP grid electricity can fluctuate significantly from year-to-year and will correspondingly effect the City's operational emissions, positively or negatively.[7]

Figure 15: Comparison of Scope 1 and Scope 2 emissions, by source, over time.



As can be seen in Figure 16, Scope 3 emissions sources represent a large portion of the City's total operational emissions (~70% of total). Significant Scope 3 sources include supply chain, solid waste disposal, and employee commute. The largest of these, supply chain, increased significantly post-2012 due to increases in construction projects and vehicle purchases.

Figure 16: Comparison of total emissions, by source, over time.



[7] The most recent eGRID factors available are based on 2012 data and are used to calculate 2012 emissions, but are also used as a proxy to calculate 2013 – 2015 emissions, per inventory protocol.

Figure 17: Detailed Description of the City of Ashland's Operational GHG Emissions, 2011-2015

Emissions Category	2011	2012	2013	2014	2015	% Change 2011 to 2015	Factors in change between 2011 and 2015
Scope 1 Totals	**882**	**852**	**855**	**876**	**969**	**10%**	
Stationary Combustion	103	106	105	113	97	-6%	Stationary combustion has remained steady with a small drop over the 5 year period that can be attibuted a warmer average winter temperatures. Note that natural gas use in incomplete for Parks department.
Mobile Combustion	750	739	740	750	867	16%	Mobile combustion remained steady until a significant increase in 2015. This increase is due increased fuel use by the Police and Parks departments.
Fugitive Emissions	29	7	9	12	5	-83%	Refrigerant loss has decreased over the 5 year period. Note that data collection in known to be incomplete for this emissions source.
Scope 2 Totals	**2,658**	**2,096**	**2,066**	**2,105**	**2,047**	**-23%**	
Electricity	2,658	2,096	2,066	2,105	2,047	-23%	Electricity usage is unchanged over the 5 year period. Electricity emissions however have decreased by -23% as a result of more hydro and wind generated electricity available on the regional electricity grid.
Scope 1 + Scope 2 Subtotal:	**3,540**	**2,947**	**2,921**	**2,981**	**3,016**	**-15%**	
Scope 3 Totals	**6,246**	**6,348**	**8,462**	**8,043**	**7,741**	**24%**	
Employee Commute	400	400	400	400	400	0%	Employee commute emissions have been stable over the 5 year period. The City workforce has been consistent in number and geographic distribution over this period.
Business Travel	40	50	40	50	50	25%	City business travel (air and auto miles) has increased by 25% This is due to increased air travel.
Solid Waste	806	798	822	793	891	11%	Emissions from solid waste has increased during the 5 year period due to an increase in the quantity of biosolids waste volume between 2014 and 2015. Biosolids waste is represents 97% of the City's total landfill-related emissions.
Supply Chain	5,000	5,100	7,200	6,800	6,400	28%	Supply chain emissions have increased over the time period due to increased spending on construction and maintenance and vehicle purchases.
Total Emissions:	**9,786**	**9,295**	**11,384**	**11,023**	**10,757**	**10%**	

Note: Values reported in metric tons of carbon dioxide equivalent (MT CO_2e).

Figure 18 shows emissions intensities metrics – emissions per Ashland resident and emissions per 1,000 square feet of City-owned facilities. As can be seen, total emissions have increased per capita, but Scope 1 and Scope 2 emissions per capita and per 1,000 square feet of building space have both decreased.

Figure 18: Emissions per Ashland resident and per 1,000 sq.ft. of City-owned facilities.

Emissions Intensity Metric	2011	2012	2013	2014	2015	% Change 2011 to 2015
Per Population Served						
Ashland Population	20,078	20,314	20,465	20,510	20,684	3%
Scope 1&2 Per Capita (MT CO_2e / person)	***0.2***	***0.1***	***0.1***	***0.1***	***0.1***	***-17%***
Total Per Per Capita (MT CO_2e / person)	***0.5***	***0.5***	***0.6***	***0.5***	***0.5***	***7%***
Per 1,000 Square Feet						
City Government Square Footage	110,589	110,589	110,589	110,589	110,589	0%
Facility-Related Per 1,000 sq.ft. (MT CO_2e / 1000 sf)	***25.2***	***20.0***	***19.7***	***20.2***	***19.4***	***-23%***

Methodology and Approach

Protocols and Methodology

The City of Ashland's Operational Inventory follows The Local Government Operations Protocol v1.1 (LGOP) for Scope 1 and Scope 2 emissions sources as well as guidance, best practices, tools and models from a variety of other sources including World Resource Institute's (WRI) Scope 2 Guidance, EPA's Climate Leaders, EPA's Waste Reduction Model (WARM), Oregon Department of Environmental Quality's Purchaser Price Model, and others to estimate Scope 3 emissions sources.

Good Company's Carbon Calculator v3.8 (G3C) was used to calculate all greenhouse gas (GHG) emissions for the City's operations. G3C follows the standards set by the LGOP Protocol in its methodology and calculation of emissions. Calculations in G3C are fully transparent and include citations to all resources utilized.

All operational GHG emissions presented in this report are represented in metric tons of carbon dioxide equivalent (MT CO_2e). Quantities of individual GHGs are accounted for in the G3C file used to calculate emissions for this GHG inventory. The GHG calculations use the global warming potentials (GWP) as defined in the International Panel on Climate Change's 5th Assessment Report (IPCC AR5).

Inventory Boundaries

Operational inventory protocols classify emissions sources and activities as producing either direct or indirect GHG emissions. Direct emissions are those that stem from sources owned or controlled by a particular organization. Indirect emissions occur because of the organization's actions, but the direct source of emissions is controlled by a separate entity unless the organizations negotiates with its purchasing power or procures differently made goods. To

distinguish direct from indirect emissions sources, three "Scopes" are defined for traditional GHG accounting and reporting.

Scope 1 – Direct sources of GHG emissions that originate from owned equipment and facilities such as combustion of fuels or loss of fugitive refrigerants.

Scope 2 – Indirect emissions from purchased electricity and how the power is generated.

Scope 3 – All other indirect sources of emissions that result from the institution's activities and choices, but are directly controlled by another party, such as employee commutes, air travel, solid waste disposal or supply chain.

Scope 1 (direct) and Scope 2 (indirect) emissions must be reported for most operational protocols and registries. Scope 3 emissions are indirect and usually considered optional when reporting emissions to a registry, but serve to clarify an organization's entire carbon footprint and illuminate the potential climate, regulatory and financial risks an institution may face due to its carbon footprint. Ashland's City Operational Inventory follows an Operational Control approach and covers emissions from fiscal year 2011 through FY 2015. The emissions sources included in this inventory are summarized and described on Figure B1. The data was collected for all owned and leased City facilities.

There are three known emissions exclusions in this inventory:

- Scope 1 natural gas emissions from a portion of the City's accounts. Natural gas consumption for several Parks department accounts due to accounting classification discrepancies between City master accounts and the Parks department separate accounts with Avista Utilities (the estimated volumes are not expected to substantially alter the initial analysis and ratio of carbon emissions by category).
- Scope 1 fugitive refrigerant from buildings. A portion of the data was available and included, but the data set is assumed to be incomplete.
- Scope 1 fugitive refrigerant from vehicles. These emissions sources are assumed to be relatively small for the City of Ashland's fleet and do not have readily available data streams to support emissions calculations.

This inventory includes six "Kyoto gases": carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), perfluorocarbons (PFCs) and hydrofluorocarbons (HFCs). The City of Ashland does not use PFCs, NF_3 or SF_6; therefore those gases are not included. Overwhelmingly, direct and indirect CO_2-equivalent (CO_2e) emissions consist of CO_2 from the combustion of fossil fuels. Emissions are reported in units of metric tons of carbon dioxide equivalent (MT CO_2e). See the G3C calculator for details about specific gases.

Data Collection

Good Company worked primarily with Adam Hanks, Project Manager for the City of Ashland, to collect the data required to calculate operational emissions for FY2011-2015. Good Company provided the City with a data collection checklist that specified data types and units. The City's Project Manager used the checklist to either directly supply data or coordinate data collection efforts among the appropriate City staff.

After the receipt of an individual data file, Good Company reviewed it for completeness and asked follow-up questions if necessary. All data source files, answers to follow-up questions, resulting calculation files, and related resource files are documented and cataloged an Audit Trail for each inventory year. For more details see Appendix C.

In general, data was available and comprehensive. The two exceptions, a portion of the natural gas data and refrigerant emissions from buildings, were noted in the previous section. Of these the priority should be to collect the outstanding natural gas data. Refrigerant emissions are relatively small for most City governments and other organizations.

Emissions Calculations and Uncertainty

There is some degree of uncertainty in any GHG inventory. This uncertainty can come from incomplete data, but it can also result from uncertainty in the methodology or factors used in translating units of activity (e.g. gallon of gasoline, kilowatt-hour of electricity, short ton of solid waste) into CO_2-equivalent emissions. The sources of uncertainty should inform future inventory and reporting efforts, including prioritization of additional data gathering, framing inventory results, and in the development of mitigation goals and tracking systems.

Figure 19 provides a subjective assessment of this uncertainty, by emissions source. Later sections of the report provide additional detail, but the general points are straightforward:

- Stationary and mobile combustion have low uncertainty. Both sources are supported by good data and the methods for quantifying emissions from them are well-defined and accepted.
- Purchased electricity, the second-largest emissions source, has well-defined and well-known units of activity (kWh of electricity consumed) but significant year-over-year changes in emissions factors (from changes in available renewable electricity) combined with a 3-year lag in the availability of emissions factors creates "real-time" uncertainty. Emissions calculations will be more accurate as this data becomes available.
- Several emissions sources are low to moderate in magnitude and have some uncertainty with their data and methods. These include fugitive refrigerants, air travel, employee commute, and solid waste.
- Supply chain is the source of the largest emissions and uncertainty. The high degree of uncertainty related to supply chain emissions, and consumption-based emissions calculations in general, is that calculation of these emissions require models to

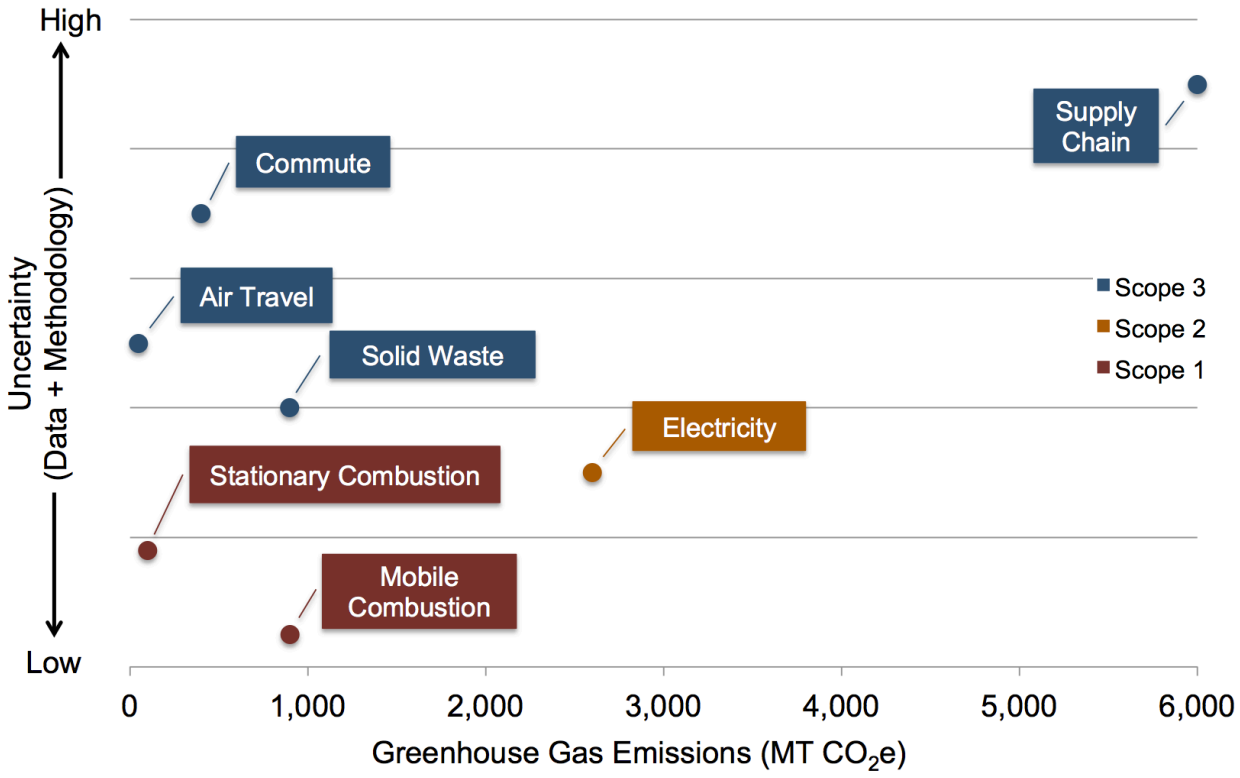
approximate complex economic interactions and effects for over 400 economic sectors as well as global trade.

Suggestions for Future Operational Inventories

In general, data availability for City of Ashland Operations is very good and uncertainty is based more on inherent methodological challenges as opposed to improvements to be made by the City. There are two exceptions (prioritized by scale of emissions):

- Stationary Combustion: Establish a data collection system that includes all City accounts, including the excluded Parks accounts previously mentioned.
- Solid waste: Establish a data collection systems that provides annual landfilled biosolids weights.
- Employee commute: Conduct surveys to coincide with future updates to the Operational Inventory. The survey should be designed in a way to track and monitor the effectiveness of any City programs that encourage alternative modes of commute.

Figure 19: Assessment of operational emissions calculation uncertainty.

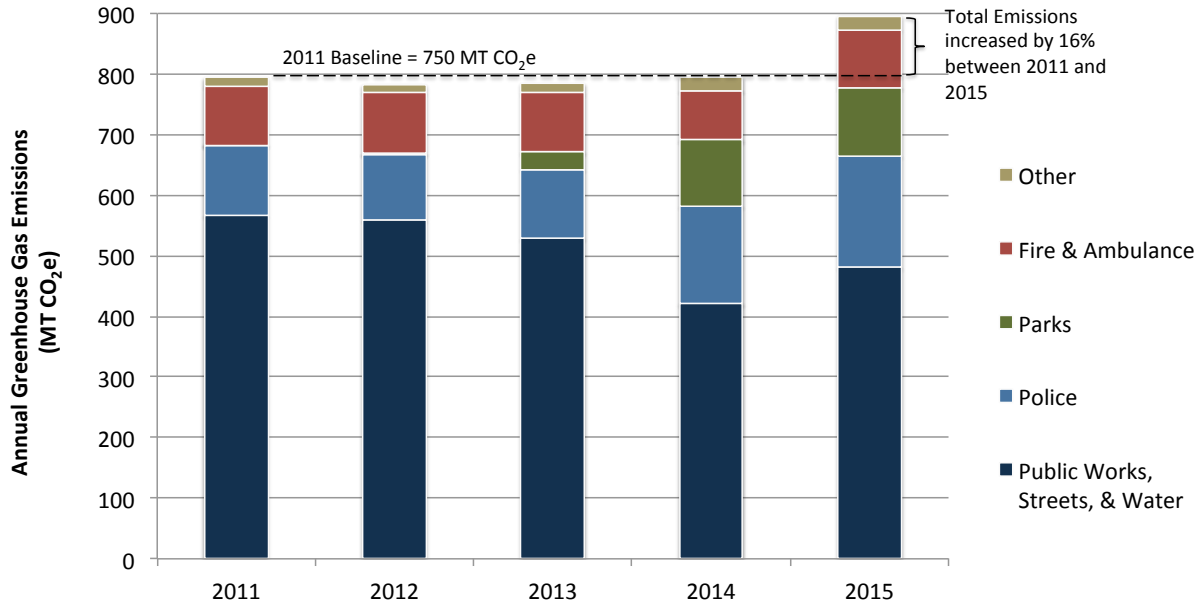


Detailed Results for Significant Emissions

Mobile Combustion

Mobile combustion represents emissions from city vehicles and equipment. The data represents E10 gasoline (10% Ethanol) and B5 Diesel (5% Biodiesel). Figure 20 shows these emissions by department. Public Works uses the greatest quantities of these fuels followed by, Police, Fire & Ambulance, and all others. While overall emissions remained steady between 2011-2014, an increase of 13% was experienced between 2014 and 2015. Over this time period, Public Works decreased fuel use and emissions compared to the 2011 baseline, while the largest increases are by Police and Parks[8].

Figure 20: Fleet emissions by department, FY2011 – 15.



Electricity

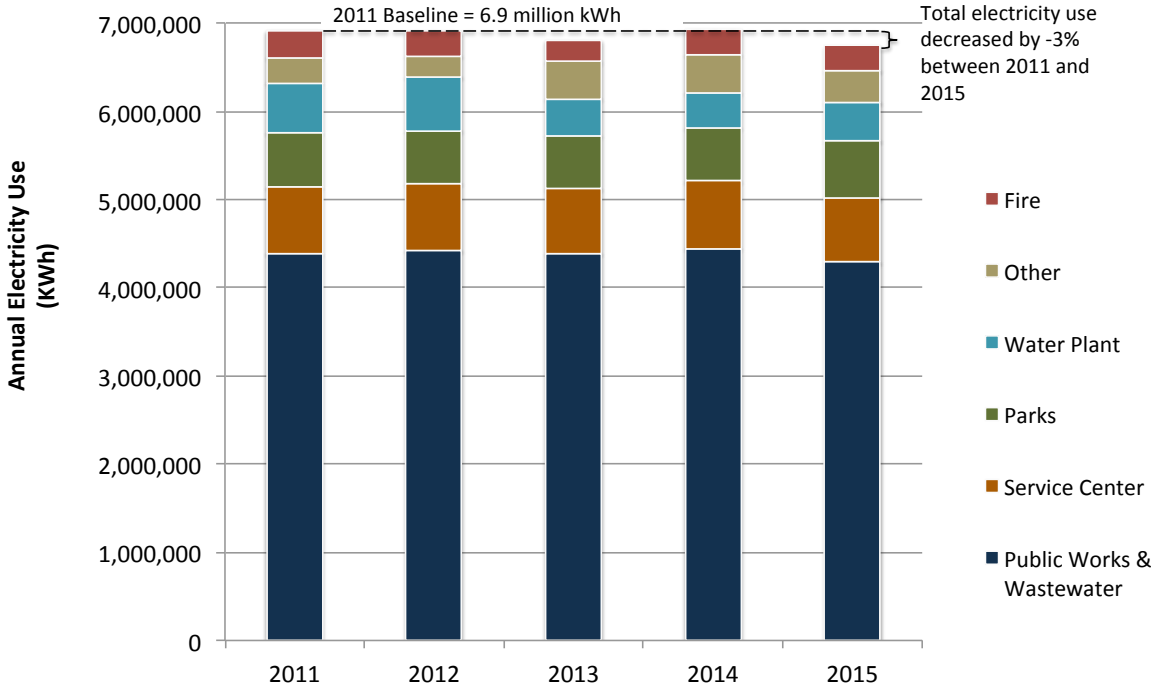
City electricity use remained relatively stable between 2011 and 2015, decreasing by 2.5%. The largest electricity use within City operations is the wastewater treatment plant (nearly 50%). Most City departments decreased electricity use (between -2% and -23% compared to 2011) except for Parks, which increased use by 5% and the Other category increased (22%).

Presenting the activity data in Figure 21 (in KWh) for operational electricity is important to clearly show that the operational electricity emissions reductions are primarily the result of a

[8] Potential Source of Uncertainty: The change in emissions for Parks may be the result of internal accounting methodology rather than actual increases in fuel usage.

significant reduction in the carbon intensity of grid supplied electricity as opposed to electricity conservation or efficiency efforts. City wide operational electricity use has been stable over the 2011 – 2015 time period.

Figure 21: Electricity use by departments or activities, FY2011 – 15.

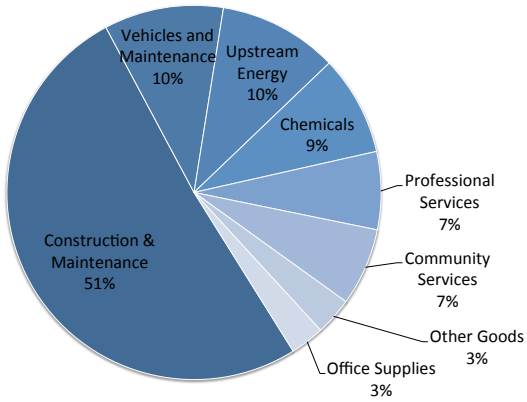


Consumption of Goods and Services

As is described in the Community Inventory, consumption-based emissions associated with the City's supply chain include the upstream emissions from production of goods and services consumed in the course of providing community services.

Over half of these emissions between 2011 and 2015 are the result of facility and infrastructure construction and maintenance. Production of vehicles and equipment, fuels and energy, chemicals, and professional and community services are all significant contributors as well. Description of Purchasing Categories:

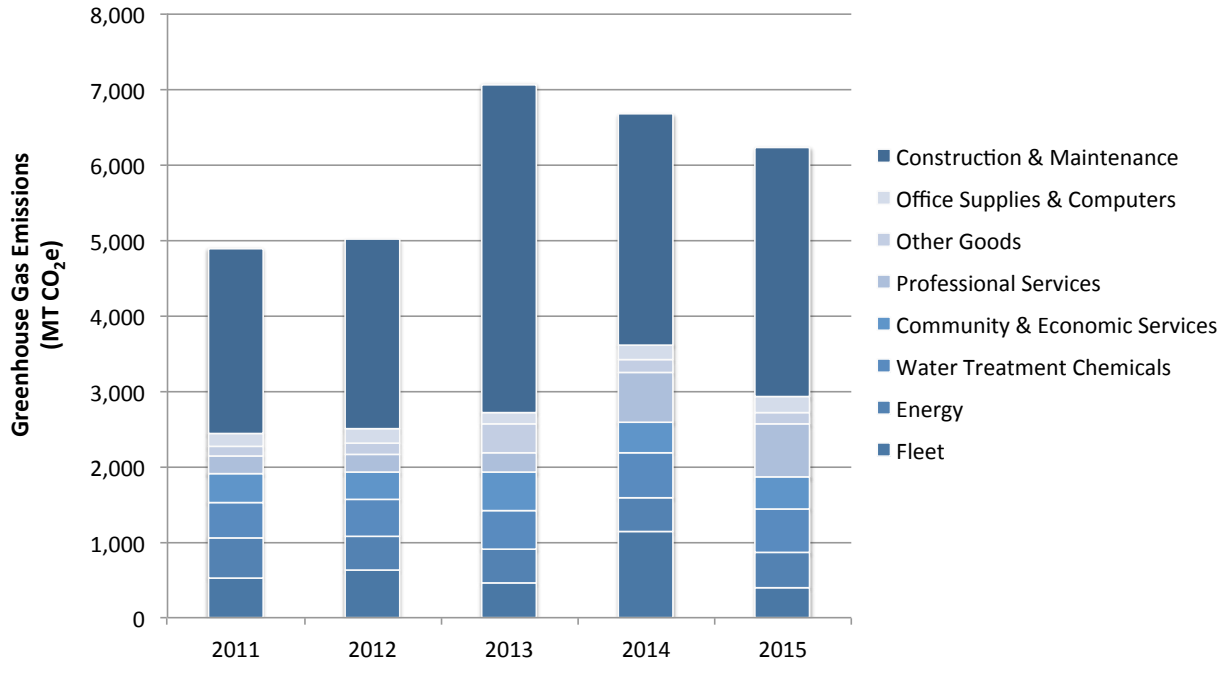
Figure 22: Average supply chain emissions, 2011 - 2015, by category.



- **Construction & Maintenance:** This category includes construction of infrastructure, facilities and improvements, and contractual services. Contractual services are services contracted by the City and performed by third parties and primarily include construction and professional services. This category also includes small tools, other maintenance equipment, and safety equipment.
- **Office Supplies and Computers:** This category includes the office, communications, audio/visual, computing supplies and software necessary to maintain the City's operations.
- **Chemicals:** This category includes chemicals, principally for water treatment.
- **Energy:** This category includes upstream emissions from the extraction and processing of fuels prior to combustion.
- **Fleet:** This category includes vehicle purchases and maintenance.
- Community & Economic Services: This category includes community programs and the administration of memorials and grants.
- **Professional Services:** This category includes contractual purchases of professional and technical services that support the City.
- **Other Goods:** This category includes goods not included in the above categories.

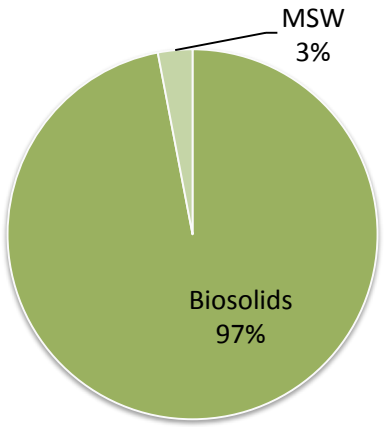
As can be seen in Figure 23, consumption-based, supply chain emissions from many of these categories remain consistent. Energy (fuel production), chemicals, services, and office supplies all have little change over the 2011 – 2015 period. The variability in Ashland's supply chain emissions is largely the result of significant purchases like construction projects and vehicle purchases. In addition to being more variable, these emissions are typically the most significant in terms of scale.

Figure 23: Composition of supply chain emissions over time, by category



The City disposes of its mixed solid waste (MSW) and biosolids from wastewater treatment at Dry Creek Landfill. Once landfilled, solid waste in general, and specifically organic wastes,[9] decompose under anaerobic conditions (without oxygen) and begin to produce landfill gas (a mix of methane and carbon dioxide).

Figure 24: Share of 2015 solid waste emissions by waste category.



Dry Creek is a modern landfill with landfill gas capture and electricity generation.[10] It is very difficult to capture 100% of landfill biogas – a certain percentage is bound to escape. According to the EPA's Waste Reduction Model (WARM), approximately 85% of landfill gas is captured.

The City's operational solid waste tonnage and associated landfill emissions are dominated by wastewater biosolids, which represents 97% of solid waste emissions. Mixed solid waste from the City's other facilities represent the remaining 3%. Solid waste emissions have stayed relatively consistent between 2011 and 2015, averaging 830 MT CO_2e / year.

[9] Examples include paper, wood, food waste, biosolids, etc.
[10] Dry Creek has also been proactive in exploring use of landfill biogas as a low-carbon fuel for collection trucks.

APPENDIX A: ELECTRIC UTILITY – ELECTRICITY SUPPLY PORTFOLIO GHG INVENTORY

In addition to the Ashland's Community and City Government Operations GHG Inventories already presented, Good Company calculated another GHG inventory focused on emissions associated with Ashland Municipal Utility's Electricity Supply Portfolio. The purpose of the Portfolio inventory is to examine the direct GHG emissions associated with Ashland's Municipal Utility's-owned electricity generation resources as well as the indirect emissions from power contracts with regional suppliers.

Ashland has owned its Municipal Electric Utility since 1909. It is the second oldest Municipal Utility in Oregon. The majority (~98%) of the electricity resources that serve the City of Ashland are purchased from the Bonneville Power Administration, with the majority of the remaining (2%) generated by City-owned hydro facilities and a very small fraction of the City's owned community solar project, Solar Pioneer II (a 63.5kW PV solar installation). All electricity is distributed through city-owned distribution lines to the City Utility's customers.

The Portfolio GHG Inventory is focused on the carbon intensity of the BPA power contracts and local hydro generation used to serve the Ashland community's retail electric load. This inventory is not meant to consider operational emissions from the Utility's services (e.g. Utility-owned building or fleet vehicles). Those emissions are included in the City Government Operational Inventory presented in Section 3 of this report.

This inventory is meant to inform two primary audiences and perspectives.

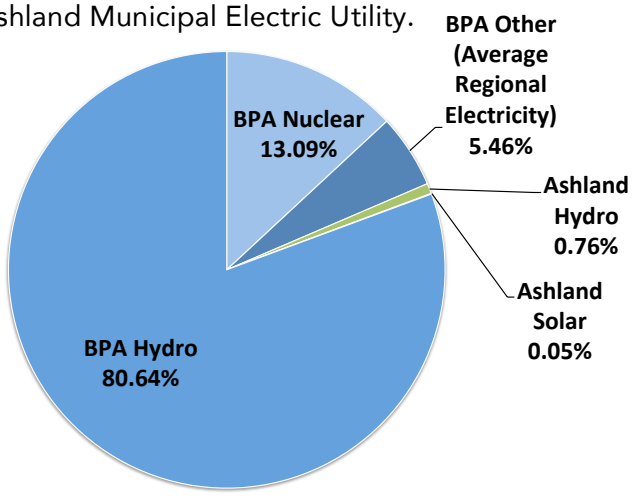
- Ashland Municipal Utility: The City's Electric Utility staff may use this inventory to understand and share the direct and indirect emissions associated with its owned-generation and contracted power supply. This understanding is meant to inform potential supply-side GHG mitigation opportunities from a Utility power purchasing perspective, as well as a cost-of-carbon risk perspective related to future regulations, such as the Clean Power Plan, to the Utility and its customers.
- Community-at-Large: The Community may use this inventory to better understand the GHG impacts of the resources currently used to supply community electricity demand and the interaction of those resources with larger regional electricity grid.

As of this writing, Ashland is about to embark on developing its first Community Climate and Energy Action Plan. This process is generating interest from the public for information on the "carbon footprint" of their electricity use. The City of Ashland's Electric Utility has both an opportunity and a responsibility to provide information on the impacts of electricity generation and use in order to enable its customers and the community-at-large to make informed decisions related to its use of electricity and the carbon consequences of using electricity.

INVENTRORY RESULTS

Because BPA electricity supplies the majority of the City's demand – the results of this inventory are fairly straightforward.

Figure A1: Sources of electricity supply for Ashland Municipal Electric Utility.



- The carbon intensity – as defined by The Climate Registry's Electric Power Sector Protocol - of Ashland's Municipal Utility's supply is very small (0.039 MT CO_2e / MWh) relative to the Northwest Power Pool (NWPP) regional grid (0.30 MT CO_2e / MWh), as a result of the following;
    - BPA's electricity generation, which supplies 98% of the community's demand, is dominated by low-carbon hydro and nuclear resources (90% of total), which do not emit GHGs.[11] See Figure A1 for details on BPA resource mix.
    - The remaining 10% of BPA generation is served by the average regional electricity supply, which includes coal and natural gas generation. It's these purchases -made by BPA to serve the requirements of its contracts with Ashland - that result in the only source of GHG emissions in Ashland's Utility's supply portfolio.
    - The City of Ashland's owned-generation hydro resources provide the remaining 2% of the City's demand, which do not emit GHGs.
- While Ashland is served by BPA power via long-term contracts for electricity, the environmental benefits of BPA power are shared and accounted for in the average carbon intensity of our regional electricity grid, the Northwest Power Pool.
- While BPA resources are low-carbon, they do not generate Renewable Energy Certificates (REC)[12], nor is any ownership of the low-carbon of benefits from BPA transferred to Ashland's Municipal Utility or the Ashland Community, except for the following exception:
    - On behalf of the community, The City of Ashland does purchase BPA's Environmentally Preferable Product for a premium at a quantity equal to 5% of the Ashland community's annual consumption. The Environmentally Preferable

[11] Hydro and nuclear power generation do not produce any emissions at the point of generation. That said they do produce upstream emissions, in the gathering of the uranium for nuclear power; methane emissions from dam reservoirs. These upstream emissions are not included in TRC's Electric Sector Protocol.

[12] Renewable Energy Certificates or RECs are a contractual means of transferring ownership of the environmental benefit associated with qualifying renewable electricity generation.

Product is wind-generated electricity bundled with wind generated RECs that are retired on behalf of the Ashland community.

- Because the Ashland community does not own the environmental benefits of BPA power, the best representation of the GHG consequences of Ashland's electricity use is the carbon intensity (ie. emissions factors) of the regional NWPP electricity grid, adjusted downward for voluntary community purchases of RECs.
- From a Utility perspective, this inventory provides a public accounting of the greenhouse gas emissions associated with Ashland's owned electricity-generation (2% of total) and the upstream emissions from the community's contracted supply from BPA (remaining 98%). The Utility's electricity supply is generated almost entirely from low-carbon resources and therefore risk related to future GHG regulations is likely low.
- In addition, it's important to note that BPA contracted power is one of the lowest-cost power resources available in our region.

Figure A2 shows the results of the 2015 inventory by emissions source and Scope category. Scope 1, or direct emissions, for the Utility's owned hydro-electricity generation are 0 MT CO_2e. Scope 2 emissions from line loss total 126 MT CO_2e. These emissions account for the inherent loss of energy as you transmit electricity over distribution lines. Scope 3 indirect emissions are the largest sources within the Utility inventory equal 2,912 MT CO2e. These emissions are the result of BPA's "spot market" purchases of power or average grid electricity (roughly 10% of BPA's generation resources). Average grid electricity in our region does include emissions from combustion of coal and natural gas to generate electricity.

Figure A2: Ashland Utility emissions by source and Scope category.

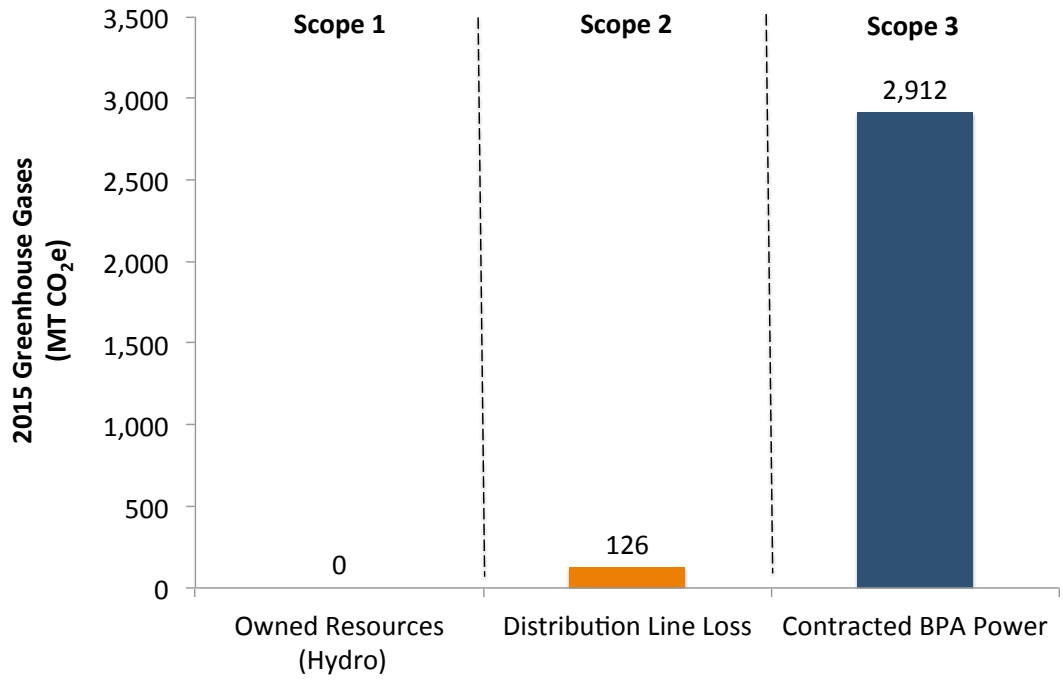


Figure A3 compares the carbon intensity (MT CO_2e / MWh) of Ashland Utility's supply portfolio to the regional electricity grid (Northwest Power Pool), and regional grid adjusted for Ashland's REC purchases. Notably, the electricity emissions factors can fluctuate significantly from year to year based on the amount of hydroelectric power generated by BPA, as is seen between 2011 and 2012.

The Ashland Utility emissions factors show that the Ashland's electricity supply contracts and owned-generation are low-carbon, even if the Utility or the Community does not own those environmental benefits. Because Ashland does not own the environmental benefits of BPA power, a better representation of the climate consequences of Ashland's electricity use is Regional Grid, NWPP. The best representation of is use of NWPP adjusted to account for the REC's purchased voluntarily by Ashland's Utility on behalf of the community from BPA and voluntary, community-at-large REC purchases from Bonneville Environmental Foundation. Ownership of the community-at-large RECs remains with the households and businesses making these purchases, but are included in this inventory so as not to overestimate emissions from grid electricity.[13] For more details and a description of issues with using the TCR protocol for BPA supplied public utilities, see the following Methodology section.

The NWPP Grid (REC adjusted) emissions factor is used to calculate emissions for the Ashland Community and City Government Operations GHG Inventory. It is recommended that a market-based calculation methodology using the regional grid factor (NWPP) adjusted by total community REC purchases is used to calculate emissions in Ashland operational and community inventories.

Figure A3: Comparison of Utility-Specific and Regional Grid emissions factors.

Type of Emissions Factors (MT CO2e / MWh)	2011	2012	2013	2014	2015
Ashland Utility	0.080	0.039	0.044	0.039	0.039*
Regional Grid (NWPP)	0.373	0.304	0.304*	0.304*	0.304*
NWWP Grid (REC adjusted)	0.355	0.288	0.288*	0.288*	0.288*

*Indicates previous year's factor used as proxy. Most recent EPA eGRID factor for NWPP is 2012.
Likewise 2015 data from BPA for Ashland's inventory is not available.

Methodology and Approach

Protocols and Methodology

This inventory follows The Climate Registry's Electric Power Sector Protocol. Calculations used the Bonneville Power Administration's (BPA) 12-month average firm energy resources as reported in BPA's Annual Facts Reports. BPA resources defined as "other" sources of energy

[13] Community-at-large purchases REC data was received late in the process. This data is included in the Audit Trail for the Community inventory, but was only included in the accounting for the 2015 inventory.

were assigned the average Northwest Power Pool (NWPP) energy generation GHG intensity. NWPP emissions factors are provided by the EPA eGRID data tables. All utility GHG emissions presented in this report are represented in metric tons of carbon dioxide equivalent (MT CO_2e). The GHG calculations use the global warming potentials (GWP) as defined in the International Panel on Climate Change's 5th Assessment Report (IPCC AR5).

There are inherent problems with TCR's Electric Power Sector Protocol accounting methodology when it's applied to publically-owned utilities in our region because of the scale of BPA power generation and the way in which BPA power is preferentially distributed to publically-owned utilities. This inventory for Ashland mostly represents an inventory of BPA power. Therefore it is not recommended that Ashland continue to conduct this inventory in the future. It is clear from this accounting that Ashland's owned and contracted-electricity supply resources are low-carbon. The results of this inventory for Ashland's Electric Utility will not change significantly over time, and will always be correlated with BPA's electricity generation resource mix.

The TCR protocol focuses on emissions from generation of electricity supply, which is appropriate for many electric utilities around the country and around the globe as they move towards renewable electricity generation and away from fossil fuels. Focusing on supply is not as appropriate or useful for small, publically owned utilities served by BPA. For these utilities, it could be argued that the focus should be on energy efficiency and conservation, and cost effective, local renewable generation. In other words - efforts to reduce peak and overall demand by Ashland for grid generated electricity. By reducing demand for grid power, low-carbon BPA electricity can be redirected back to the regional grid to reduce the need for generation from fossil fuels; thereby lowering emissions from the regional electricity grid.

It is anticipated that in the future, Oregon's Clean Power Plan will provide additional guidance on how to best account for climate impacts and help define the most effective means of mitigation for specific communities.

Inventory Boundaries

The boundary of the Utility Inventory is defined by a) sources of power generation owned by Ashland's Municipal Electric Utility and b) the electricity, from any source, distributed, transmitted and delivered by the Utility. Together these sources are comprised of electricity generated and delivered by the Utility's hydro plant and community solar installation and BPA electricity delivered to Utility customers. The Utility also distributes electricity directly to some Pacific Power customers under an agreement with Pacific Power and emissions associated with these deliveries are within this inventory's boundaries.

Data Collection

Good Company worked with Adam Hanks, Project Manager for the City of Ashland to collect the data required to calculate emissions. Primary data collection for the FY2011-2015

inventories was completed in September through December of 2015. Good Company provided the City with a data collection checklist that specified data types and units. The City's Project Manager used the checklist to either directly supply data or coordinate data collection efforts among the appropriate City staff and external parties. After the receipt of a data file, Good Company reviewed it for completeness and asked follow-up questions if necessary. All data source files, answers to follow-up questions, resulting calculation files and related resource files are documented and cataloged an Audit Trail for each inventory year.

Inconsistencies in reported line loss numbers, reported by the City, required Good Company to make assumptions related to line loss effects for several years. The percentage of electricity lost in distribution in 2012 and 2014 was the calculated average of the reported values from 2010, 2011 and 2013. This was necessary because the reported line losses for 2012 and 2014 were unrealistically low and high respectively, and the city could not provide further insight into the methodology used in calculating these values.

Suggestions for Improvements to Future Inventories

As previously mentioned, it is not recommended that Ashland update this inventory in the future, using the TCR protocol. If Ashland does decide to update the inventory, the following suggestions are provided to improve the accuracy:

- Pass through electricity delivery for Pacific Power is tracked separately but is accounted for in Line Loss in the Utility's power generation and consumption reporting. It is recommended that this value be fully split out into a pass-through or 3rd party delivery category.
- Reported Utility Line loss values fluctuate significantly over the FY 2010 – 2014 time period without any indication as to the cause. It is recommended that the values used to calculate line loss be separated and accounted for to better understand the cause of these fluctuations.
- Community owned solar generation is not included in the Utility's generation and delivery report. It is recommended that this be included, especially as this source may grow in the future.

APPENDIX B: COMMUNITY INVENTORY – SUMMARY OF DATA AND EMISIONS FACTORS

Emissions Category	Category Description	Descripion of Data and Emissions Factors
Built Environment		
Residential Energy Commercial Energy Industrial Energy	These categories include direct emissions from natural gas, fuel oil, propane combustion by the residentia, comercial, and industrial sectors within the City of Ashland's geographic boundaries. Also includes the indirect emissions from grid electricity use by the same sectors for the same geographic boundaries.	Electricity and natural gas data provided by utilities and considered highly accurate. Fuel oil and propane use estimated using state-level per capita fuel usage data and Ashland's annual population. Emissions factors for natural gas, fuel oil, and propane are taken from The Climate Registry's 2015 Default Emissions Factors and are considered highly accurate. The Electricity location-based emissions factors are taken from EPA eGRID data for the Northwest Power Pool (NWPP) subregion. The eGRID factors are considered accurate for 2011 and 2012. Emissions factors are not available for 2013 - 2015 and therefore 2012 data is used as a proxy. The 2013 - 2015 emissions factors should be updated and emissions recalculated as the EPA publishes the relevant emissions factors. Market-based factors are based on Ashland's Utility Inventory presented in Section 3 and are considered accurate.
Transportation		
On-Road Energy Off-Road Energy	Direct emissions from gasoline and diesel for passenger and freight transportation as well as off-road vehicles and equipment used for construction.	Emissions are calculated using 2 methods. 1) Emissions are modeled by Oregon's Department of Transportation using the Regional Strategic Planning Model. 2) State-level consumption is downscaled on a per capita basis. Emissions factors for gasoline and diesel and calculation methodology are considered highly accurate. Data source 1 is considered more accurate and therefore used to report results. Data source 2 may be used as a point of comparison.
Refrigerant Loss		
Refrigerant Loss (buildings and vehicles)	Fugitive loss of refrigerants from building and vehicle air conditioning systems.	Actual data on refrigerant loss is not available at the local level. State-level data from Oregon's 2013 GHG Inventory is down-scaled by population to estimate emissions. Emissions factors are taken from The Climate Registry's 2015 Default Emissions Factors.
Solid Waste and Wastewater		
Solid Waste	Fugitive methane emissions from mixed solid waste and wastewater biosolids generated in the Ashland community and disposed of at Dry Creek Landfill. Its important to note that Dry Creek Landfill is modern landfill that collects landfill gas (LFG) and generates electricity. Even using best practices, achieving 100% LFG collection is difficult and therefore solid waste landfill disposal produces GHG emissions.	Mixed Solid Waste: The City was able to provide total shorts tons of materila transfered to Dry Creek Landfill. Annual solid waste weights were multipled by 70% to exclude population outside of the inventory boundaries. An average mixed solids waste (MSW) emissions factor from EPA's Waste Reduction Model (WARM) was used to estimate emissions. In addition to MSW generation from operations, the City also landfills significant quantities of wastewater treatment biosolids. Biosolids: Annual spend data for landfill disposal was available, as were average, annual tip fees charged by Dry Creek Landfill for all inventory years (FY2011 – 15). These data were used to estimate annual wet biosolids disposal weights. Moistue content of biosolids is available from City staff. An emissions factor for biosolids is not included in EPA's WARM and therefore needed to be calculated using the Biosolids Emissions Assessment Model (BEAM).
Water & Wastewater	Fugitive nitrous oxygen emissions from nitrofication / denitrification process and from discharge of treated effluent.	Nitrogen quantities discharged in plant effluent are available for calendar year 2014. 2014 data was used as a proxy for all other inventory years. Ashland population data is readily available for all inventory years and is used to calculate nitrification/denitrification emissions. Emissions factors are taken from LGOP protocol.
Household Consumption-Based Emissions		
Goods Food	Upstream energy and process emissions raw material extraction, manufacturing, and out-of-state transportation of goods. Upstream energy and process emissions from the growing, processing and transportation of foods.	Accurate data on quantities consumed and suppliers for the goods and food consumed by Ashland community households is not readily available. Therefore Oregon's Carbon Calculator and US Cencus Bureau data on distribution of households by household income were used to estimate emissions.
Energy (Fuel Production)	Upstream energy and process emission from the production and distribution of natual gas, gasoline, diesel and electricity consumed either directly or indirectly by the Ashland Community.	Data is readily available for electricity and natural gas, as previously described. Data for gasoline and diesel use is as previously described. Upstream emissions factors are provided in the ICLEI protocol. These factors are based on industry averages and are considered moderately accurate.
City Government Consumption	Upstream energy and process emissions for the production of goods purchased to support City Operations.	Purchasing data (in FY $) is readily available and considered accurate. Emissions factors are provided by the Oregon Department of Environmental Quality's Purchaser Price Model and are considered highly accurate. The City's supply chain emissions (i.e. consumption-based emissios), calculated for the City's Operational inventory are adjusted to remove local services and upstream fuel production emissions to avoid double counting with other emisisons categories.

APPENDIX C: OPERATIONS INVENTORY – SUMMARY OF DATA AND EMISSIONS FACTORS

Emissions Category and Source	Description of Emissions Source	Description of Data and Emissions Factors
Scope 1		
Stationary Combustion	Natural gas combustion by City-owned and leased facilities.	Natrual gas data is only partially available for all inventory years. Data that is available is considered highly accurate. Emissions factors and methodlogy per protocol for stationary combustion are well understood and considered highly accurate.
Mobile Combustion	Gasoline (E10) and diesel (B5) combustion by City-owned vehicles and equipment.	Gasoline and diesel data was readily available by fuel type and by department. Emissions factors and methodlogy per protocol for mobile combustion are well understood and considered highly accurate.
Fugitive Emissions	Fugitive loss of refrigerants from building heating, ventilation and air conditioning (HVAC) systems. Fugitive nitrous oxide (N2O) process emissions are generated during wastewater treatment process.	*Refrigerant Fugitive Loss:* Refrigerant recharge data is considered partially complete with reporting from 1 service vendor for all inventory years. It is possible that there are additional vendors that service the City's building air conditioning units, but they could not be identified for this inventory. A better tracking system could be developed to support future inventories. Fugitive refrigerant loss from vehicles is considered a diminimus emissions source and therefore was excluded from the inventory. Emissions factors and methodlogy per protocol are considered highly accurate. *Wastewater Treatment Process Emissions:* Nitrogen quantities discharged in plant effluent are available for calendar year 2014. 2014 data was used as a proxy for all other inventory years. Ashland population data is readily available for all inventory years and is used to calculate nitrification/denitrification emissions, per methods dictated by GHG inventory protocol. Emissions factors and methodology per protocol are based on industry averages and therefore are considered moderately accurate.
Scope 2		
Electricity	Indirect emissions from grid electricity generation for electricity consumed by City operations.	Data provided by City for purchased electricity is considered highly accurate for all inventory years. Emissions factors are readily available from EPA eGRID for 2011 and 2012. Note 2012 emissions factor is most recent avilable and used as a proxy for 2013 - 2015. Available emissions factors and methodlogy per protocol for electricity are well understood and considered highly accurate. The primary source of uncertainty is lack of emissions factors for 2013 - 2015.
Scope 3		
Employee Commute	Gasoline (E10) combustion by employee-owned	Emissions were estimated using survey data collected in 2015. The survey conducted by City of Ashland provided a modal split and average, one-way commute miles. The City only conducted the survey for a single year. The results of the 2015 survey are used as proxy data for all other inventory years, 2011-2014. The City provided the number of full-time equivalent City staff employed during each inventory year, which were used in conjunction with the survey results to estimate employee commute emissions for all inventory years. Commute methodolgy and emissions factors require some assumptions be made and is therefore considered moderately accurate.
Business Travel	This category includes emissions from: 95,539 miles of air travel; 27,361 miles driven in employee-owned vehicles used for business travel	*Air Travel:* Annual dollars ($) spent on air travel was available and used to estimate passenger-miles traveled using average cost per mile data from Air Travel Association. Air travel emissions factors and calculation methodology per protocol are considered accurate. *Employee-Owned Reimbursed Mileage:* Annual dollars ($) reimbursed to employees was available for all inventory years. This data was used to calculate vehicle miles traveled based on annual corporate per mile reimbursement rates. Fuel efficiency values from the commute survey were used to convert miles to gallons. This methdology is per protocol and considered to be moderately accurate. Once gallons have been calculated the emissions factors and methodlogy per protocol for mobile combustion are considered highly accurate.
Solid Waste	Types / quantity of waste and destination landfill with methane management technique. Include how much waste was generated.	*Mixed Solid Waste:* The City was able to provide a receptacle count; volume of each receptable; and frequency of pickup for all City facilities. Annual volume was converted to weight using solid waste density values. Based on available data, the operational inventory assumes that all inventory year's (FY2011 – 215) MSW generation is equal. Dry Creek Landfill is a modern landfill with a landfill gas collection system and electricity generation. An average mixed solids waste (MSW) emissions factors was taken from the EPA's Waste Reduction Model (WARM) that represents local landfill management practices. In addition to MSW generation from operations, the City also landfills significant quantities of wastewater treatment biosolids. *Biosolids:* Annual spend data for landfill disposal was available, as were average, annual tip fees charged by Dry Creek Landfill for all inventory years (FY2011 – 15). These data were used to estimate annual wet biosolids disposal weights. An emissions factor for biosolids is not readily available as part of EPA's WARM and therefore needed to be calculated using the Biosolids Emissions Assessment Model (BEAM). The biosolids were reported This calculation and the resulting values are documented in Operational Inventory Audit Trail and G3C.
Supply Chain	Upstream energy and process emissions for the production of goods purchased to support City Operations.	Annual spend data was readily available and was moderately compatible with Oregon Department of Environmental Quality's *2010 Purchaser Price Model*. The ODEQ model provides a database of emisions factors for roughly 400 economic sectors for Oregon. The methodology used follows best practice.Its important to note that there is significnat general uncertainty in estimating supply chain emissions (ie. consumption-based) due to the reliance on a large, complecated economic models to estimate emissions using industry averages. See Supply Chain detailed results for more information. Upstream energy and process emissions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