



## Climate and Energy Plan Committee Meeting Agenda

September 7, 2016 | 3:30-5:30 | Community Development Building  
51 Winburn Wy – Siskiyou Room

### Agenda

Duration	Item	Lead
5 min	Call to Order <ul style="list-style-type: none"><li>Approval of Minutes – August 17, 2016</li><li>Icebreaker Question</li></ul>	Rich Claudia
15 min	Public Forum	Rich
20 min	Plan Development – Vision Refresh	Consultant Team (Jeff/Jill)
20 min	Open House Plan – Prep and outreach	Consultant Team (Andrea/Jeff)
5 min	Geos Vulnerability Assessment (draft)	Marni
60 min	Strategies and Actions – Follow up discussion	Consultant Team (Andrea/Jeff)

## **MINUTES FOR THE CLIMATE & ENERGY ACTION PLAN ad hoc COMMITTEE**

**Wednesday, August 17, 2016**

**Siskiyou Room, 51 Winburn Way**

### **1. Call to Order**

Councilor Rich Rosenthal called the meeting to order at 5:30 p.m.

Committee members Rich Rosenthal, Marni Koopman, Louise Shawkat, Greg Jones, Stuart Green, James McGinnis, Roxanne Beigel-Coryell, Jim Hartman, Cindy Bernard, Isaac Bevers, Sarah Lasoff, Bryan Sohl and Claudia Alick were present. Staff member Adam Hanks was present.

### **2. Approval of Minutes**

**Sohl/Jones m/s to approve the minutes of July 6, 2016, as presented. Voice Vote: All Ayes. Motion Passes.**

### **3. Public Forum**

Ken Croker – shared thoughts from previous meeting and is concerned with how targets are being set and why, especially with the goal/target changing from one meeting to the next. Stated that he feels it is important for the targets to be based on science and feels that the committee's targets were based on fear of acceptance/approval by Council rather than by science.

Morgan Lindsay – stated her view that this is an urgent topic given the heat and air quality issues, which is toughest on the community's most vulnerable citizens. Reminded the committee that the Eugene target included an annual 7.8% reduction by 2050 and City operations carbon and fossil fuel neutral even earlier. She also supports the draft ordinance for goals/targets

Hannah Sohl – Requested the committee to pass the goals/target ordinance as soon as possible, get the ordinance discussion out of the way to be able to work on the plan to achieve it.

Robert Block-Brown – Appreciates the work of the committee and re-stated the urgency of moving the ordinance forward as quickly as possible then continuing to work on the plan. Suggested that the ordinance be made public for better understanding in the community of the criteria and the broad array of current GHG impacts/emissions in the community.

Allie Rosenbleuth – Supports the work of the commission and supports moving the ordinance forward as soon as possible.

Huelz Gutchen – Informed the committee that he thinks 7 megawatts of solar locally is possible, stated that the recent presentation from the City Electric Director shows that solar issues/programs should be in the Community Development Dept not in the Electric Dept and that the City needs solar trained employees.

#### **4. Recap of Council Presentation**

Chair Rosenthal provided a short recap of the July 19 committee presentation to the Council, adding that he thought it was well received and suggested that anyone who was interested to go to the City website and see the presentation materials and watch the presentation video if they were interested in the details.

Rosenthal also provided a brief update on the recent Council discussion/direction regarding the recent ballot measure that directs the City to approve an ordinance that requires the City to produce 10% of the community's electricity from local and clean sources by 2020. Rosenthal outlined the state ballot measure process and directed interested committee members to the August 16 Council meeting agenda and video for more information and informed them of the official Council vote for acceptance/approval of the ordinance on the September 6 Council meeting.

#### **5. Discussion of Goals/Target Ordinance**

Koopman advocated to the committee that the goal and target should be science based. Rosenthal asked for a definition of science based and Koopman stated that a science based goal/target is one that meets the per capita carbon reduction required to restore the carbon intensity of the atmosphere back to 350 parts per million (or less). Koopman added that the goal ordinance that has been worked on by others in the community contains a science based target and was based on the Eugene ordinance, which also doesn't exclude consumption based emissions from the goal/target.

Rosenthal referenced the staff memo in the meeting packet that identified two key questions for the committee relating to the goals/target ordinance issue. One question is whether to recommend that the goals/target ordinance be forwarded to staff with the intention of having the ordinance adopted by Council as soon as possible. The other option is to recommend that an action be developed in the plan to adopt the goals/targets via ordinance concurrent with the adoption of the plan.

Beigel-Coryell noted that she was one of the committee members who was originally opposed to including consumption in the goal/target, but now feels like it should be re-evaluated and made a motion to recommend the adoption of the draft goals/target ordinance as soon as possible.

Second made by Sohl.

Sohl explained that he feels that approving the ordinance first keeps the committee honest in response to community requests, tells the youth of the community that we hear them and also noted that the Council make up could change between now and when the plan is presented. Sohl also noted that he felt that Eugene in retrospect would have done the ordinance earlier rather than later if they could do it over again.

Koopman added that forwarding the ordinance for adoption now would assist the committee in being able to move forward and would help focus the committee.

McGinnis noted he was originally resistant to advocating for the ordinance before the plan was completed but now sees value in moving it forward, but still wonders if Council would be receptive given they would not have an understanding of the implications of the ordinance since the plan wouldn't be in front of them. He added that he feels there are adequate checks and balances in City and the ordinance puts a responsibility on the Council to communicate back to the public.

Shawkat added that she likes it being a challenge and is concerned with the potential Council changes.

Lasoff and Alick advocated her support of advancing the ordinance now.

Beyers added that he feels the Council can't make action decisions without a goal in place.

Bernard stated that she originally opposed the idea of the ordinance going before the plan, but now thinks the timing could work fine by moving it forward for staff to work on and prepare for Council consideration.

Jones added that this is really just a timing question, not whether or not the committee supports an ordinance for the goals/target and is in support of moving it forward now. Rosenthal agreed with Jones.

The committee voted on the motion and it passed unanimously.

The committee asked about the next steps for the ordinance. Hanks responded by explaining that both he and the City Attorney would need to review the draft ordinance document. Hanks also suggested that the committee formally endorse the draft ordinance that has been circulating around but never formally submitted as the working ordinance template.

Alick motioned that the draft that the committee had been sent from Rogue Climate should be accepted by the committee and used as the working ordinance template. McGinnis second. Jones clarified that the document would be the baseline not the finished document.

The committee voted on the motion and passed it unanimously.

## **6. Focus Group activity on initial draft actions list**

Rosenthal turned this agenda item over to Jeff Golden, part of the Cascadia consultant project team. Golden stepped the committee through the planned activity and referenced the materials in the meeting packet. The committee then broke into their assigned focus area groups and worked on initial sorting and prioritizing of the initial strategies and actions, including adding additional actions.

### **7. Follow up for next meeting**

At the conclusion of the multi-step process, Golden requested that the small groups meet again outside of the regular committee meetings to continue with the exercise if they hadn't finished and to submit final notes to Hanks by August 31 so that the process could be continued at the September 7 committee meeting. Rosenthal offered to assist in coordinating and distributing the informal meeting times for the various groups in case others wanted to participate in more than one focus area discussion.

### **8. Adjournment**

Meeting adjourned at 7:35 p.m.

Respectfully submitted,  
Adam Hanks  
Administration

## Ashland Climate and Energy Plan: Open House #2 Plan

### DRAFT – 8/30/2016

**Meeting Date:** 9/25      **Meeting Time:** 3:00-5:00pm

**Meeting Location:** SOU

**Anticipated Number of Attendees:** 80-120

#### Meeting Purpose:

Allow the public to explore potential strategies to address climate change in Ashland, and provide input on considerations and priorities. Educate the public on Ashland's emissions forecast model and climate vulnerabilities.

#### Meeting Agenda:

Time	Topic
3:00-3:15pm	Open House begins – welcome, refreshments
3:15-3:30pm	Welcome comments and brief presentation
3:30pm-5:00pm	Visit stations/talk with staff/provide feedback
5:00pm	Open House adjourns

#### Meeting Overview:

The open house will begin with a brief (15-minute) update on the CEAP process and overview of the open house format and objectives. There will be two informational stations and six focus area-specific stations. The focus area-specific will describe the focus area, overview climate action goals, and list potential strategies and actions (along with short descriptions and/or considerations for each). Attendees will be given 25 dots (five of each color) and \$1,000 in play money at the registration table. They will then walk among the various stations and vote on their highest and lowest priority strategies/actions for each focus area. With the dots, they will vote on the top strategies/actions that should absolutely be a part of the plan, as well as two strategies/actions that could be eliminated from the plan if needed. With the fake money, they will distribute their dollars towards those strategies that they would most likely want to fund by placing them into designated boxes, in the proportion of funding that they see fit. Each station will also have comment cards and focus area handouts that attendees can write on to provide comments, as well as 1-2 iPads with online surveys that also allow attendees to provide comments, including ideas for new actions. Stations could also ask other questions specific to the focus area, strategy, or actions, as identified by the ad-hoc committee.

#### Logistics:

- 1:00 pm: Cascadia, Jeff, and City meet with venue staff
- 2:30 pm: Other staff/ad-hoc committee members arrive
- 2:45 pm: Consultants, City staff, and ad-hoc committee greet attendees, be available for questions at their assigned stations
- 3:15 pm: Presentation – Jeff welcome, Rich – few words, Jeff – open house overview
- 3:30 pm: Consultants, City staff, and ad-hoc committee back to assigned stations
- 5:00 pm: Pack up

#### Staffing:

Name	Affiliation	Station
Adam Hanks	City of Ashland	1
Diana Shiplet	City of Ashland	Comment station

Name	Affiliation	Station
Rich Rosenthal	City Council	5
Isaac Bevers	Ad-hoc Committee Member	8
Claudia Alick	Ad-hoc Committee Member	7
Roxanne Biegel-Coryell	Ad-hoc Committee Member	6
Louise Shawkat	Ad-hoc Committee Member	7
Greg Jones	Ad-hoc Committee Member	8
Jim Hartman	Ad-hoc Committee Member	4
Marni Koopman	Ad-hoc Committee Member	2
James McGinnis	Ad-hoc Committee Member	4
Bryan Sohl	Ad-hoc Committee Member	5
Stuart Green	Ad-hoc Committee Member	5
Cindy Bernard	Ad-hoc Committee Member	6
Andrea Martin	Consultant team (Cascadia)	7
Jeff Golden	Consultant team	Welcome table

Note: Ideally we would like to have 1-2 project team members at each station.

#### **Presentation Outline:**

- Jeff – Welcome (MC)
- Rich (3-5 min): Update on CEAP process; importance of developing a strategic plan based on top priorities and key strategic initiatives
- Jeff (3 min): Overview of Open House
  - 8 Stations
  - Orientation of each station
  - Next steps:
    - What committee will be working on until the next open house
    - How the public can stay involved
  - (Take questions on open house, but content questions can be directed to stations/comment area)

#### **Layout**

Attendees will trickle in informally until 3:00pm, when the program begins. Attendees will be asked to sign in upon arrival and will receive their voting packet. Project team members will be available for small group conversations at stations, along with display boards.

### **Station One – Ashland’s Future Greenhouse Gas Emissions**

#### **Description, Purpose and Need**

- Community members will review the modeled emissions forecast for Ashland and explore potential emissions reduction goals.
- Attendees will be asked which emissions reductions goal they would like to see the City adapt for the plan (three choices: 1) 75-80% reduction by 2050; 2) carbon neutral sector emissions by 2047; and 3) science-based emission reduction)

#### **Visual Display Boards Needed (4)**

- Emissions forecast summary
- Emissions reduction goal choices (including description, pros, cons, and other considerations)
- Goal voting board (dot voting exercise)

**How to gather community input**

- Dot exercise

**Staffed by:**

- Adam Hanks

**Station Two – Ashland’s Climate Vulnerability****Description and Purpose**

- Community members will review key findings from Ashland vulnerability assessment workshops and provide input on which resources, systems, or populations should be prioritized.

**Visual Display Boards Needed (3)**

- Vulnerability assessment findings summary
- What are the most important resources, systems, or populations for the City to pay attention to in preparing for climate change and why?

**How to gather community input**

- Open response on board (post-its)

**Staffed by:**

- Marni Koopman

**Stations Three to Eight– CEAP Focus Areas**

Station #	Focus Area
3	Cross-cutting strategies
4	Buildings and Energy
5	Urban Form, Land Use, and Transportation
6	Consumption and Materials Management
7	Health and Social Systems
8	Natural Systems

**Description and Purpose**

- Attendees will be asked to review and provide feedback proposed goals, strategies, and actions related to each focus area.
- Feedback will be both open-ended comments/considerations and voting exercise through dots and play money.

**Visual Display Boards Needed (3x6=18)**

- Overview of why it’s important, what the City is already doing, goals
- Two strategy/action list boards (1-3 strategies per board) with room for dot voting
- Print-out of list to allow attendees to write considerations/comments/edits directly

**Other Materials:**

- Funding boxes for each strategy (where attendees will insert money)
- iPads to complete survey



- Public comment cards and boxes
- Focus area handouts

### **How to gather community input**

- Online survey (different surveys for each section, and one combined survey)
- Comment cards
- Handout comments
- Dot voting exercise
- Money funding exercise

### **Staffed by:**

- **Buildings and Energy:** Jim H, Adam, James
- **Urban Form, Land Use, and Transportation:** Bryan, Rich, Stu
- **Consumption and Materials Management:** Roxane, Cindy
- **Health/Social Systems:** Claudia, Louise
- **Natural Systems:** Greg, Isaac

### **Other Tables**

- Welcome table with sign-in sheet, blank name tags, handouts
- Comment table for surveys and comment cards
- Table with refreshments

### **Materials/Assets** – Ashland staff will bring unless otherwise marked.

For Cascadia to bring:

- Project Team name tags (logo, name, title)
- Two laptops for station 5 (City will also bring some, if possible)
- 10 sign-in sheets (double sided)
- Door signage (on all doors, name and logo)
- 8 iPads for surveys
- 100 anonymous comment cards

For City to print beforehand and bring (Cascadia will provide to City by EOB 9/19):

- Signage for each station (numbers for stations)
- 3 Open House signs (Cascadia will create multiple arrow directions and Adam will print what's needed)
- ~27 display boards
- 150 Open House flyers (map of stations and brief descriptor of each station)

For City to bring:

- ~25 easels (can be mix of table and standing)
- 1 welcome/sign-in table
- 4 comment station tables
- 200 chairs
- 20 pens for comment card area
- 10 Sharpie markers per station (total = 50)
- 150 Blank name tags (for attendees)

- Refreshments
- Cameras for documentation (City will have designated colleague for taking photos)
- Projector and laptop cords
- Laptop with presentation
- Table cloth (1 per station; )
- Long extension cords
- Tape
- Box(es) to receive anonymous comment cards
- 2 iPads for surveys

#### **Work back plan**

Date	Action	Who
8/4	Send Adam initial open house meeting plan	Cascadia
8/11	Revise open house plan	Cascadia/City
8/18	Draft flyer; draft email announcement	Cascadia
8/30-9/9	Final flyer, distribute flyers/post “save the date” on local listserves	Cascadia/City/committee
9/9	Finalize open house plan	Cascadia
8/11-9/12	Draft visuals for open house	Cascadia
9/14	Receive comments on visuals	City
9/19	Finalize visuals for printing	Cascadia/City
9/12-9/16	Send press release to newspapers; put up flyers	City/ad-hoc committee
9/18-9/25	Send reminder “save the date” emails	Ad-hoc committee
9/25	Open house	All



# What do you think the City of Ashland should do to address climate change?

## We want to hear from you!

**Where?** SOU Stephenson Union, 1250 Siskiyou Blvd

*\* Please note location change!*

May 24

5:30-7:30pm

Vision

Learn about Ashland's climate footprint and potential climate impacts, and tell us your vision for climate action in Ashland.

September 25

3:00-5:00pm

Strategies

Explore potential strategies to address climate change in Ashland, and tell us which are most important to you.

December 7

5:30-7:30pm

Plan

Review the draft Climate and Energy Action Plan and let us know what you think.

### Attend the Climate and Energy Action Plan open house series!

The City of Ashland is hosting a series of open houses to help guide direction of the City's first ever Climate and Energy Action Plan, and we need your help.

Please join us at the **second open house** 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 actions and discuss them with the Mayor-appointed planning committee and others in our community.



For more information about this event or to learn about other ways to provide input, go to [www.Ashland.or.us/climateplan](http://www.Ashland.or.us/climateplan) or contact Adam Hanks at 541-552-2046 or [adam.hanks@ashland.or.us](mailto:adam.hanks@ashland.or.us).

# CLIMATE CHANGE VULNERABILITY IN ASHLAND AND THE ROGUE VALLEY

AUGUST 2016

## Executive Summary

Climate change is already impacting the Rogue Valley. Residents and businesses of the area are feeling the impacts of more heat waves, lower snowpack, more smoke in the summer, and warmer rivers with water quality problems from algae and bacteria. We assessed the different populations and resources of the Rogue Valley to determine where our communities are most vulnerable to climate impacts. Our process included a review of climate model projections specific to our area, combined with an expert elicitation process to determine how climate impacts might affect the people and resources throughout the Rogue Valley, but also specific to Ashland, in support of the City's Climate and Energy Action Planning (CEAP) process.

We found that the most **vulnerable natural resources** include:

- High elevation plants and wildlife
- Sensitive species such as Brewer spruce, Northern Spotted Owl, and wolverine.
- Intermittent springs and wetlands
- Anadromous fish, amphibian, and migratory bird populations
- Intact ecosystems and overall biodiversity
- Habitat connectivity needed for species to shift ranges with warming climate

The most **vulnerable socioeconomic populations and resources** include:

- Elders, who are sensitive to heat, and especially low-income without family nearby
- Outdoor workers and seasonal workers, most of whom are also low income
- Seasonal and service industry workers (forest, ski area, restaurant, hotel, etc.)
- Homeless populations, people lacking in transportation options
- Hydropower supply
- Low income populations, including Latino/a and families/single parents with young children
- People with existing respiratory and heart conditions or mental illness
- Manufacturing, retail, and service sector businesses
- Roads and other infrastructure in valley bottoms and along rivers
- Health care providers and emergency response staff
- Tourism and recreational based businesses, including the ski area and river rafting
- Water resources, especially water quality issues for TID

Of note were the exacerbating factors of income level, environmental degradation, and development pressure for housing and renewable energy as stressors to numerous populations and resources. For instance, families with young children, seasonal workers, and elders were all more vulnerable to climate change if they were also low income, because of the loss of adaptive capacity related to having few resources with which to make changes. This indicates

that addressing income/wealth inequality could increase overall community resilience to climate change. Similarly, reducing stressors to natural systems, such as water use, land use, and fragmentation of natural areas, could create more natural systems resilience, which in turn supports quality of life, recreation and tourism in the region.

The climate change variables of greatest concern included the increase in severity and frequency of extreme heat and heat waves (89 more days per year of extreme temperatures, which could be 12°F hotter), the increased potential for large storms and flooding (large downpours 1.3" larger), loss of snowpack (-86%) and the associated loss of water storage in winter, declines in water quality due to warmer temperatures and lower flow, and overall change in climate conditions leading to disruptions in native vegetation and wildlife.

Many of the most severe impacts can be prevented by aggressively reducing greenhouse gas emissions. The City of Ashland is currently creating a Climate and Energy Action Plan to set emissions targets over time. The City of Talent is creating a clean energy plan to shift away from fossil fuel sources and towards local and renewable energy. The City of Medford is working to update its emergency response plan with climate change model output. Other Southern Oregon communities will also need to take action to reduce emissions and protect our communities and the resources we rely on from increasingly severe impacts.

## Introduction

The Rogue Valley in Southern Oregon has experienced changes in temperature, precipitation, and snowpack in the last few decades. As climate change accelerates, we can expect more days of extreme heat, fewer freezing nights, and more frequent periods of drought than there have been historically. Many of the most severe impacts, however, can be avoided if greenhouse gas emissions are reduced, creating a more positive future for residents of the Rogue Valley and around the globe.

The City of Ashland is working on a Climate and Energy Action Plan to reduce greenhouse gas emissions throughout the community. Another Rogue Valley community, Talent, is creating a plan for shifting to clean energy. Communities throughout the nation are taking action on reducing greenhouse gas emissions in efforts to prevent warming more than 1.5 - 2° C (2.7-3.6° F), which has been recognized by the international community as the a mandatory level to prevent catastrophic warming.

In addition to reducing greenhouse gas emissions, however, communities need to respond to the changes already being felt and plan for those that are still to come, regardless of our emissions reductions. Because greenhouse gases can remain in the atmosphere for decades, we will continue to experience climate change impacts for decades, and even centuries, to come.

While greenhouse gases are measured globally, climate change impacts are locally specific. Each community feels climate change in a different way, depending on historic conditions and locally-specific climatic conditions and patterns of change. As these local impacts and changes worsen over time, we will need to prepare and protect our most vulnerable resources and populations from the impacts.

## Climate Change Vulnerability Assessment

Determining which resources and populations are most vulnerable to ongoing and future impacts of climate change is the first step in developing effective strategies and sound solutions. We held a series of workshops on climate change vulnerability in Ashland, Oregon. These workshops included experts in a variety of fields and topics. The workshops were intended to share knowledge on the science and future trends associated with climate change, as well as expected impacts to important sectors of our communities.

While the workshops were held in Ashland in support of Ashland's Climate and Energy Action Planning process, we invited experts from throughout the Rogue Valley to look at regional vulnerabilities and trends as well. Because climate change is an all-encompassing trend with both local and regional solutions, it is vital that we work together and develop a better understanding of cross-jurisdictional impacts as well as opportunities.

**Climate Change Vulnerability** is a function of three variables:

- Exposure - what changes the resource or population is expected to be exposed to
- Sensitivity - what the impacts are likely to be
- Adaptive capacity - what actions or resources are available to reduce the impacts

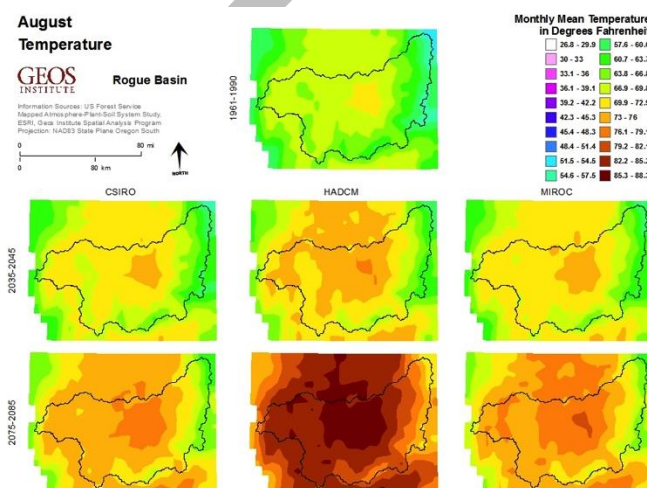
A vulnerability assessment, such as this one, determines the contributions of each of these variables to each of the target resources and populations, in order to help to prioritize and direct potential solutions.

**1. EXPOSURE** – Exposure is the specific impact or trend that is expected from climate change. Different resources and populations will be exposed to different components of climate change, which can be assessed using global climate models and looking at recent trends and data. It is important to get information on exposure from reputable scientific institutions and knowledgeable scientists with an understanding of not just climate change, but also the potential impacts of climate change to our natural systems that communities depend on.

For example, Mt. Ashland Ski Area's exposure to climate change impacts is high, because snowpack is expected to decline 70-80% by the 2080's, even if we reduce emissions. Exposure of Mt. Ashland's ski area to sea level rise impacts, however, is relatively low due to elevation and distance from the coast.

**2. SENSITIVITY** – Some resources and populations are more sensitive to changes than others, meaning that the experience a larger or more severe response to those changes. For example, Infants and elders are more sensitive to severe heat because they are less able to regulate their body temperature.

**3. ADAPTIVE CAPACITY** – People can respond to climate impacts in a variety of ways. There are many resources and behaviors available to us already for responding to impacts, providing some adaptive capacity. For instance, people who can afford air conditioning have higher adaptive capacity during both heat waves and when smoke from wildfires makes outdoor air unhealthy than those without air conditioning or those working and/or living outdoors.



**Figure 1.** Climate model output, such as that shown here, can be used to investigate the level of exposure of specific regions to climate impacts. This downscaled climate model output shows historic and projected future August temperature across the Rogue Basin, using three different climate models (CSIRO, HADCM, and MIROC) and two future timeframes (2035-45 and 2075-85). All three models agree on future warming, but some show faster warming than others.



In addition to each of the 3 variables associated with climate change vulnerability, we assessed the following variables:

**TIMEFRAME** – Are the impacts already occurring? Based on climate model projections and considering the level of uncertainty associated with those projections, are the impacts expected to occur in the near, mid- or long-term?

**STRESSORS** – What are the current stressors that are affecting the target resource or population? Identifying current stressors provides valuable information for where to find solutions. Many stressors are exacerbated by climate change, such as ozone being exacerbated by heat, thereby affecting air quality and human health. By reducing the stressors, we can increase overall resilience of the target as climate change worsens and accelerates.

**SECONDARY IMPACTS** – Secondary impacts are impacts created from actions that we take in response to climate change, such as spraying more pesticides in response to warming waters and more mosquito-borne disease. In many cases, the secondary impacts will be more serious than climate change itself.

**SOLUTIONS** – The focus of this effort was on identifying local vulnerabilities. These vulnerabilities will then inform the CEAP and other planning processes to develop solutions. The experts in the workshops, however, had numerous ideas for sound solutions to climate impacts. Those are included in this report, but are not comprehensive across all sectors and topics.

Solutions included ways to reduce our greenhouse gas emissions (called “mitigation”) as well as ways to protect people and resources from ongoing and worsening impacts (called “adaptation”). Both approaches are needed.



Workshop participants discussing climate impacts with group facilitator, Eric Dittmer



## Results

### Climate Change Trends for Ashland and the Rogue Valley –

Numerous studies have detailed these impacts for our region (TRIG and Geos Institute, 2008; Southern Oregon Forest Restoration Collaborative 2013; Oregon Climate Change Research Institute 2016). This overview pulls from those reports and others to provide the latest information on historical changes in climate, future projections, and expected impacts.

**HISTORIC TRENDS** – The average temperature in Ashland has increased by 2.5° F over the last century. This is about 1° F more warming than the average for the Pacific Northwest for the same time period (OCCRI 2016).

Average precipitation has decreased slightly in Ashland, although this is not a significant decline and is overshadowed by year-to-year variation (OCCRI 2016).

Among 13 monitoring stations in the Rogue Basin, 12 have recorded declines in snowpack, ranging from 3-60% (avg. = 26.8%). Averaged over all 13 stations, a decline in 17% was observed from 1960-2014 (calculated from OCCRI 2016).

Wildfire season lengthened by 28 days (averaging 1 day/yr.) from 1984-2011. The number of large wildfires has increased by 0.6 per year (Dennison et al. 2014).

**PROJECTED FUTURE TRENDS** – Global Climate Models (GCMs) are used to model the Earth's climate systems and provide insights into potential future change. Uncertainty in model output comes from an incomplete understanding of those systems and, more importantly, how people will respond to the need to reduce greenhouse gas emissions. Thus, there is a range of potential outcomes dependent on which models are used and whether or not the international community takes action on climate change.

In analyses by OCCRI (2016), projections based on continued higher emissions (RCP 8.5) were compared to those based on lower emissions (RCP 4.5), to assess the how much climate change impact can be avoided by taking action to substantially reduce emissions (Table 1).

### Historic Trends

- Temp. ↑ 2.5° F since 1910<sup>1</sup>
- Precip. ↓ 0.9 in. since 1910<sup>1</sup>
- Snowpack ↓ 17% since 1960<sup>1</sup>
- Wildfire season ↑ 27 days since 1984<sup>2</sup>

### Likely Future Trends

- Temp. ↑ 3-11° F by 2080s<sup>1</sup>
- Summer temp. ↑ 7-15° F by 2080s<sup>3</sup>
- Extended warm spells ↑ 89 days by 2080s<sup>1</sup>
- Snowpack ↓ 86% by 2080s<sup>1</sup>
- Runoff - earlier spring melt, higher winter flow, lower summer flow<sup>1,3</sup>
- Extreme precipitation events ↑ by 1.3 inches by 2080s<sup>1</sup>
- Dry spells 6 days longer by 2080s<sup>1</sup>

<sup>1</sup> OCCRI 2016

<sup>2</sup> Dennison et al. 2014

<sup>3</sup> TRIG and Geos Institute 2008

In general, all of the models predict warming, but some predict faster warming than others. Similarly, all models predict sea level rise, but some are showing much faster sea level rise than others. Most models agree on more intense storms, wetter winters, drier summers, lower snowpack, and more frequent extreme heat and wildfire.

Changes in precipitation are likely, but in any one area those changes are highly uncertain. Southern Oregon is especially uncertain, as areas further north are expected to become wetter, on average, and those further south are expected to become drier, according to many models. With higher temperatures, however, soils are expected to be drier. Thus, drought becomes more likely and vegetation will change, even with moderate increases in precipitation.

**Climate Change Vulnerabilities** – We held five workshops covering the following topics: Equity and Disadvantaged Populations, Natural Systems, Health and Emergency Response, Business and Agriculture, and Infrastructure. Each workshop was attended by invited experts within the topic area. These experts first became familiar with the climate science and projections. Then they were asked to consider how target resources and populations would be affected. We built upon previous work (TRIG and Geos Institute 2008 and Southern Oregon Forest Restoration Collaborative 2013) for a more comprehensive assessment.

The vulnerabilities were discussed and documented during the workshops using large matrices written on flip charts hanging on the conference room walls. After the notes were transcribed, we ranked the vulnerabilities based on Adaptive Capacity (high, medium, or low) and Exposure/Sensitivity combined (high, medium, low) in order to display them in the matrix in Figures 2 and 3.

**Table 1.** Comparison of climate values in the 2080s, if we substantially lower emissions (RCP 4.5) or continue with business as usual (RCP 8.5) (adapted from OCCRI 2016).

	RCP 4.5 Low emissions	RCP 8.5 High emissions
Hottest day of the year	+7°F	+12°F
Duration of warm spells	+39 days/yr.	+89 days/yr.
Rainfall in an extreme storm	+0.8 inches	+1.3 inches
Snowpack	-71%	-86%

Workshop participants discussing climate impacts with group facilitator, Leslie Becknell-Marx



**Figure 2.** Natural systems vulnerabilities in Ashland and the Rogue Valley.

		SENSITIVITY AND EXPOSURE		
		High	Medium	Low
ADAPTIVE CAPACITY	Low	<p><b>High elevation plants and wildlife</b> unable to shift in range yet intolerant of warming conditions, loss of snow.</p> <p><b>Wolverine, Brewer spruce, Northern Spotted Owl</b>, and other sensitive species at risk from changing conditions. Mining, logging, rodenticides, and other stressors exacerbate the risk.</p> <p><b>Intermittent springs and wetlands</b> at risk from changes in precipitation and snowmelt. Important breeding grounds for frogs and turtles.</p>	<p><b>Intact habitats and ecosystems</b> at lower elevations at risk from climate change, invasive species, and development for housing, agriculture, and renewable energy.</p> <p><b>Connectivity of habitat</b> that allows species to shift with climate change is at risk from ongoing stressors and also secondary impacts of climate change, such as renewable energy.</p> <p><b>Migratory birds</b> affected by changes in seasonality and timing for food and migration.</p> <p><b>Amphibians</b> exposed to drought stress and an inability to disperse to new areas.</p>	
	Medium	<p><b>Anadromous fish populations</b> affected by warmer water, more sediment and erosion, lower flows, loss of food, ongoing pollution and dams. Connectivity required for short-term resilience to wildfire impacts.</p> <p><b>Biodiversity</b> is expected to decline as climate change accelerates. Some species will benefit, but far more will decline and even go extinct.</p>	<p><b>Mid-elevation coniferous forests</b> to suffer from disease, pests, and overall change. Wildfire expected to increase, but is also considered an important ecological process for maintaining forest health and diversity.</p> <p><b>Mid-elevation coniferous forests</b> at risk from additional stress and loss of moist micro-climate from large-scale thinning, also pressure from increasing biomass energy production.</p> <p><b>Oak woodlands, grasslands</b> at risk from overall change and stressors such as agriculture, development and renewable energy.</p>	<p><b>Generalist species</b> such as raccoons, black bears, black-tailed deer, American Robins, and others expected to be more able to adapt to changing conditions. Edge species and those that live in fragmented, disturbed, or early successional habitat also expected to persist.</p>
	High		<p><b>Chaparral, grasslands, and shrublands</b> could increase as coniferous forests contract while also being at risk from development at lower elevations.</p>	<p><b>Invasive and non-native species</b> benefit from declines in native species, warmer water and air.</p>

**Figure 3. Socioeconomic vulnerabilities in Ashland and the Rogue Valley.**

		SENSITIVITY AND EXPOSURE		
		High	Medium	Low
ADAPTIVE CAPACITY	Low	<p><b>Outdoor workers, elders, and low income populations</b> will be vulnerable to severe heat.</p> <p><b>Elders, especially disabled and low income individuals</b>, affected by severe heat, smoke, and storms. Many are far away from relatives or in rural areas.</p> <p><b>People with mental illness</b>, and especially veterans, especially susceptible to impacts from heat and natural disasters.</p> <p><b>Seasonal and service industry workers</b> at risk from all aspects of climate change that affect their lineup of jobs over the year. This can push people into poverty and/or make them look elsewhere for more stable employment.</p> <p><b>Hydropower</b> to become less reliable due to reduced snowpack, loss of stream flow, drought and flooding. Also wildfire and heat to affect transmission. Increased demand in summer will stress systems at time when stream flow is lowest.</p>	<p><b>Homeless residents</b>, especially the long-term homeless are often used to extreme conditions. However, once conditions become too extreme, they have little adaptive capacity. Most at risk from water quality and heat.</p> <p><b>People without cars</b> vulnerable during wildfire, severe storms and natural disasters.</p> <p><b>Low income residents, especially young children</b> 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.</p> <p><b>Manufacturing, retail, and service</b> sectors likely to experience higher fuel and transportation costs, heat and storm related disruptions.</p> <p><b>Roads bordering rivers and streams, and in valley bottoms</b>, as well as unstable slopes at risk from increased frequency of large storms.</p>	<p><b>Local reservoirs</b> exposed to more severe storms and larger precipitation events. Reeder reservoir is well maintained and has been rated for a 10,000 year storm. North Emigrant reservoir has had issues with turbid water from storms, expected to increase and worsen.</p>
	Medium	<p><b>People with asthma, respiratory and heart disease</b> impacted by smoke and ozone.</p> <p><b>Low income populations, and especially Latino/a populations</b>, at risk from heat, smoke, and larger storms. Also loss of reliable employment.</p> <p><b>Health care providers, emergency response staff</b> at increased risk with more extreme events, dealing with emergencies while also worried about their own families.</p> <p><b>Rafting and other river-related recreation</b> industries impacted by water quality, low flow, and smoke.</p> <p><b>Solar panels</b> affected by smoke – reduces production by up to 30%.</p>	<p><b>Human health</b> at risk from smoke, vector and water-borne disease, and increased use of pesticides due to mosquito spraying and agricultural pests.</p> <p><b>Emergency response and evacuation</b> to become more difficult and frequent due to increase in natural disasters and closure of evacuation routes during storms. More funding will be needed.</p> <p><b>Agricultural production</b> expected to decline with less reliable seasonality, more disease, and more uncertainty in harvest dates and length of seasons.</p> <p><b>Local agriculture</b> will become stressed from pests, disease, drought, greater competition for water and land, and lower productivity from climate change.</p>	<p><b>SOU students</b> 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.</p>

ADAPTIVE CAPACITY	Medium	<p><b>Tourism-based economy</b> affected by changes in natural beauty, smoke, severe heat, drought, water quality issues, and unpredictable seasons. Employee base could become more stressed.</p> <p><b>Mount Ashland ski area</b> likely to become increasingly unprofitable as snowpack declines 70-80%. Will need to shift to other sports and activities.</p> <p><b>Talent Irrigation District (TID) water</b> impacted by declines in water quality from wildfire, algae, warmer temperatures, more herbicides, etc. Also affected by evaporation and drought conditions.</p>	<p>Specifically, <b>wine grapes</b> expected to have more disease and shifts in the types of grapes.</p> <p><b>Roads, buildings, bridges, and real estate</b> 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 high enough flood standards.</p> <p><b>Municipal water supply</b> expected to see greater demand and lower supply due to higher temperatures and reduced snowpack. Cost of water could increase. Increase in algal outbreaks expected. Wildfire can cause water quality problems. Not enough redundancy of supply.</p> <p><b>Energy infrastructure</b> at risk from heat (affects distribution), lower and less predictable stream flow, storms, and increase in summer demand with higher temps.</p>	
	High	<p><b>General population</b> at increased risk for disease outbreaks, but we have a Tier II hospital ready to deal with outbreaks of new diseases.</p> <p><b>Fire fighters</b> at increased risk from fire as more homes are at risk and fires become more frequent.</p> <p><b>Local creeks</b> already affected by E. coli and algae, likely to get worse, but management options exist to reduce impacts.</p> <p><b>Stormwater infrastructure</b> at risk from larger storms.</p>	<p><b>Health care providers, emergency response staff</b> at increased risk with more extreme events, dealing with emergencies while also worried about their own families. Could cause stress and mental health issues.</p> <p><b>Landscaping</b> (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.</p>	



## Natural Systems

Natural systems are on the front line with climate change. Natural systems support biodiversity and functioning ecosystems. Natural systems also provide people with clean water, air, recreational and spiritual opportunities, and a variety of other services. Because our communities in Southern Oregon are highly dependent on natural systems for the local economy (tourism, forestry, agriculture, water) and our way of life (recreation, rural housing, natural beauty), the impacts of climate change on natural systems will have direct impacts on all other sectors considered.

The natural systems workshops participants identified numerous potential vulnerabilities of natural systems to climate change impacts. These stemmed from overall changes in temperature and precipitation, greater storm intensity with erosion and sedimentation, more extreme heat events, higher incidence of wildfire, substantial declines in snowpack, warmer river and stream temperatures, and changes to species distributions.

**CONIFEROUS FORESTS** – Forests in Southern Oregon are likely to be affected by changes to temperature and precipitation, increases in CO<sub>2</sub>, changes in wildfire patterns and declines in snowpack. At lower elevations, conifers could be replaced by hardwoods. North facing slopes are expected to act as refuges for endemic species that require a slightly cooler microclimate. The high topographic complexity of the region and relatively mild climate, which allowed for biodiversity refuges during times of glaciation, could act in a similar manner as climate change accelerates.

Some species that could be most sensitive to climate impacts include **Brewer Spruce**, **Northern Spotted Owl**, and **Fisher**. Current stressors from land use and resource extraction are likely to be exacerbated by climate change. **Wolverine**, which occur at higher elevations, could be impacted by declines in snowpack.

Wildfire is a natural occurrence and vital part of forest health in Southern Oregon forests. Mature coniferous forests, with extensive canopy cover and complex understory, maintain moist microclimates that reduce the incidence of wildfire. The most effective way to increase forest resilience may be to restore mature forest structure. Because many native forest species are highly adapted to wildfire, wildfire is seen as a benefit, not a threat to ecosystem health.



**Stressors** – Current stressors to coniferous forests of Southern Oregon include mining, logging, biomass harvest for energy production, fire suppression activities like mechanical thinning, and, at lower elevations, clearing for development of homes and vineyards. Invasive species and forest pests and diseases also stress coniferous forests. Climate change is expected to exacerbate many of these stressors. By reducing stressors to forest systems, they will become more resilient in the face of accelerating climate change.

Regrowth in recently burned coniferous forest of Southern Oregon. Photo by Kevin Schafer.

**Adaptive Capacity** – North facing slopes could function as important refuges that allow biodiversity to persist, if protected. Federal lands (USFS and BLM) have greater adaptive capacity than private lands because of the potential for increased protection and conservation-based management.

#### LOWER ELEVATION OAK WOODLANDS AND NATIVE GRASSLANDS

– Similar to coniferous forests, oak woodlands and grasslands are expected to be impacted by changes to temperature and precipitation, as well as increases in CO<sub>2</sub> and changes in wildfire patterns. Oak woodlands may displace conifers at higher elevations. Native grasslands are likely to increasingly lose ground to invasive and non-native species, as CO<sub>2</sub> and temperature/precipitation change give non-native species a competitive edge.



**Stressors** – Current stressors to oak woodlands and grasslands include wildfire suppression, which precludes regeneration, and agriculture and housing development. Oak woodlands already are threatened by Sudden Oak Death, and could be prone to more diseases and pests as climate change progresses.

**Adaptive Capacity** – Protected and intact grasslands and oak woodlands have higher adaptive capacity than fragmented areas.

**INTACT ECOSYSTEMS PROVIDING CONNECTIVITY** – Intact ecosystems are vital to maintaining biodiversity and allowing species to shift and adapt over time. As climate change progresses, intact ecosystems and connected natural areas will become even more vital for the movement of species of plants and wildlife to new areas. Intact ecosystems are expected to be impacted by climate change through the loss of keystone species (from changes in temperature and

precipitation) and/or vital ecosystems function. Regional planning for connectivity and more focus on conservation of natural areas could enhance ecosystem resilience in the face of climate change.

**Stressors** – Lower elevation ecosystems, such as oak woodlands and native grasslands, are especially at risk from development for homes and agriculture (wine grapes, marijuana, etc.). Continued encroachment of housing into the forest interface threatens coniferous forests, as does fire suppression, logging, mining, and biomass for energy.

#### AQUATIC AND RIPARIAN SPECIES AND ECOSYSTEMS

– Greater storm intensity, lower streamflow, and warmer temperatures all threaten aquatic and riparian ecosystems and species. In addition, snowpack declines can greatly change the timing of streamflow, with impacts to spawning, migration, and food availability for salmonids. Warmer waters can cause increases in bacteria and disease, and decreased dissolved oxygen, which leads to fish kills. Salmonids, amphibians, macroinvertebrates, intermittent springs, wetlands, and vernal pools are all at risk from drought as well.



**Stressors** – Many intermittent springs, vernal pools, and wetlands are already being destroyed or turned into year-round ponds that support invasive species such as bullfrogs. Salmonids are affected by dams and other barriers that block passage to spawning areas and cooler, higher water. Salmonids are also affected by non-natural flow, such as that in Bear Creek in the summer.



Many amphibians already suffer from chitrid fungus and are likely to have more disease and drought impacts with climate change. Grazing can destroy riparian vegetation and meadows, thereby leading to reduced ability to hold water and more flooding during extreme storms.

Additional target communities to assess include mesic dependent systems, endemic species, pollinators, bats, decomposers (fungi), restoration efforts, and others.

Workshop participants were not tasked with developing solutions as part of the vulnerability assessment, yet many were suggested.

**Some potential SOLUTIONS included:**



- Place new renewable energy development and other development on already degraded and fragmented lands.
- Restore riparian systems, reduce invasive species and increase native species.
- Rehydrate the watershed by creating beaver-like structures and/or introducing beavers.
- Decommission roads to reduce sedimentation in streams during large storms.
- Enforce the City's riparian ordinance. Retain dead trees for fish and wildlife.
- Trim the vegetation on Neil Creek near the airport to ensure a low canopy cover for shade, while also meeting airport requirements.
- Restore fish passage at Granite Street Dam to allow native migratory fish to use Ashland Creek up to Reeder where there is cold water habitat for winter steelhead.
- Encourage and mandate planting of native trees and shrubs, especially in new development.

**For more recommended SOLUTIONS, see Appendix A**

DRAFT

## Equity and Disadvantaged Populations

Climate change has the greatest impacts on those who not only have the least ability to protect themselves, but also those who have contributed the least to the problem itself. Disadvantaged populations include low income residents, people of color, people with disabilities, non-English speakers, homeless residents, and others who have had little input into our society's planning processes.

Similar to natural systems, disadvantaged populations are often on the front line when it comes to climate change. Outdoor workers and low income workers, for example, are exposed to the full impacts of severe heat and smoke from wildfire, with little adaptive capacity.

Historically, many societal norms and procedures have created preferential opportunities based on race, gender, sexual orientation, and other factors. Unfortunately, many of these systems are still in place. As our awareness increases and we work to dismantle discriminatory practices and systems, climate change threatens to add additional stressors that exacerbate inequities.

The equity and disadvantaged populations workshop participants identified numerous potential vulnerabilities to climate change impacts.

**ELDERS AND DISABLED ADULTS** – Extreme heat, larger and more destructive storms (with flooding), and increasing levels of smoke are all expected to have health and safety impacts to elders and disabled adults. Many elders and disabled adults have compromised health, which can be exacerbated by climate impacts. Mobility may be limited, making it difficult to escape unsafe or unhealthy conditions. When cognitive abilities are compromised, elders and disabled adults may have trouble communicating discomfort or understanding emergency procedures. They are often reliant on preparedness of their caregivers or facilities, which may or may not be well prepared for extreme conditions. Finally, many elders and disabled adults have fixed incomes that can limit their options for air conditioning, transportation, and siting in flood zones.

**Stressors** – Existing stressors include flood risk to many lower income homes, especially trailer parks situated in flood prone areas. Low income is also a stressor.

**Adaptive Capacity** – Medical facilities, case managers, assisted living, churches, and other community services that are routinely provided for elders and disabled adults can also act as support and communication hubs during extreme events.



A FEMA representative speaks with a homeowner after disaster. Photo from Wikimedia Commons.

**MENTAL HEALTH** – Similar to elders and disabled adults, people suffering from mental health issues and especially veterans, can be hypersensitive to extreme and/or unexpected events, including severe heat, smoke, and extreme precipitation that leads to flooding.

**LOW INCOME POPULATIONS** – Low income populations are also expected to be at risk from extreme events, including heat, storms and flooding, and smoke. Latino/a populations are especially at risk. Many low income populations are less likely to prepare for emergencies or extreme events, and don't have information about where to go or how to get help.

**Stressors** – Low income residents, and specifically Latino/a low income residents, have fewer resources available during extreme events. They often have little or no access to affordable healthcare. Language barriers can also prevent people from getting the help and resources that are available, or understanding the risk. Negative experiences with law enforcement or other forms of authority create situations of distrust and a lack of support for people of color. People with a criminal record may have a harder time getting support services, access to shelters, jobs, and housing. Mental health and abuse issues, while prevalent in all income levels, can become exacerbated by climate change impacts because low income populations are already pushed to the edge. Many low income families do not have insurance, and can lose everything during an extreme event.

**Adaptive Capacity** – Overall, low income populations have little adaptive capacity because they are already in survival mode, often close to homelessness. Strong family and church connections among Latino/a communities provide some adaptive capacity. Many rural residents are more self sufficient and able to protect themselves. Organizations like ACCESS and Energy Trust have funds for upgrades. RVTD has matching funds opportunity. Work Source Rogue Valley has funds for job training that are often underutilized.

**AGRICULTURAL AND FOREST WORKERS, OTHER OUTDOOR AND SEASONAL WORKERS** – All of the climate change impacts that affect forests and agriculture will also affect forest and agricultural workers. For example, as forests become stressed from climate change, pests, and disease, forest workers may have trouble finding enough work. If heat, drought, and larger storms affect agricultural production, seasonal farm workers could experience less reliable employment. In addition, these workers are themselves affected by heat and storms, making their jobs more dangerous to their health. One of the greatest impacts may be the lack of predictability for seasonal workers who need to string together consistent employment.



Harvest workers in Oregon. Photo from Wikimedia Commons.

**Stressors** – Some existing stressors for forest and agricultural workers include insufficient water and breaks, very low wages, periodic drought, a lack of power or representation to ensure good conditions and fair wages, undocumented workers, a lack of family medical coverage, and the physically demanding aspect of their jobs. Low income is also a stressor to outdoor and seasonal workers.

**Adaptive Capacity** – As agriculture and/or forestry jobs become less predictable, fire fighting jobs may become better options. Fire fighting generally has higher wages than agriculture and forestry jobs.

**SERVICE INDUSTRY WORKERS** – Many jobs in Southern Oregon and especially in Ashland are service industry jobs related to the tourist –based economy. If the natural beauty of the area is diminished from climate change, due to dead and dying forests, wildfire, and lower water quality and quantity in rivers and streams, the tourist-based economy is likely to suffer. Similarly, extreme heat and smoke from wildfire could keep tourists away from the region.

**Stressors** – The service industry already experiences fluctuations in employment levels, creating uncertainty in income and a lack of job security for many workers. Many service industry workers rely on public transportation, which is limited, and are unable to evacuate in the case of a natural disaster such as a large wildfire or flood. In addition, low income housing is often placed in flood-prone areas. Low income in itself is also a stressor to service industry workers.

**Adaptive Capacity** – Low income service workers are often flexible in the type of employment they can fill, but have very little overall adaptive capacity. Because many people do not own homes, they have some flexibility allowing them to move to areas with more jobs, if needed.

**HOMELESS** – Homeless residents in Ashland and the Rogue Valley are highly sensitive to climate change. They are affected by extreme heat, larger storms causing flooding, poor air quality from smoke, poor water quality from bacteria and toxins, and a lack of water due to drought. While shelters are set up to protect people from freezing temperatures, there are no cooling centers or shelters to protect people, and their pets, from extreme heat. Due to the lack of transportation, homeless people have a difficult time evacuating during emergencies.

**Note on income:** We found a common stressor among all socioeconomic groups that were vulnerable to climate change, and that was low income. Having a low income in addition to health problems, racial biases, job type, and age greatly exacerbates the impacts of climate change. By targeting the issue of wage disparity, numerous populations could become more resilient to the impacts of climate change.

**Stressors** – A lack of transportation makes it difficult for homeless residents to get the services and supplies they need, which in Ashland are on opposite ends of town.

Criminalization of many behaviors and basic human needs, such as sleeping and relieving oneself, results in confrontations with police, fines, and jail for people already dealing with mental health struggles. Community stress from climate change could create even less willingness by the public to accommodate the homeless, resulting in a lack of compassion and even more criminalization.

**Adaptive Capacity** – Homeless residents, and especially those homeless by choice or for a long time, may have high adaptive capacity because they are already used to dealing with climate extremes and are relatively savvy about outdoor living. Even so, many of the conditions projected by climate change models surpass those that have occurred historically, which could stress homeless populations.

Additional target communities to assess include non-English speakers, young children in low income households, LGBTQ community, indigenous people, renters, low income and homeless people with pets or service dogs, people with no health insurance, and isolated elders.

**Some potential SOLUTIONS included:**

- Develop system of cooling stations in convenient locations and public areas
- More consistent shelter openings, including shelters from the heat
- Develop more approaches like Hope Village in Medford (tiny homes village)
- Create job programs that link together seasonal employment for more security and consistent income
- Proactively discuss equity and disadvantaged populations in all City planning processes, rather than afterwards
- Implement financial strategies to allow low income home owners to upgrade energy systems
- Provide incentives for landlords to invest in energy upgrades, air conditioning, comfort, and air quality in rental units
- Train people with relationships in different communities (Latino communities or churches for example) to do outreach on energy, water, heat impacts, and other issues
- Ensure that the message resonates so people understand their role. Compensate people for participation.
- Provide opportunities for low income people to become the educators and leaders.
- Ally different organizations - have them come together on climate change.
- City commissions need to actively recruit people with a diversity of backgrounds.

**For more recommended SOLUTIONS, see Appendix A**



## Health and Emergency Response

The impacts of climate change on human health are numerous and expected to be increasingly detrimental. For example, increased temperatures can cause ground level ozone to become far more concentrated, exacerbating respiratory and heart disease and leading to mortality. Also, extreme heat is the top source of mortality of all natural disasters, and is expected to increase substantially in the years to come. The current outbreak and spread of Zika virus is an example of the increased disease risk associated with climate change. The relationship between human health and the myriad of climate impacts is well documented, from water-borne disease to mental health issues.

**ELDERS** – Older adults, especially those with low incomes, substandard housing, or without air conditioning, are expected to have serious impacts from extreme heat, storms and flooding, drought, and smoke from wildfire. Many elders already experience health challenges, which are expected to be exacerbated by climate impacts. Decreased lung capacity, heart problems, lowered awareness, low mobility, physiological sensitivity to dehydration, and lowered body temperature regulation all make elders more sensitive to the impacts of climate change. Elders that live in rural areas and/or are isolated from family members are especially at risk.

**Stressors** – Additional stressors to elders include isolation, lack of public transportation combined with reduced mobility, long distances from family members, lack of affordable housing, and a quickly growing population without enough caregivers.

**Adaptive Capacity** – Adaptive capacity comes from many elders living in retirement communities or assisted care. Also, there are numerous civic and church organizations for elders, medical facilities that act as community hubs, case managers for those with extra medical support, and support programs to help with utility bills, health care, and emergency response. Jackson County Health, citizen alert programs like Everbridge, 1700 AM radio, and even ham radio were all listed as available resources for elders.

**YOUNG CHILDREN** – Young children are at risk from extreme heat, water- or vector-borne disease, smoke and ozone leading to asthma, and bacteria and toxins in water. Children of single mothers, young mothers, and low income parents are at especially at risk.

**Stressors** – Single parents and low income parents working full time have the additional stressors of a lack of childcare and unsupervised kids in summer, when extreme heat is a risk. Low income households also have less access to air conditioning.



**Adaptive Capacity** – La Clinica offers health care for low income families. Also, many parent and other support groups are available, including La Leche, ESL groups, and others.

#### **HEALTH CARE STAFF and FIRE**

**FIGHTERS** – Staff at hospitals, first responders, fire fighters, university health providers, and others are at risk due to the potential increase in extreme events and natural disasters associated with climate change. As these staff members serve the community, they also become concerned about their own families, homes, and other loved ones, making it more difficult to provide quality services and take care of their own mental and physical health. Fire fighters are already responding to longer and more extreme fire seasons, putting their own lives on the line and dealing with loss of fellow fire fighters.



Photo from Wikimedia Commons.

**Stressors** – Stigmatization of mental health issues. For profit health systems (including hospice) that prioritize cost savings rather than health outcomes or readiness.

**Adaptive Capacity** – Firewise program and CERT to increase fire protection within the community. Because we have a Tier II hospital, procedures are already in place for a major disease outbreak in the area. Natural disaster and disease training exercises increase efficiency and effectiveness of response, reducing impacts to the public and to first responders as well.

**RESIDENTS WITHOUT FAMILY NEARBY** – Students at SOU are far from their families, without support during extreme events. Climate impacts include extreme heat, more extreme storms and flooding, and smoke and ozone. College students often leave for the summer, reducing their exposure to extreme heat. Many elders also lack family in the vicinity.

**Stressors** – Many classrooms and apartments are not air conditioned. Athletes and outdoor recreationists can be exposed to heat and poor air quality during practice.

**Adaptive Capacity** – Students are young and physically more resilient than older adults. They are more able to withstand heat. Many students at SOU have cars and are able to evacuate during disasters.

**PEOPLE WITH ASTHMA AND RESPIRATORY ILLNESS** – People of all ages, but especially very young children and elders, with compromised respiratory systems are at risk from increase in ozone, smoke and particulates, and pollen associated with climate change.

**HOMELESS** – please see previous section on Equity and Disadvantaged Populations.

Additional target communities and resources to assess include people with low mobility (physical mobility and also due to a lack of transportation), international travelers, seasonal and migrant workers, people without health insurance, climate refugees from other areas, people with mental illness, first responders, people living in the forest interface, outdoor enthusiasts

**Some potential SOLUTIONS included:**

- Increase and strengthen efforts to improve water quality in streams and rivers
- Change land use codes to reduce building in high risk areas (such as forest interface and flood zones)
- Anticipate new health challenges related to climate change and address them proactively
- Implement the recommendations in the Jackson County Climate and Health Action Plan
- Partner with churches (such as Catholic church) to provide training in health and
- Create buddy system for those without family
- City should have greater emergency supply of water and food
- Map neighborhood residents so people know who needs support and resources
- Create systems of neighborhood captains
- Educate and provide people with the correct type of mask for smoke
- Need to have an evacuation plan for pets and livestock
- Distribute water purifiers for emergency situations

**For more recommended SOLUTIONS, see Appendix A**



## BUSINESS AND AGRICULTURE

Businesses in Ashland and the Rogue Valley are diverse, including manufacturing, agricultural production, outdoor recreation, tourism, retail, and other industries. Government and health care are the largest employers overall.

The business and agriculture workshop participants identified numerous potential vulnerabilities to climate change impacts. These are not comprehensive, and many other vulnerabilities still need to be identified and quantified. Many of the business vulnerabilities identified in this report are focused on Ashland, due to Ashland's current efforts to develop a Climate and Energy Action Plan.

**TOURISM BASED BUSINESSES** – Changes to the natural beauty of the area, changes to fish and wildlife, extreme heat, smoke, and severe storms are all likely to impact tourism, which makes up a significant portion of the local economy in Ashland and other areas of the Rogue Valley.

**Stressors** – High housing prices and limited public transportation already make it difficult for low income and seasonal workers to live and work in Ashland.

**Adaptive Capacity** – Many tourist attractions can shift their seasons to shoulder seasons if summers become too hot and/or smoky. Inside theaters, non-snow recreation, and diverse alternative tourist attractions such as wine tasting and mountain biking create more resilience and opportunity.

**SEASONAL WORKERS** – Mt. Ashland Ski Area, Oregon Shakespeare Festival, local hotels and restaurants, rafting guides, grape and pear harvesters, and a variety of other seasonal workers could experience disruptions in work availability due to climate change (from declines in snowpack, changes to forests, smoke impacts, drought and extreme heat) pushing them into poverty or to leave the area.

**Stressors** – High housing prices and limited public transportation already make it difficult for low income and seasonal workers to live and work in Ashland. Ski area workers already experience years without employment opportunities.

**Adaptive Capacity** – The diversity of seasonal jobs means that even with changes in one industry, options might still exist in other industries to sew together year-round work.

**LANDSCAPING** – SOU and the City of Ashland attract students and tourists with landscaping and parks. Bigger storms, extreme heat, water shortages from drought, and increased pests and disease could all take a toll on landscaping. Additionally, many of the current trees and plants may no longer grow well in new and changing conditions.

**Stressors** – Outdated irrigation systems make it difficult for large users such as SOU to save water, because pipes can burst from water pressure if the water isn't used. Many

landscaping trees are already dying from disease, and tree removal is very expensive for property owners.

**Adaptive Capacity** – Many residents are already planting native and drought-tolerant species. The TID provides untreated water for many parks and yards at lower cost. Mulching offers another common way to save water.

**ELECTRICAL PRODUCTION FROM SOLAR PANELS** – The solar industry is growing quickly in Southern Oregon, as in many other parts of the nation. Yet smoke from more wildfires threatens to lower solar energy production. Smoke from wildfire can reduce output by 30%, and ash and other residue can coat solar panels, reducing their output until they are cleaned.

**AGRICULTURE** – Agriculture is already being affected by climate change, and will continue to be affected by new diseases and pests, a loss of important “chill hours” from freezing nights, extreme conditions (heat, storm damage, drought), declines in water quality, and declines in hydropower during drought, which could affect electricity costs for marijuana growing. Crops may become less hardy as there are fewer freezing temperatures in winter. Additionally, many crops will no longer be able to be grown in the area and new crops will need to be planted, making it more difficult to grow crops that require years before maturation, such as wine grapes and fruit trees (Harry and David). Increased pesticide and herbicide use in response to climate change could create secondary impacts to farm workers, the public, water quality, and fish and wildlife.



**Stressors** – Outdated irrigation systems make it difficult for large users such as SOU to save water, because pipes can burst from water pressure if the water isn’t used. Many landscaping trees are already dying from disease, and tree removal is very expensive for property owners.

**Adaptive Capacity** – Many options are already available to reduce heat impacts and water use limitations. Kalonite can be applied to make plants reflective. Harry and David already import some of their fruit instead of growing it all locally. Compared to other areas, water availability is high in the Rogue Valley, which could compensate for increased heat.

**HOMES AND ENERGY USE** – see the next section on Infrastructure and Planning.

**QUALITY OF LIFE** – Related to many of the impacts to tourism are impacts to the quality of life that brings people to the Rogue Valley. Our region is a retirement destination because of the beautiful forests, temperate climate, water availability, large rivers, and abundant fish and wildlife. Many of these features are threatened by climate change. Real estate values could decline if the area no longer acts as a draw, in alternatively, people are likely to move to the area as climate change hits the coastlines and areas with extreme heat, drought or storms far worse than the Rogue Valley. The area could become a draw for climate refugees.

Additional target communities and resources to assess include food supply (local and imported agricultural products), city trees, power lines, water supply issues for businesses (brewing)

**Some potential SOLUTIONS included:**

- Choose robust plants and trees, climate adapted for future conditions
- Plant more trees for shade and air quality
- Natural pest predators to reduce the need for pesticides, herbicides
- Look at international best practices to see what works in other places – innovation
- Support farmers in helping them conserve water
- Update building codes to make buildings more efficient
- Outreach – expand current efforts – especially to new audiences
- Increase renewable energy installation, especially for low income homes
- Diversify energy

**For more recommended SOLUTIONS, see Appendix A**

## INFRASTRUCTURE AND PLANNING

Current infrastructure and planning processes are based on codes and protocols that have the same basic assumption – continued historic climate. Unless plans, codes, and guidelines have been updated to incorporate climate change model projections, they assume that risks from wildfire, floods, contaminants, and other variables will fall within the historic range of variation and averages. Unfortunately, we know that this assumption is false, and that many future conditions will not only be outside that historical range, but will also be unanticipated.

As 100-year floods become 20- or 10-year floods, and 80-year fire return intervals become 40-year fire return intervals (or less), all planning processes, codes, and guidelines will need to be updated. At this point in time, we need to not only be considering future conditions as we maintain and upgrade our existing infrastructure, but also consider likely future conditions and the magnitude of change in siting and sizing of new infrastructure.

The infrastructure and planning workshop participants identified numerous potential vulnerabilities to climate change impacts.

**MUNICIPAL WATER SUPPLY (TREATED)** – Risks to municipal water supply include less reliable precipitation, lower snowpack, higher evaporation from increasing temperatures, increased sedimentation from severe storms and wildfire, and increasing demand with longer, hotter summers. Warmer temperatures are likely to lead to more algae blooms, and lower flows could cause higher contamination rates. Higher prices and limitations on businesses that use a lot of water (such as breweries) could cause impacts to low income populations and economic growth in the future.

**Stressors** – The Rogue River, which provides water for Medford and other communities, and is already over-appropriated, even without considering the impacts of climate change. Not enough redundancy in supply makes communities vulnerable during drought or extreme events. If water conservation is increased, pipes may need to be resized to withstand lower flows. Water from TAP is more expensive than water from Reeder, and could affect pricing. Impervious surfaces and pavement make it difficult for water to infiltrate groundwater. Clay soils also prevent infiltration.

**Adaptive Capacity** – Connection to TAP (water from the Rogue River available now to Ashland from Medford) has provided a backup supply. While Ashland's supply is more reliant on snowpack, Medford's is less so, creating some diversification in supply. Conservation programs in Ashland are already quite good and the community is engaged.



**TALENT IRRIGATION DISTRICT – TID** water is used for agriculture and also made available for landscape watering in certain areas. Risks to the TID are similar to those to municipal water supply. Water quality is expected to be an issue as water levels decline and evaporation increases. TID water is also used as a backup for municipal water in Ashland, and water quality issues could affect treatment cost. Additionally, TID water flows into Bear Creek and can affect algae blooms and bacteria outbreaks.



**Stressors** – TID can be laden with pesticides, herbicides, bacteria, and other contaminants. Because the TID is not metered, waste is common. Because the delivery systems for TID are outdated, there are many limitations, such as SOU having to water regardless of need because otherwise the pipes would burst from the high water pressure.

**Adaptive Capacity** – The WISE project is moving forward, with plans to pipe the TID and reduce loss through evaporation and leakage.

**LOCAL CREEKS** – Local creeks, such as Bear Creek and Ashland Creek are expected to have lower low flows and more sedimentation during high flows. E. coli and other bacteria and contaminants could increase due to warmer waters, lower flows and more storms that wash contaminants into the streams.

**WASTEWATER AND STORMWATER** – Many areas are already prone to flooding, which is expected to worsen with larger storms. Downtown Ashland, neighborhoods that back to Bear Creek, homes along Clay Creek, and other known areas are all at risk.

**Stressors** – Continued development of wetlands and other natural water storage features exacerbate the flood risk. Low income housing is often placed in flood zones, especially trailer and mobile homes, putting low income residents at a greater risk for life-changing events. Downtown Ashland already experiences flood damage, such as hundreds of thousands of dollars of damage last summer from an unexpected downpour, which affected local businesses.

**Adaptive Capacity** – The state revolving fund “SRF” that provides better rates on loans when wastewater and stormwater are planned together.

**WATER INFRASTRUCTURE** – Reeder reservoir is the main water storage for Ashland, and has been rated as safe up to a 10,000 year flood event. Medford’s water infrastructure could be at risk from more severe storms that create sedimentation and require more water treatment at high cost prior to delivery. Increased sedimentation of Emigrant Lake and other local reservoirs create turbid water conditions.

**ENERGY INFRASTRUCTURE** – The City of Ashland owns its own utility, and purchases power from Bonneville Power Administration (BPA). Medford, Grants Pass and other communities get their power from Pacific Power. Ashland’s energy comes largely from hydroelectric power, which has been shown to be highly sensitive to climate impacts, including the loss of natural water storage in snowpack, changes to precipitation, more sedimentation, and more evaporation (van Vliet et al. 2016). BPA predicts a shortage of hydropower capacity during low water and extreme weather conditions (Northwest Power and Conservation Council 2016).



Pacific Power will be affected by the Clean Power Plan, which requires reductions in greenhouse gas emissions associated with fossil fuel based energy production. Risks to energy infrastructure include risks to transmissions lines and distribution systems, lowered distribution efficiency with higher temperatures, and increased demand for energy in summer with higher temperatures and electric vehicles.

**Stressors** – Ashland produces hydropower from Reeder Reservoir, and this dewateres portions of Ashland Creek, compromising about a mile of Steelhead habitat. The City’s energy use now has a second peak in the summer, due to more use of air conditioning, which is likely to increase. Homes are developed for reducing heat loss more than they are for staying cool. Also, homes are developed without siting for solar panels, creating a missed opportunity for more clean energy.

**Adaptive Capacity** – The existing relationship between the City of Ashland and Bonneville provides relatively clean and inexpensive energy for the city. Solar panel installation is growing quickly and can provide a significant portion of the city’s power.

**TRANSPORTATION** – The primary risks to transportation and transportation infrastructure are extreme heat and more severe storms, both of which can impact roads and highways. Extreme heat can also cause train tracks to buckle. Large storms can destroy or damage bridges and culverts, and can cause extreme sedimentation from unpaved roads into rivers and streams.

Additionally, extreme heat and smoke puts people at risk as the walk or bike, and are likely to reduce the success of efforts to get people to use alternative transportation more often.

**Stressors** – Many students and workers in Ashland cannot afford to live in Ashland and commute, putting stress on roads and highways. Insufficient public transportation leads to more cars on the road. Bikes lanes are insufficient and often bikes are forced to ride with cars, creating unsafe situations for bikers.

**Adaptive Capacity** – New funding that allows for improvements to RVTB.

Additional target communities and resources to assess include wildland urban interface (WUI) planning, electric car infrastructure, trees versus fire safety versus solar production (best approach for all three), water in creeks, reservoir production, etc.

**Some potential SOLUTIONS included:**

- Develop more and innovative water conservation measures
- Strengthen codes and standards, especially for multi-family housing
- Use bioswales, permeable pavement, and other approaches to reduce flood risk to homes
- Include climate change projections and information in EVERY planning process – plan for future range of variability and future conditions
- Increase regional coordination in planning
- Solar energy production on reservoirs
- Look at new technologies in using treated wastewater for use
- Reduce building in high risk areas (such as forest interface and flood zones)
- After floods, move development rather than reconstructing in high risk areas
- New homes in high risk areas should pay for protection
- Upgrade culverts to benefit fish
- Give food production priority for water (over marijuana and landscaping)
- Address equity through electricity rate structure
- Expand Rogue Valley Transportation District
- City should give preference to minority-owned and women-owned businesses

**For more recommended SOLUTIONS, see Appendix A**

## Conclusions

Climate change is a global threat with locally-unique impacts for communities. Because each region is affected differently, it is vital to assess vulnerabilities at the local level. Some of the most important impacts to the Rogue Valley include air and water quality declines, affecting human health and natural systems, as well as changes to our forests and more extreme storms, heat, and drought conditions. The most vulnerable residents and resources are generally those with the least adaptive capacity to deal with the additional impacts of climate change.

Many of the impacts of climate change in the Rogue Valley cannot be avoided and actions must be taken to protect the most vulnerable populations and resources from accelerating change. Because climate change affects all sectors and resources across the board, coordinated actions are needed to increase overall resilience. Without coordination, actions in one sector often shift the impact to other sectors, vulnerable populations, and/or future generations. We are seeking solutions that build resilience across sectors, populations, and resources while also addressing historical stressors and inequities.

**Efforts to reduce emissions quickly and aggressively are also needed.** By keeping global average temperatures below 1.5° C (about 2.7° degrees F), and returning atmospheric carbon dioxide levels to 350ppm, we can protect young people and future generations from catastrophic impacts and runaway climate change.

As Ashland and other communities in the Rogue Valley take on the challenge of planning for climate change, we have an opportunity to do so in ways that create greater community resilience for ALL residents and resources. A recent review of climate change plans (Geos Institute, In Review) showed that some sectors or populations are not receiving adequate attention in the planning process. Even though climate change affects all sectors of our communities, disadvantaged populations, natural ecosystems, and economic systems are rarely addressed in community plans.

As Ashland completes the first comprehensive mitigation and adaptation plan in Southern Oregon, we have the opportunity to lead the way and demonstrate truly co-beneficial solutions to climate change. Such solutions would address economic and social inequities, increase ecological resilience, and reach out to other communities to work across jurisdictions and create new collaborations. Focus on strategies that create co-benefits would include things like clean energy and home upgrades for low income residents, watershed restoration benefitting fish and protecting homes from flooding, and outreach with Latino populations to develop job opportunities clean energy. Such strategies focus on collaboration and co-benefits, which reduce conflict, save money, and build relationships within and among communities.

Ashland and the Rogue Valley are at a turning point, and we believe our communities are heading in the right direction, by reducing emissions, creating new jobs in clean energy and creating more collaborative solutions. These solutions are ecologically sound and create the social equity and diversity that will allow our communities to thrive in coming decades.



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## Workshop Participants

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## Appendix A. Additional information from the Climate Change Vulnerability Assessment

In June-July 2016, the Geos Institute held a series of workshops on climate change vulnerabilities in Ashland and the Rogue Basin. The results from that effort are in draft form and will be released in September 2016. These tables include draft solutions, reorganized to fit the Ad-hoc Committee on Climate and Energy Action Planning (CEAP) categories, for use in that planning process.

The climate change vulnerability assessment focused primarily on vulnerabilities, but inevitably the experts at the workshops offered up potential solutions. Below we list their suggestions, which have been reorganized by the categories being used in the Climate and Energy Action planning process for the City of Ashland.

- Health and Social Systems
- Natural Resources (includes agriculture and water)
- Buildings and Energy
- Urban Form, Land Use, and Transportation
- Consumption and Materials Management
- Other

Additional solutions recommended in the 2008 climate change preparedness report (TRIG and Geos Institute 2008)<sup>1</sup> are also listed, and were derived similarly from a series of expert elicitation workshops. More recommendations for protecting people and resources from climate impacts can be found in the following reports: Jackson County Public Health (2013)<sup>2</sup> and Southern Oregon Forest Restoration Collaborative (2013)<sup>3</sup>. Strategies from these report are locally-specific to Southern Oregon and should inform adaptation planning in our region.

Most strategies listed here are specific to protecting people and resources from the impacts of climate change (climate change “adaptation”) rather than reducing greenhouse gas emissions (climate change “mitigation”), but both are listed.

Many strategies are listed in more than one category because the strategy crosses over different topics, or because it was recommended in more than one workshop.

The source codes show where each solution came from, based on the following acronyms:

**NR** = Natural Resources workshop

**INF** = Infrastructure and Planning workshop

**ECON** = Business and Agriculture workshop

**HEA** = Health and Emergency Response workshop

**EQ** = Equity and Disadvantaged Populations workshop

**TRIG** = Rogue Basin climate change preparedness assessment from 2008

<sup>1</sup> The Resource Innovation Group (TRIG) and the Geos Institute. 2008. Preparing for Climate Change in the Rogue River Basin of Southwest Oregon. Available at: <http://climatewise.org/projects/799-rogue-river-basin>

<sup>2</sup> Jackson County Public Health (JCPH). 2013. Jackson County Climate and Health Action Plan. Available at: <http://public.health.oregon.gov/HealthyEnvironments/climatechange/Documents/AdaptationPlans/adaptation-plan-jackson.pdf>

<sup>3</sup> Southern Oregon Forest Restoration Collaborative (SOFRC). 2013. The Rogue Basin Action Plan for Resilience Watersheds and Forests in a Changing Climate. Available at: <http://www.mfpp.org/wp-content/uploads/2011/04/SOFRC-Watersheds-and-Forests-Climate-Adaptation-Plan-FINAL21.pdf>

**Table 1. Health and Social Systems** recommendations for climate change “solutions” (both mitigation and adaptation).

Solution	Source	Other sectors affected
Create job programs that link together seasonal employment for more security and consistent income	EQ	
Link jobs with climate change preparation, such as restoration work and home upgrades	TRIG	
Invest in new technology and job training	EQ	
Develop a renewable energy economy with high quality jobs	EQ	Buildings and Energy
Support a sustainable and diversified economy	EQ	
Increase and strengthen efforts to improve water quality in streams and rivers	HEA	Natural Resources
Job training for low income	INFR	
City should give preference to minority-owned and women-owned businesses	INFR	
Proactively discuss equity and disadvantaged populations in all City planning processes, rather than afterwards	EQ	Buildings and Energy
Cities address the issue of equity and disadvantaged populations at the very highest levels of government	EQ	
Increase connection between equity issues and local government	EQ	
Ally different organizations - have them come together on climate change.	EQ	
City commissions need to actively recruit people with a diversity of backgrounds.	EQ	
Community planning should take a Whole Community approach – all decisions include consideration of equity and disadvantaged communities to create co-benefits	EQ	
Ensure that the Healthy Climate Bill funds some of these strategies	EQ	
Look for co-benefits and avoid conflicts among groups, sectors, mitigation/adaptation, etc.	EQ	
Have lending institutions become part of the solution	EQ	
Implement financial strategies to allow low income home owners to upgrade energy systems	EQ	Buildings and Energy
Increase resilience among low income in order to have them able to think about things like energy and climate	EQ	

change - move them out of survival mode by creating leadership positions and paying them for participation		
Vulnerable populations committee and branch of Sheriff's office	EQ	
Connect people to emergency preparedness plans and resources already available	EQ	
Create disaster registry and supplies such as "Go Stay" kits	EQ	
Develop system of cooling stations in convenient locations and public areas	EQ	Buildings and Energy
Distinguish between efforts to prepare for gradual change and efforts to prepare for emergencies.	EQ	
Change land use codes to reduce building in high risk areas (such as forest interface and flood zones)	HEA	Urban Form, Land Use, and Transportation
Expand CERT	HEA	
Expand education through FireWise	HEA	Natural Resources
Partner with churches (such as Catholic church) to provide training in health and emergency response	HEA	
Latino parent group – Jackson education district	HEA	
Create buddy system for those without family	HEA	
Increase electronic signups for notices, updates – cell phone coordinator	HEA	
Create more public spaces with AC (cooling centers)	HEA	Buildings and Energy
City should have greater emergency supply of water and food	HEA	
Map neighborhood residents so people know who needs support and resources	HEA	
Create systems of neighborhood captains	HEA	
Use ham radio to contact certain populations	HEA	
Need to have an evacuation plan for pets and livestock	HEA	Urban Form, Land Use, and Transportation
Distribute water purifiers for emergency situations	HEA	Natural Resources
Develop mutual aid districts	HEA	
Campus wide communication and control – SOU	HEA	
Invest in public transportation to make it more convenient and abundant	EQ	Urban Form, Land Use, and Transportation
Create public transportation linkages and plan for emergency situations and evacuation.	TRIG	Urban Form, Land Use, and Transportation

Create redundancy planning/backup and secondary plan	HEA	
Anticipate new health challenges related to climate change and address them proactively	HEA	
Implement the recommendations in the <i>Jackson County Climate and Health Action Plan</i>	HEA	
Update and expand vector control programs to better respond to emerging disease	TRIG	
Enhance strategies to anticipate new health service needs and ensure the most vulnerable residents get services	TRIG	
Educate people on how to evaluate air quality based on visibility	HEA	
Educate and provide people with the correct type of mask for smoke	HEA	
Provide education and information on heat impacts and how to protect yourself	HEA	
Change in work hours so people can avoid the heat	HEA	
Education on air quality and the risk of exercise	HEA	
Better air quality notification system	HEA	
Use adaptation measures to close the equality gap. Opportunity for resilience across all sectors and groups.	EQ	
Ashland's plan needs to come up with more options rather than fewer for disadvantaged populations.	EQ	
Train people with relationships in different communities (Latino communities or churches for example) to do outreach on energy, water, heat impacts, and other issues	EQ	
Ensure that the message resonates so people understand their role. Compensate people for participation. Provide opportunities for low income people to become the educators and leaders.	EQ	





**Table 2. Natural Resources, including Agriculture and Water** recommendations for climate change “solutions” (both mitigation and adaptation).

Solution	Source	Other sectors affected
<b>Terrestrial and Riparian Natural Systems</b>		
Place new renewable energy development and other development on already degraded and fragmented lands.	NR	Buildings and Energy
Protection and restoration of ecosystem structure, function, and genetic diversity to allow organisms to withstand and adapt to climate stressors.	NR, TRIG	
Protect remaining intact habitats, including old growth, roadless areas, grasslands, oak woodlands, and others.	NR, TRIG	
Protect areas that provide ecosystems services, such as water filtration, fire protection, recreation, flood abatement, pollinator habitat, and others.	TRIG	
Increase coordination and implementation of riparian renewal - reduce invasive species and increase native species.	NR	Urban Form, Land Use, and Transportation
Rehydrate the watershed by creating beaver-like structures and/or introducing beavers.	NR	Urban Form, Land Use, and Transportation
Place thinned trees (logs) touching the ground perpendicular to slope to hold moisture and create rehydration of watershed.	NR	Urban Form, Land Use, and Transportation
Forest management should be based on future conditions and increase greater structural and genetic diversity for increased resilience	TRIG	
Manage forests with longer rotation between harvest to increase carbon sequestration.	TRIG	
Enforce the City’s riparian ordinance. Retain dead trees for fish and wildlife.	NR	Urban Form, Land Use, and Transportation
Trim the vegetation on Neil Creek near the airport to ensure a low canopy cover for shade, while also meeting airport requirements.	NR	Urban Form, Land Use, and Transportation?
Plant more native plants along Tolman Creek at the golf course.	NR	
Implement a multi-decade riparian restoration effort from the headwaters down to heal the streams in time to reduce extreme damage in the future. Restored riparian vegetation will likely encourage beaver activity in lower reaches that should help the effort. This will not necessarily provide a significant benefit for stream	NR	Urban Form, Land Use, and Transportation

shading (many go dry in summer) but would be about reducing future damage.		
Conduct fire-related thinning carefully to avoid exacerbating fine sediment delivery in Ashland Creek.	NR	
Map and protect remnant spring and wetland habitats within the city limits, and advocate for their protection throughout the watershed.	NR	Urban Form, Land Use, and Transportation
Encourage planting of native trees and shrubs, which have a greater chance of surviving a changing climate compared to most ornamentals. Perhaps require a certain percent of native trees and shrubs for new development.	NR	
Combine vegetation guidance for wildfire with vegetation guidance for solar and drought.	INF	
Expand education through FireWise.	HEA	Health and Social Services
Strategic fire and ecologically appropriate fuels reduction efforts	TRIG	
Redirect responsibility for emergency services to private parties that choose to locate in high risk areas	TRIG	Urban Form, Land Use, and Transportation, Buildings and Energy
<b>Water</b>		
Develop more and innovative water conservation measures	INF	
Use bioswales, permeable pavement, and other approaches to reduce flood risk to homes	INF	Buildings and energy
Consider improvements to water use timing to align with cost (e.g. TAP more expensive)	INF	
Communicate watering times to spread out demand	INF	
Avoid over-appropriation of water (Rogue River, for example, is already over-appropriated)	TRIG	
Look at new technologies in using treated wastewater for use	INF	Buildings and energy
High water and energy prices are ok - they lead to innovation and technology, but need to protect low income residents	INF	Buildings and energy
More xeriscaping	INF	Buildings and energy
Implement WISE (piping of ditch systems)	INF	
Look into using more untreated water for landscaping applications	INF	Buildings and energy
Expand catchment	INF	Buildings and energy

Increase pervious surfaces	INF	Buildings and energy
Increase and strengthen efforts to improve water quality in streams and rivers	HEA	Health and Social Services
Modernize the hydropower facility to optimize production and move it closer to Reeder, so that water flows the entire distance between Reeder and Granite Street.	NR	Buildings and Energy
Partner with Jackson County and others to determine how to minimize fine sediment input into Emigrant Lake.	INF	
Target restoration of Upper Emigrant Watershed	INF	
Better water projections for future supply, cost, and quality	ECON	
Restore fish passage at Granite Street Dam to allow native migratory fish to use Ashland Creek up to Reeder where there is cold water habitat for winter steelhead.	NR, INF	Urban Form, Land Use, and Transportation
Utilize expert panel to review the “rule curve”/operation of Reeder Reservoir to look for improvements for supply and fish use downstream; plan for more extreme conditions.	NR	
Acquire older water rights to Ashland Creek and place as instream rights.	NR	
Investigate the Ashland Creek watershed for areas that have the potential to shed decomposed granite sediment into the creek, and reduce sediment entry.	NR	
Continue to improve passage throughout the creek, especially for juvenile fish to help them utilize this cold water source. Some sites include the weir at Caldera, Smith-Meyer-Roper diversion, and city culverts.	NR	Urban Form, Land Use, and Transportation
Screen Ashland Pond.	NR	
Support restoration of fish passage for all life stages of fish in mainstream Bear Creek leading to Ashland, and in the tributaries in/above Ashland to help give native migratory fish the best chance of surviving long term.	NR	Urban Form, Land Use, and Transportation
Identify what level of flood risk to plan for – 50 year, 100 year, 500 year?	INF	Buildings and energy, Urban Form, Land Use, and Transportation
Expand low income credits for water and sewer	INF	Health and Social Systems
Make water conservation a top priority	ECON	Buildings and energy
Look at international best practices to see what works in other places – innovation	ECON	

Water technology and reuse from Australia and other places	ECON	
Let homeowners know how they rate in their community for water use. Post the median value for water use each month on the city website so folks can track their own progress.	NR	Buildings and energy
Distribute water purifiers for emergency situations	HEA	Health and Social Services
Increase and strengthen efforts to protect water quality in streams and rivers	INF	Urban Form, Land Use, and Transportation
Manage Reeder reservoir differently to reduce downstream flows during flooding	INF	
Upgrade culverts to benefit fish – right size	INF	Urban Form, Land Use, and Transportation
Restore more Ashland creek water below Reeder reservoir	INF	
Remove water treatment plant to protect fish	INF	
City should post throughout the year what the streamflow would be in lower Ashland Creek if not for diversions (combined flow in East and West forks from gauges versus the flow at the lower Ashland Creek gauge).	NR	
Plan road crossing for larger storm events, on Ashland Creek and Bear Creek, improve fish passage	INF	Urban Form, Land Use, and Transportation
Restore stream complexity and connectivity to improve spawning areas and allow access to cooler waters	TRIG	
Restore and maintain critical landscapes such as high elevation riparian areas, floodplains, tributary junctions, north-facing streams, and stream reaches with gravel and topographic complexity.	TRIG	
Protect genetic and life history diversity of fisheries	TRIG	
Restore stream cooling in Ashland area into Bear Creek.	NR	
Increase canopy cover along streams to cool the water.	NR	Urban Form, Land Use, and Transportation
Decommission roads to reduce sedimentation in streams during large storms.	NR	Urban Form, Land Use, and Transportation
Reduce building in high risk areas (such as forest interface and flood zones)	TRIG	Buildings and Energy, Natural Resources
After floods, move development rather than reconstructing in high risk areas	TRIG	Buildings and Energy, Natural Resources
<b>Agriculture</b>		

Help farmers to support wine industry as they need to change wine varieties.	ECON	
Also for fruit growers as the crop types need to change	ECON	
Maintain existing crops as long as possible while researching new crops.	TRIG	
Expand agricultural energy and water conservation and efficiency programs	TRIG	
Improve irrigation coordination (through WISE project and other projects).	NR	Urban Form, Land Use, and Transportation
Increase water conservation (residential and agriculture) to keep water in streams.	NR	Buildings and Energy
Give food production priority for water (over marijuana and landscaping)	INF	
Support farmers in helping them conserve water	ECON	Urban Form, Land Use, and Transportation

**Table 3. Buildings and Energy** recommendations for climate change “solutions” (both mitigation and adaptation).

Solution	Source	Other sectors affected
Place new renewable energy development and other development on already degraded and fragmented lands.	NR	Natural Resources
More consistent shelter openings, including shelters from the heat	EQ	Health and Social Systems
Develop more approaches like Hope Village in Medford (tiny homes village)	EQ	Health and Social Services
Capitalize on existing funds, such as the trust fund through affordable housing division in Ashland	EQ	Health and Social Services
Provide incentives for landlords to invest in energy upgrades, air conditioning, comfort, and air quality in rental units	EQ	Health and Social Services
Expand conservation and efficiency programs to dramatically reduce energy and water use	TRIG	
Invest carbon credits in upgrades and clean energy for low income communities	EQ	Health and Social Services
Solar energy production on reservoirs	INF	Natural Resources
Increase distributed energy to provide backups during supply problems and to stabilize costs.	TRIG	
Strengthen codes and standards, especially for multi-family housing	INF	Health and Social Services
Get solar (5-7MW) on line faster and electric cars on the road	INF	
New roofs aligned for solar energy	INF	
Assess ALL actions and plans for KWH, cost, and carbon saved	INF	Business and Economics
More community solar on schools, storage units, etc.	INF	
Hire City staff to install solar panels	INF	Business and Economics
Address equity through electricity rate structure	INF	Health and Social Services
Use funds from Healthy Climate Bill to retrofit low income homes with renewable energy and conservation	INF	
AMI metering	NR	
Update building codes to make buildings more efficient	ECON	
More efficient cooling systems – need to get them into peoples’ homes ASAP	ECON	
Training and education in conservation	ECON	



Outreach – expand current efforts – especially to new audiences	ECON	
Increase renewable energy installation, especially for low income homes	ECON	Health and Social Services
Diversify energy	ECON	
Regulate businesses to include climate change consideration – both carrot and stick	ECON	
Share information and support on low cost things people can do – more outreach – to save water and energy	ECON	
Place new renewable energy development and other development on already degraded and fragmented lands.	NR	Natural Resources
Use bioswales, permeable pavement, and other approaches to reduce flood risk to homes	INF	Natural Resources
Look at new technologies in using treated wastewater for use	INF	Natural Resources
High water and energy prices are ok - they lead to innovation and technology, but need to protect low income residents	INF	Natural Resources
More xeriscaping	INF	Natural Resources
Look into using more untreated water for landscaping applications	INF	Natural Resources
Expand catchment	INF	Natural Resources
Increase pervious surfaces	INF	Natural Resources
Modernize the hydropower facility to optimize production and move it closer to Reeder, so that water flows the entire distance between Reeder and Granite Street.	NR	Natural Resources
Identify what level of flood risk to plan for – 50 year, 100 year, 500 year?	INF	Natural Resources
Make water conservation a top priority	ECON	Natural Resources
Let homeowners know how they rate in their community for water use. Post the median value for water use each month on the city website so folks can track their own progress.	NR	Natural Resources
Increase water conservation (residential and agriculture) to keep water in streams.	NR	Natural Resources
Reduce building in high risk areas (such as forest interface and flood zones)	TRIG	Urban Form, Land Use, and Transportation, Natural Resources

After floods, move development rather than reconstructing in high risk areas	TRIG	Urban Form, Land Use, and Transportation, Natural Resources
New homes in high risk areas should pay for protection	TRIG	Urban Form, Land Use, and Transportation
Developers need information and guidance on the conditions to expect in the future as well as how to plan for those and build to new standards	INF	Urban Form, Land Use, and Transportation
Plant more trees for shade and air quality	ECON	Urban Form, Land Use, and Transportation
Proactively discuss equity and disadvantaged populations in all City planning processes, rather than afterwards	EQ	Health and Social Systems
Implement financial strategies to allow low income home owners to upgrade energy systems	EQ	Health and Social Systems
Develop system of cooling stations in convenient locations and public areas	EQ	Health and Social Systems
Develop a renewable energy economy with high quality jobs	EQ	Health and Social Systems
Create more public spaces with AC (cooling centers)	HEA	Health and Social Systems

DRAFT

**Table 4. Urban Form, Land Use, and Transportation** recommendations for climate change “solutions” (both mitigation and adaptation).

<b>Solution</b>	<b>Source</b>	<b>Other sectors affected</b>
Reduce building in high risk areas (such as forest interface and flood zones)	TRIG	Buildings and Energy, Natural Resources
After floods, move development rather than reconstructing in high risk areas	TRIG	Buildings and Energy, Natural Resources
New homes in high risk areas should pay for protection	TRIG	Buildings and Energy, Natural Resources
Support more local food production to reduce distribution and emissions associated with consumption	INF	Natural Resources
Improve options for alternative transportation	INF	
Expand RVTD	INF	
Create public transportation linkages and plan for emergency situations and evacuation.	TRIG	Health and Social Services
Expand road upgrading and maintenance such as larger culverts and regular culvert cleanouts to reduce washouts during flooding.	TRIG	
High school programs to support electric cars, renewable energy, etc.	INF	
Electric buses for tourists and residents	INF	
Developers need information and guidance on the conditions to expect in the future as well as how to plan for those and build to new standards.	INF	Buildings and Energy
Make school buses available in summer for other purposes.	EQ	
Closely monitor effectiveness of fire activities to determine best use of funds for protecting lives and structures.	NR	
Choose robust plants and trees, climate adapted for future conditions.	ECON	
Plant more trees for shade and air quality	ECON	Buildings and Energy
Natural pest predators to reduce the need for pesticides, herbicides	ECON	Health and Social Services, Natural Resources
Include climate change projections and information in EVERY planning process – plan for future range of variability and future conditions	INFR	
Increase regional coordination in planning	INFR	

Increase coordination and implementation of riparian renewal - reduce invasive species and increase native species.	NR	Natural Resources
Rehydrate the watershed by creating beaver-like structures and/or introducing beavers.	NR	Natural Resources
Place thinned trees (logs) touching the ground perpendicular to slope to hold moisture and create rehydration of watershed.	NR	Natural Resources
Enforce the City's riparian ordinance. Retain dead trees for fish and wildlife.	NR	Natural Resources
Trim the vegetation on Neil Creek near the airport to ensure a low canopy cover for shade, while also meeting airport requirements.	NR	Natural Resources
Implement a multi-decade riparian restoration effort from the headwaters down to heal the streams in time to reduce extreme damage in the future. Restored riparian vegetation will likely encourage beaver activity in lower reaches that should help the effort. This will not necessarily provide a significant benefit for stream shading (many go dry in summer) but would be about reducing future damage.	NR	Natural Resources
Map and protect remnant spring and wetland habitats within the city limits, and advocate for their protection throughout the watershed	NR	Natural Resources
Restore fish passage at Granite Street Dam to allow native migratory fish to use Ashland Creek up to Reeder where there is cold water habitat for winter steelhead.	NR, INF	Natural Resources
Continue to improve passage throughout the creek, especially for juvenile fish to help them utilize this cold water source. Some sites include the weir at Caldera, Smith-Meyer-Roper diversion, and city culverts.	NR	Natural Resources
Support restoration of fish passage for all life stages of fish in mainstream Bear Creek leading to Ashland, and in the tributaries in/above Ashland to help give native migratory fish the best chance of surviving long term.	NR	Natural Resources
Identify what level of flood risk to plan for – 50 year, 100 year, 500 year?	INF	Buildings and energy, Natural Resources
Increase and strengthen efforts to protect water quality in streams and rivers	INF	Natural Resources
Upgrade culverts to benefit fish – right size	INF	Natural Resources
Plan road crossing for larger storm events, on Ashland Creek and Bear Creek, improve fish passage	INF	Natural Resources

Improve irrigation coordination (through WISE project and other projects).	NR	Natural Resources
Increase canopy cover along streams to cool the water.	NR	Natural Resources
Decommission roads to reduce sedimentation in streams during large storms.	NR	Natural Resources
Support farmers in helping them conserve water	ECON	Natural Resources
Reduce building in high risk areas (such as forest interface and flood zones)	TRIG	Buildings and Energy, Natural Resources
After floods, move development rather than reconstructing in high risk areas	TRIG	Buildings and Energy, Natural Resources
New homes in high risk areas should pay for protection	TRIG	Buildings and Energy
Developers need information and guidance on the conditions to expect in the future as well as how to plan for those and build to new standards	INF	Buildings and Energy
Plant more trees for shade and air quality	ECON	Buildings and Energy
Invest in public transportation to make it more convenient and abundant	EQ	Health and Social Systems
Change land use codes to reduce building in high risk areas (such as forest interface and flood zones)	HEA	Health and Social Systems
Need to have an evacuation plan for pets and livestock	HEA	Health and Social Systems

**Table 5. Consumption and Materials Management** recommendations for climate change “solutions” (both mitigation and adaptation).

Solution	Source	Other sectors affected
Install water bottle fill stations in City buildings	City	

**Table 6. OTHER** recommendations for climate change “solutions” (both mitigation and adaptation).

Solution	Source	Other sectors affected
Need more information on what the changes mean on the ground – more specific estimates of risk	ECON	
Show people clearly what the future looks like, where we are headed	ECON	
Develop specific estimates of risk	ECON	
Calculate business thresholds and impacts	ECON	
Expand tourist season to include spring and winter as summer becomes hotter and longer	TRIG	
Incorporate climate change preparedness consideration in ALL current and future public and private plans and policies	TRIG	
Utilize scenario planning approaches to dealing with uncertainty	TRIG	
Expand planning to regional and Basin scale instead of forest, county, or city scale and constantly coordinate and find ways to create co-benefits	TRIG	
Expand participation on planning and decision-making teams to include people representing different stakeholders and other regions that are likely to also be affected by climate change	TRIG	
Improve data gathering and monitoring to generate timely information on rate, trajectory, and consequences of climate change.	TRIG	
Increase public understanding of the consequences of climate change and preparedness options as well as efficacy of action.	TRIG	



## CEAP Ad-Hoc Committee Needs to Project Completion

Updated 9/1/2016

Event	Date	Activities/Objectives	Approx. Time Needed	Inputs	Outputs
CEAP Committee Meeting	9/7	<ul style="list-style-type: none"> <li>Present vision for plan and open house (Jeff &amp; Jill Simmons)</li> <li>Refine strategies and descriptions for open house</li> </ul>	1.5 hrs	<ul style="list-style-type: none"> <li>Plan vision</li> <li>Open house plan</li> <li>Initially prioritized strategies/actions with comments</li> </ul>	<ul style="list-style-type: none"> <li>Strategy/action shortlist w/ notes</li> <li>Open house comments/suggestions</li> </ul>
<i>Open house preparation; higher-level strategy development</i>					
<b>Public Open House #2</b>	9/25	<ul style="list-style-type: none"> <li>Solicit public comment on strategies/actions</li> </ul>	2.5 hrs	<ul style="list-style-type: none"> <li>Draft strategies/action list</li> <li>Mitigation target options</li> </ul>	<ul style="list-style-type: none"> <li>Public comment on strategies/actions and mitigation target</li> </ul>
City Staff/CEAP Committee Workshops	9/26	<ul style="list-style-type: none"> <li>Summarize initial public comment</li> <li>Discuss higher-level strategy for CEAP</li> <li>Link strategies/actions to City implementation functions</li> <li>Discuss questions for stakeholder interviews</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Initial public input summary</li> <li>Draft strategy concept from consultant team</li> <li>Discussion guide for strategy/action review</li> <li>Draft stakeholder interview guide</li> </ul>	<ul style="list-style-type: none"> <li>Comments on higher-level strategy</li> <li>Strategies/actions linked to City implementation functions</li> <li>Final stakeholder interview guide</li> </ul>
<i>Stakeholder interviews (9/28 – 10/5); public input summary development; prioritized list of strategies with comments and links to City functions; draft implementation plan</i>					
CEAP Committee Meeting	10/5	<ul style="list-style-type: none"> <li>Review public input (stakeholder interviews and open house #2)</li> <li>Review outcomes from workshop #2</li> <li>Discuss implementation plan</li> </ul>	1.5 hrs	<ul style="list-style-type: none"> <li>Public input summary</li> <li>Workshop #2 outcomes summary</li> <li>Draft implementation plan</li> </ul>	<ul style="list-style-type: none"> <li>Comments on revised higher-level strategy &amp; impl. plan</li> <li>Responses to public input and workshop #2 outcomes</li> </ul>
<i>Revise higher-level strategy and implementation plan; initial strategies/actions evaluation</i>					
CEAP Committee Meeting	10/19	<ul style="list-style-type: none"> <li>Strategy/action evaluation review</li> <li>Identification of top-priority cost-benefit analysis (CBA) needs</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Framework for strategy/action evaluation</li> </ul>	<ul style="list-style-type: none"> <li>Evaluated strategies/actions</li> <li>Identification of top-priority actions for CBA</li> </ul>
<i>Cost-benefit analysis; draft CEAP development; open house plan development</i>					
CEAP Committee Meeting	11/2	<ul style="list-style-type: none"> <li>Discuss overarching mitigation target</li> <li>Initial review of CEAP draft #1</li> <li>Review open house plan</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Target comparison with elaboration on consumption calculations</li> <li>Draft CEAP #1</li> </ul>	<ul style="list-style-type: none"> <li>Recommended mitigation target</li> <li>Comments on draft CEAP #1</li> </ul>
<i>Revised draft CEAP</i>					
City Staff/CEAP Committee Workshop #3	11/16	<ul style="list-style-type: none"> <li>Review draft CEAP #2</li> <li>Review implementation plan</li> </ul>	1.5 hrs	<ul style="list-style-type: none"> <li>Draft CEAP #2</li> <li>Draft implementation/M&amp;E strategy</li> </ul>	<ul style="list-style-type: none"> <li>Comments on draft CEAP #2</li> <li>Comments on open house plan</li> </ul>
<i>Revise CEAP and implementation/M&amp;E strategy</i>					

Event	Date	Activities/Objectives	Approx. Time Needed	Inputs	Outputs
<b>Public Open House #3</b>	12/7	<ul style="list-style-type: none"> <li>Solicit public comment on draft CEAP #3</li> </ul>	2.5 hrs	<ul style="list-style-type: none"> <li>Draft CEAP #3</li> </ul>	<ul style="list-style-type: none"> <li>Public comment on draft CEAP #3</li> </ul>
<i>Public input summary document development</i>					
<i>CEAP Committee Meeting</i>	12/14	<ul style="list-style-type: none"> <li>Review public input</li> <li>Identify revisions to CEAP draft #3</li> </ul>	1.5 hrs	<ul style="list-style-type: none"> <li>Public input summary</li> </ul>	<ul style="list-style-type: none"> <li>List of revisions to CEAP #3</li> </ul>
<i>Revise draft CEAP (12/14 to 12/23); Solicit City staff comments on revised CEAP (12/23 to 1/11); Incorporate City staff comments into CEAP (1/11 to 1/18)</i>					
<i>CEAP Committee Meeting</i>	1/18	<ul style="list-style-type: none"> <li>Review CEAP draft #4</li> <li>Prepare for City Council meeting</li> </ul>	1 hr	<ul style="list-style-type: none"> <li>Revised CEAP #4</li> <li>Draft City Council presentation</li> </ul>	<ul style="list-style-type: none"> <li>Final revisions to CEAP</li> <li>Draft City Council presentation</li> </ul>
<i>CEAP Committee Meeting</i>	2/1	<ul style="list-style-type: none"> <li>Finalize CEAP</li> <li>Finalize City Council meeting materials</li> </ul>	1 hr	<ul style="list-style-type: none"> <li>Final CEAP</li> <li>Finalized City Council presentation</li> </ul>	<ul style="list-style-type: none"> <li>Final CEAP</li> <li>Final City Council presentation</li> </ul>
<i>City Council meeting</i>	2/7	<ul style="list-style-type: none"> <li>Present final CEAP</li> </ul>	1 hr	<ul style="list-style-type: none"> <li>Final CEAP</li> </ul>	<ul style="list-style-type: none"> <li>Presentation/potential adoption of plan</li> </ul>

*\*italicized meetings are new.*

Focus Area	#	Strategy	#	#	Action	Impact	Scope	Category	Comments, Notes, and Considerations	Rating	Lead(s)	Other Stakeholders	Timeframe
Consumption and Waste	NS-3	Expand community recycling, composting, and reuse.	1	NS-3.1	Examine options for expanding commercial and residential composting, including the feasibility of establishing a permitted facility in the area that can compost or anaerobically digest organic materials and food waste.	Mitigation	Community	R&D	Part of Council approved plan from Recycle Center Committee work in 2014-15.	A+			
Consumption and Waste	HS-1	Expand community recycling, composting, and reuse.	1	HS-1.1	Install water bottle filling stations at City facilities.	Both	Municipal	Capital/ infrastructure		A+			
Natural Systems	BE-3	Manage and conserve community water resources.	1	BE-3.1	For all relevant building permits, evaluate and implement if feasible new technologies that result in wastewater flow reductions.	Mitigation	Community	Policy/ Regulation	(e.g., composting toilets, greywater reuse, on-site biological wastewater treatment systems).	A+			
Natural Systems	BE-3	Manage and conserve community water resources.	2	BE-3.2	Promote water conservation through continued investment in water conservation programs and associated outreach and communications to residents and businesses.	Both	Community	Outreach/ education	Includes the following actions: 1) Explore feasibility and benefits of installation of "smart" water meters. (A) 2) Consider improvements to water use timing to align with costs (eg. TAP higher cost than Reeder water). (B) 3) Better reporting for homeowners to track own water use. (A)	A+			
Natural Systems	HS-2	Promote ecosystem resilience.	1	HS-2.1	Implement best available science in fire management and planning in the watershed and along the urban boundary interface to manage ecosystem health, community safety, and carbon storage.	Adaptation	Community	Operations	Note to committee: Will need to think about the role of the City here. If we are talking about lands the City does not own or manage, how can City influence these actions?  Includes the following actions: - Utilize controlled burning in spring and fall when smoke impacts on public are best managed. (A+) - Manage thinning to reduce fine sediment delivery into streams. (A) - Change zoning to reduce development in high fire risk areas. (A)	A+			
Natural Systems	HS-2	Promote ecosystem resilience.	2	HS-2.2	Consider climate change projections in City forest and ecosystem management, including restoring to the future, not past conditions.	Adaptation	Municipal	Planning	(e.g., changes in vegetation types, forest fire driver shift from fuels to climate).  These should be included in ALL management, not just fire management.	A+			
Natural Systems	HS-2	Promote ecosystem resilience.	3	HS-2.3	Promote habitat restoration and conservation through improved public lands management/ownership and promotion of conservation easements and private open space to maintain and restore habitat.	Both	Community	Planning		A+			
Natural Systems	BE-2	Promote ecosystem resilience.	1	BE-2.1	Update the City's approved street tree guide and landscape design standards for new development for tree species appropriate for a future local climate.	Both	Municipal	Policy/ Regulation		A+			
Natural Systems	CC-3	Conserve water use within City operations.	1	CC-3.1	Implement efficiency recommendations from the City facilities water audit.	Both	Municipal	Capital/ infrastructure		A+			
Natural Systems	BE-3	Manage and conserve community water resources.	1	BE-3.1	Identify areas for conducting restoration to hold water upstream and reduce flood risk (e.g., Ashland Creek, Bear Creek).	Adaptation	Community	Planning	1. Reduce invasive species and increase native species in riparian areas 2. Create beaver-like structures or reintroduce beavers 3. Rehydrate slopes by laying thinned trees perpendicular to ground to hold moisture 4. Other riparian and watershed restoration measures	A+			
Cross-Cutting Strategies	CW-1	Educate and empower the public.	1	CW-1.1	Implement utility level smart grid technologies that empower and inform the customer energy decision making process.	Both	Community	Capital/ infrastructure	As a component of a smart grid, smart meters can provide the basis for personal and interactive consumption management – including energy efficiency and demand response. Smart grid allows more efficient load and power management (identifies and reduces system losses), and creates an environment where alternative distributed resources (e.g. solar) can be easily integrated and managed for efficient distribution system operations.	A			
Cross-Cutting Strategies	NS-1	Educate and empower the public.	1	NS-1.1	Communicate best practices and priorities between management and City staff.	Both	Municipal	Outreach/ education		A			
Buildings and Energy	BE-1	Support cleaner energy sources and improved demand management	1	BE-1.1	Expand current net meter resolution to include and incorporate virtual net metering (includes ability to facilitate private/non-profit community solar).	Mitigation	Community	Capital/ infrastructure	E: Highly effective. Money comes from people investing in it. C: Most people will make money in doing so, creates jobs, good for local economy Other: Use simple language; increase support for community solar	A			

Buildings and Energy	BE-1	Support cleaner energy sources and improved demand management	2	BE-1.2	Explore Implement a holistic energy approach that balances energy efficiency, demand management, and renewable energy.	Mitigation	Community	Planning	<p>As part of this:</p> <p>1) Implement utility systems that provide customers the ability to make real time usage and demand response decisions.</p> <p>2) Expand and prioritize energy conservation programs for rental housing. Support zero net energy apartments for low income renters that have better air quality and no utility bills. (B rating)</p> <p>3) Introduce net zero building incentives.</p> <p>4) Ensure electric and water rates are designed and implemented to encourage and reward efficiency and conservation.</p> <p>1) E: Highly effective in reducing energy use at peak demand times (<a href="http://www.sciencedirect.com/science/article/pii/S0142061515002379">http://www.sciencedirect.com/science/article/pii/S0142061515002379</a>) Other: Can offsets for installed renewable energy be sold as offsets since we are not using BPA for our power as much? Need smart meters to charge more at high demand times, giving them guidance on when and how to use appliances. LINK "Most recent scenarios (GEA 2012) show that state-of-the-art energy-efficient renovations and new buildings could result in worldwide final energy demand savings for heating and cooling energy use of 46% in 2050 compared to 2005 or 60% of the energy consumption expected in 2050...."</p> <p>2) E: Finding effective and fair incentive programs might also include policy/regulations and rebates with pre agreements to pass on savings to both the renters and the owners. C: Everyone wins, the renters, the owners, and the planet. Other: Considering that rental housing is 50% of all housing in Ashland (7% of all building energy consumption this is no small group to work with).</p> <p>4) Need to have tiered rates to make this effective.</p>	A			
Buildings and Energy	BE-1	Support cleaner energy sources and improved demand management	3	BE-1.3	Evaluate the use of power purchase agreements (PPAs) in addition to or in lieu of upfront cash incentives for solar installations.	Mitigation	Community	R&D	<p>E: Highly effective. The number one way that solar panels can be installed.</p> <p>C: People get solar on their houses for a reduced per KW price, After 20 years you have the option to buy/deeded solar panels</p> <p>Other: Be aware of the potential downsides of PPAs if the providers (<a href="https://www.quora.com/What-are-the-pros-and-cons-of-a-power-purchase-agreement-PPA">https://www.quora.com/What-are-the-pros-and-cons-of-a-power-purchase-agreement-PPA</a>) to pros/cons and what to look for</p>	A			
Buildings and Energy	BE-1	Support cleaner energy sources and improved demand management	4	BE-1.4	Complete currently underway City facilities solar assessments and include future solar installations on City facilities in CIP budgets.	Both	Municipal	Capital/ infrastructure	<p>Would contribute to meeting annual energy master plan target or separate City solar installation goal/target.</p> <p>In many areas solar systems are considered consumables; they have a lifespan. We should ensure that we're planning for replacement of what we already have in addition to future installations.</p> <p>E: This would move us closer to local clean renewable energy C: This would be an example for the rest of the community to do the same. Other: Consider PPAs to put solar on city buildings. This is necessary for the city to become carbon neutral by 2030. No upfront costs to City to do this.</p>	A			
Buildings and Energy	BE-1	Support cleaner energy sources and improved demand management	5	BE-1.5	Utilize available vacant land, roofs, and parking lots for renewable energy projects.	Both	Community	Capital/ infrastructure	<p>This strategy could be in direct conflict with the goal to "Reduce community vehicle miles traveled" if residentially and commercially zoned lands is consumed for renewable energy projects, thereby displacing the future growth to areas further from the urban center.</p> <p>Public land? Parks? Can we cut down trees?</p> <p>E: There are many private and city owned parking lots that could be used this way. Could reduce UV to global warming heating by a factor equal to the efficiency of the solar panels themselves. C: Could be used strategically to provide shade over parking lots, reducing the amount of heat that cars absorb and need to be cooled using fossil fuel, transform UV light to usable energy and reduce the 95% UV to global warming heating factor of asphalt (<a href="http://mb-soft.com/public3/asphalt.html">http://mb-soft.com/public3/asphalt.html</a>) Other:</p>	A			

Buildings and Energy	BE-1	Support cleaner energy sources and improved demand management	6	BE-1.6	Develop an energy master plan.	Both	Municipal	Planning	<p>Plan would do the following:</p> <ul style="list-style-type: none"> <li>- Establishes an annual target for energy efficiency savings from City programs (two million kWh saved annually).</li> <li>- Evaluates the feasibility of alternative energy solutions such as geothermal and district energy.</li> <li>- Establishes a policy for energy efficiency program funding levels that relates to annual revenue in the Electric Fund.</li> <li>- Evaluates the cost effective and the maximum operationally optimum ratio of solar power generation within the City's distribution grid.</li> <li>- Establishes a long-term goal and an annual target for installation of solar PV within the City's distribution grid.</li> <li>- Establishes a policy for renewable energy programs (incentives and acquisition) that relates to annual revenue in the Electric Fund.</li> <li>- Establishes demand management targets and accompanying infrastructure, programs and initiatives to meet target, both in combination with energy efficiency or as a stand-alone target.</li> <li>- Establishes a long-term strategy for wholesale power acquisition, including policy direction for a local renewable portfolio standard. The strategy shall include risk assessment of the power to be acquired as well as comparative financial analysis of current and forecasted pricing of the different energy sources and providers, including local generation of utility level solar power.</li> <li>- Establishes a policy and implementation plan for deployment of smart meters as a tool to accomplish demand management and energy efficiency targets. Policy research shall also evaluate the use of time-of-use rates as a demand management and energy efficiency tool.</li> <li>- Move away from fossil fuel energy (specifically natural gas) to clean renewable energy.</li> <li>- Include 1) evaluation of climate change impacts on electricity resources and future energy demands, 2) opportunities to improved reliability of the city's grid, and 3) assessment of the capacity of power generators to keep pace with increased cooling demands.</li> </ul> <p>The 2010-11 Renewable Energy Assessment evaluated non-solar renewable energy potential and found that the region has limited availability.</p> <p>F-</p>	A				
Buildings and Energy	BE-3	Support cleaner energy sources and improved demand management	1	BE-3.1	Install solar in Ashland and sell the electrons (not used from BPA) as offsets to other communities.	Both	Community	Capital/ infrastructure	<p>Clarifying question to committee: Who would install solar? The City? Or the community? If the community, then how would the City influence the community action?</p> <p>E: This could be highly effective in providing \$\$ to Ashland/Community to install solar.</p> <p>C: Everyone wins</p> <p>Other: "A carbon credit, or carbon offset, is a financial unit of measurement that represents the removal of one tonne of carbon dioxide equivalent (tCO2e) from the atmosphere". If we sell a carbon credit for not using BPA power, then someone who uses Fossil Fuel based sources for their power can then buy cleaner power from BPA.</p>	A				
Buildings and Energy	BE-4	Encourage increased building energy efficiency.	1	BE-4.1	Evaluate re-starting the energy and green building challenges.	Mitigation	Community	Outreach/ education	<p>Perhaps with a focus on net zero energy?</p> <p>E:</p> <p>C:</p> <p>Other: Put emphasis on new construction toward net zero using density bonus' as incentives.</p>	A				
Buildings and Energy	TL-4	Encourage increased building energy efficiency.	1	TL-4.1	Introduce minimum efficiency standards for the affordable housing program.	Mitigation	Community	Policy/ Regulation	<p>Push for net zero energy?</p> <p>E:</p> <p>C:</p> <p>Other: This is for new construction and should be net zero ready. Consider Energy Performance Contract like mechanisms (HUD example: <a href="http://portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/programs/ph/phecc/eperformance">http://portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/programs/ph/phecc/eperformance</a>).</p>	A				
Buildings and Energy	TL-5	Encourage increased building energy efficiency.	1	TL-5.1	Evaluate and pilot a program that would pay for actual energy savings over time instead of providing an up-front payment for projected/modeled savings.	Mitigation	Community	R&D	<p>This is a good idea and one that BPA is looking at rolling out. It is currently available as a custom project. Typically, the work required to do this means that it only happens with a pretty large customer. If we do something other than the BPA programs, it comes out of City funds.</p> <p>E:</p> <p>C:</p> <p>Other: Need to have plain language to describe how this would work. Best way is to split the savings between the provider of services and the owner (50/50)? For the City of Ashland: Boulder County Example: "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." (<a href="https://bouldercolorado.gov/public-works/energy-efficiency-upgrades-at-city-facilities-energy-performance-contract">https://bouldercolorado.gov/public-works/energy-efficiency-upgrades-at-city-facilities-energy-performance-contract</a>)</p>	A				

Buildings and Energy	CW-3	Maximize efficiency of City buildings, facilities, and other energy-intensive equipment and operations.	1	CW-3.1	Explore potential energy efficiency upgrades at City facilities using long-term Return on Investment (ROI) and “triple bottom-line” (TBL) criteria provided in the 2013 Facilities Energy Audit, and based on outcomes from the TBL facility assessment, develop a specific action plan to prioritize projects and integrate into biennial budget for City Facilities CIP and Maintenance planning.	Mitigation	Municipal	Planning	The 2013 Facilities Energy Audit compares building performance on a per-square-foot basis to buildings serving a similar function within City operations and in peer communities. This action would include increasing the efficiency of data centers and use of virtual servers, and prioritizing climate change and GHG mitigation opportunities in the evaluation and decision making regarding the re-construction, replacement or new construction of City Hall.  E: C: Other: Tie to BE 1.7 (Energy Master Plan)	A			
Buildings and Energy	CW-4	Maximize efficiency of City buildings, facilities, and other energy-intensive equipment and operations.	1	CW-4.1	Pursue LEED or ENERGY STAR certification for existing and new City buildings and adopt a City policy to require that City facilities operate at optimal performance levels, including adopting the LEED EB rating system as a tool to guide operation, management, and upgrade of existing building inventory.	Mitigation	Municipal	Policy/Regulation	For example, require ENERGY STAR score of 85 or greater.  Would require LEED certified inspectors.  E: Stands out as an example to the community of good government practices and contributions to sustainability practices. C: Other:	A			
Buildings and Energy	CW-4	Maximize efficiency of City buildings, facilities, and other energy-intensive equipment and operations.	2	CW-4.2	Establish a formal purchasing policy that requires evaluation of products using the Electronic Product Environmental Assessment Tool (EPEAT).	Mitigation	Municipal	Policy/Regulation	The Electronic Product Environmental Assessment Tool (EPEAT) is a method for purchasers (governments, institutions, consumers, etc.) to evaluate the effect of a product on the environment.  E: A no brainer C: Environmental benefits abound Other:	A			
Transportation and Land Use	NS-2	Make streets and development more bike- and pedestrian-friendly.	1	NS-2.1	Implement the following actions in the Transportation System Plan: 1) installation of bicycle intersection safety improvements on heavily traveled bicycle corridors, such as by building bike lanes that are physically separated from traffic; 2) increased bike lane infrastructure (e.g., bike lane downtown); and 3) expansion of on-street bicycle racks and bike shelters, and facilitate provision of off-street bicycle parking and bike sharing.	Mitigation	Community	Capital/infrastructure	The TSP (Transportation System Plan) and Downtown Parking and Circulation committee work will be going to Council this fall.  Note that making these capital improvements may not actually increase bicycle use.	A			
Transportation and Land Use	HS-2	Support better public transit and ridesharing.	1	HS-2.1	Work with RVTD to promote expanded and more climate-friendly transit, including reduced downtown congestion, introduction of diesel-electric hybrid buses and/or oxidation catalyst retrofits, electronic real-time bus schedule information, and off-board payment options.	Mitigation	Community	Planning	Note that the City would not provide the infrastructure, RVTD would.	A			
Transportation and Land Use	BE-5	Support more efficient vehicles.	1	BE-5.1	Introduce land use code changes to require EV charging infrastructure in all multi-family and commercial developments.	Mitigation	Community	Policy/Regulation		A			
Transportation and Land Use	CW-1	Increase efficiency of City fleet and commuting.	1	CW-1.1	Improve facilities for biking at City facilities, including showers, lockers, and covered/secured bike parking.	Mitigation	Municipal	Capital/infrastructure		A			
Transportation and Land Use	CW-2	Increase efficiency of City fleet and commuting.	1	CW-2.1	Use the City fleet audit to set policy and targets for conversion of vehicles to higher efficiency (EV, clean diesel, etc), vehicle sharing across departments, and out-of-town vehicle use.	Mitigation	Municipal	Planning	Would follow the fleet audit action.	A			
Transportation and Land Use	CW-2	Increase efficiency of City fleet and commuting.	2	CW-2.2	Provide stronger incentives for sustainable City employee commuting such as walking, biking, public transportation, carpooling, or teleworking.	Mitigation	Municipal	Pricing/incentive		A			
Transportation and Land Use	CW-2	Increase efficiency of City fleet and commuting.	3	CW-2.3	Conduct a City fleet audit to identify existing and future fleet needs.	Mitigation	Municipal	R&D	Needs, policies, and targets would be based on vehicle classification, use needs, and total life cycle costing. Audit would also identify and set policy for vehicle sharing across departments and out-of-town vehicle use.	A			
Transportation and Land Use	CW-2	Support more climate-friendly development and land use.	3	CW-2.3	Revise community development plans to more strongly favor walkable neighborhoods and infill density both in existing built environment and in new development.	Mitigation	Community	Planning	May be in conflict with open space preservation and restoration.	A			
Consumption and Waste	CW-4	Expand community recycling, composting, and reuse.	1	CW-4.1	Conduct outreach and education, especially targeted at the multi-family sector, to increase recycling compliance and reduce consumption.	Mitigation	Community	Outreach/education	Tactics could include: - Emphasizing that reducing consumption should be first priority, followed by reuse, upcycling, repair, and choosing sustainable goods built to last. - Demonstrating how consumption habits contribute to carbon footprints, to encourage people to rethink the ideas of growth and economy. - Educating about local food growing, preparation, preservation skills, especially at schools.	A			



Consumption and Waste	HS-3	Reduce food waste.	1	HS-3.1	Provide a best practices guide to support commercial kitchens in finding efficiencies and reducing waste, and help households and businesses reduce food waste through better planning, purchasing, storage and preparation.	Both	Community	Outreach/ education	A				
Consumption and Waste	HS-3	Reduce food waste.	2	HS-3.2	Seek grant funds to launch a public campaign to encourage food waste reduction by residents, such as EPA's Food: Too Good to Waste program.	Both	Community	Outreach/ education	A				
Consumption and Waste	HS-4	Reduce food waste.	1	HS-4.1	Support efforts to recycle food waste for fuel/energy, including cooking oil and locally produced biodiesel and biofuels.	Both	Community		Efforts by whom? How to support?	A			
Consumption and Waste	HS-4	Improve sustainability of City purchases and procurement.	2	HS-4.2	Introduce City environmentally preferable purchasing (EPP) guidelines for City procurement, including products that increase energy efficiency and reduce waste.	Mitigation	Municipal	Policy/ Regulation	Include in this creating a standardized EPP language for vendor contracts, including green specifications, owner's project requirements, and contractor materials, and include in RFP language.	A			
Consumption and Waste	BE-1	Improve sustainability of City purchases and procurement.	1	BE-1.1	Conduct a feasibility study at the wastewater treatment facility to determine the system ability to co-digest food waste and biosolids to generate electricity.	Mitigation	Municipal	R&D	At a minimum, anaerobic digestion could convert sludge to quality soil and eliminate sludge transport and dumping at Dry Creek Landfill (cost savings to the City and reduced GHG for waste and fuel/transport).	A			
Natural Systems	BE-6	Manage and conserve community water resources.	1	BE-6.1	Require water-efficiency technologies on irrigation systems during the permitting process.	Both	Community	Policy/ Regulation	Need to evaluate the legality of mandating versus offering incentives.	A			
Natural Systems	BE-6	Manage and conserve community water resources.	2	BE-6.2	Consider rate structures or incentives for customers to encourage water conservation. For example, restructure water rates to reduce non-essential water consumption.	Both	Community	Pricing/ incentive	Strategies include increasing block rates and implementing seasonal rates.	A			
Natural Systems	CW-4	Manage and conserve community water resources.	1	CW-4.1	Examine and implement international best practices and innovation around water conservation and management.	Both	Municipal	R&D		A			
Natural Systems	HS-2	Promote ecosystem resilience.	1	HS-2.1	Manage forests to retain biodiversity, ecosystem function, and ecosystem services. Protect structural and genetic diversity in forests for greater resilience.	Both	Municipal	Operations	Note to committee/City: Again, I assume we are talking about City-managed forests here? Also, I wonder how these actions could be weaved into the Ashland Forest Plan?  Ecosystem services include water filtration, flood abatement, pollination, recreation, and fire protection. Actions would include: - Hire an Urban Forester ecologist and tree maintenance staff to oversee public forest stewardship and coordinate community volunteers. (C) (Likely higher priority needs for hiring staff; wording should separate urban areas from watershed forest management. This has come up several times over the years. We have a City forester (on contract) and a Forest Division Fire Chief who is responsible for all of our watershed work. The urban forester work has been partially done by a staff arborist in the Parks Dept, but we have never had a true urban forester. Consider first developing an urban forest master plan before hiring staff.) - Evaluate the carbon sequestration potential of Ashland's watershed. (A) - Consider climate change projections in City forest and ecosystem management, including restoring to the future, not past conditions. (A) - Protect structural and genetic diversity in forests for greater resilience. (A) - Identify areas for conducting restoration to hold water upstream and reduce flood risk (e.g., Ashland Creek, Bear Creek). (A+) (Includes 1) Reduce invasive species and increase native species in riparian areas, 2) Create beaver-like structures or reintroduce beavers, 3) Rehydrate slopes by laying thinned trees perpendicular to ground to hold moisture, and 4) Other riparian and watershed measures).	A			
Natural Systems	BE-2	Promote ecosystem resilience.	1	BE-2.1	Protect remaining intact habitats, including old growth, grasslands, roadless areas, oak woodlands, and others.	Both		Operations	Note to committee: Are you thinking this would be through City land acquisition? Or improved management? Or working with the community? Or all of the above?  Includes the following: 1) Protect intact natural areas and install renewable energy on already compromised spaces. (A) 2) Update and maintain natural features inventories so that the most climate-sensitive or significant natural resources can be tracked. (B) (For example, stormwater resources, riparian buffers, opportunities for food production, solar resources, soil classifications, publicly-owned land. Proactively sample and monitor trees for the presence of invasive species. Probably other groups should be doing this, not the city but we are not sure)	A			
Natural Systems	BE-3	Promote ecosystem resilience.	1	BE-3.1	Increase fish-friendly operations and habitat at Reeder Reservoir and in Ashland and Bear Creeks to restore native fish populations.	Adaptation	Municipal	Operations	i. Work with ODFW to prioritize actions ii. Move hydropower closer to reservoir to restore Granite St. to Reeder section of Ashland Creek. iii. Improve fish passage at Granite Street Dam for winter steelhead iv. Acquire older water rights and buy them out for instream rights v. Improve and "right size" city culverts/road crossings for fish passage vi. Move water treatment plant to give fish a longer reach of cold water	A			
Natural Systems	CC-1	Promote ecosystem resilience.	1	CC-1.1	Map and protect remnant spring and wetland habitats within City limits to provide ecosystem services.	Adaptation	Municipal	R&D	Protect and restore to provide ecosystem services (especially flood abatement) and wildlife habitat.	A			

Natural Systems	CC-1	Promote ecosystem resilience.	2	CC-1.2	Undertake a multi-decadal restoration effort to manage rivers and creeks to retain and restore native fish and riparian species.	Adaptation	Municipal		(ie. cool temperatures, higher flows, lower sediments, complexity, connectivity, and spawning habitats) Would include the following actions: 1) Enforce the city's riparian ordinance. Retain dead trees for fish and wildlife. (A+) 2) Maintain and restore native vegetation to shade streams in key areas (Neil Creek near airport, along Tolman Creek near Golf Course, into Bear Creek, other areas). (A) 3) Change zoning to reduce development in high flood risk areas. (A) 4) Avoid further over-appropriating Rogue River with TAP. (A) 5) Decommission roads and trails to reduce sediment delivery during large storms. (A)	A			
Natural Systems	CC-1	Promote ecosystem resilience.	3	CC-1.3	Use bioswales, permeable pavement, other pervious surfaces to reduce flood risk.	Adaptation	Municipal	Operations		A			
Natural Systems	CC-2	Promote ecosystem resilience.	1	CC-2.1	Introduce practices that reduce sediment entry into Ashland Creek from trails and roads.	Adaptation	Municipal	Operations	Note to committee: Added in "Introduce practices" here to be more specific about the action. Or were you thinking of some sort of capital project, like a physical barrier?	A			
Natural Systems	CC-4	Conserve water use within City operations.	1	CC-4.1	Update City landscaping standards for reducing water consumption and chemical use.	Both	Municipal	Policy/Regulation	Have already done, to some extent?	A			
Health and Social Services	CC-5	Manage ecosystems and landscapes to minimize climate-related health impacts.	1	CC-5.1	Promote the expansion of tree canopy in urban heat islands or areas that need air conditioning such as schools (while still allowing for solar).	Both	Community	Operations	Balance very carefully with solar planning. Note to committee: Moved this from the Natural Systems section.	A			
Health and Social Services	BE-6	Manage ecosystems and landscapes to minimize climate-related health impacts.	1	BE-6.1	Utilize City parks and open spaces to create more in-town farming and educational opportunities for kids of all income levels.	Both	Community	Planning	Note to committee: Moved this from Natural Systems section.	A			
Health and Social Services	TL-1	Optimize city services to minimize climate-related public health and safety impacts.	1	TL-1.1	Develop and publicize the Ready, Set, Go! Evacuation program.	Mitigation	Community	Outreach/education	Educate re: water/vector/rodent contamination contribute to diseases.	A			
Health and Social Services	TL-1	Optimize city services to minimize climate-related public health and safety impacts.	2	TL-1.2	Educate public and public health professionals about health risks posed by climate change.	Adaptation	Community	Outreach/education	City's role or others?  We must educate about all levels of impact, heat, heart, asthma, long term risks on food supply. It's an act of advocacy as well as education. : Link active transport and air pollution together as an equity issue. A: as an education tool make available to the public CO2 monitors to understand local and immediate CO2 levels and link levels to impact. A: Advocate for low exhaust output A: Educate citizenry and government in importance of adequate public transportation to reduce GHG, increase physical activity A: Evaluate how Ashland Community Hospital is preparing for effects of CC A: Invite Hospital to dialogue and plan with the city for actions r/to CC events	A			
Health and Social Services	TL-2	Optimize city services to minimize climate-related public health and safety impacts.	1	TL-2.1	Work with vulnerable neighborhoods through a community planning process that engages all stakeholders, and create site-specific adaptation strategies.	Adaptation	Community	Partnership/coordination	CERT does work like this. Can we collaborate or expand work of CERT so we are not duplicating.	A			
Health and Social Services	TL-3	Optimize city services to minimize climate-related public health and safety impacts.	1	TL-3.1	Ensure that essential services are not within the 100-year flood zone.	Adaptation	Municipal	R&D	Already done?  What are the essential services? (does this belong in land use?)	A			
Health and Social Services	TL-3	Optimize city services to minimize climate-related public health and safety impacts.	2	TL-3.2	Develop plan for coordinating at-risk individuals and groups.	Adaptation	Community	Planning	Strategically if we take care of least resourced it helps those with resources as well for maximum impact of invested resources.  Evaluate risk groups ability to access information. Provide access to materials and information. Develop/use informational messaging. Improve methods of collecting data. Reduce lack of access to material and information. Evaluate adaptive capabilities to new climate. Build leadership in these groups. Use resources within the county and state. Communicate in Spanish/English. Identify effects of extreme weather events on these groups.	A			
Health and Social Services	TL-5	Promote a sustainable local economy that minimizes emissions and vulnerability to climate impacts.	1	TL-5.1	Help farm workers arrange reliable and consistent employment opportunities.	Both	Community		Note to committee: Note that this was added from the Natural Systems group. Also, how would the City help, exactly?	A			
Health and Social Services	TL-4	Optimize city services to minimize climate-related public health and safety impacts.	1	TL-4.1	Change zoning to reduce development in high fire risk areas.				Note to committee: Note that this was added from the Natural Systems group.	A			
Buildings and Energy	TL-3	Encourage increased building energy efficiency.	1	TL-3.1	Require building audits for the largest or least efficient commercial and multifamily buildings to help identify cost-effective improvements.	Mitigation	Community	Policy/Regulation	Focusing on identifying the least efficient versus highest use. An inventory smaller inefficient buildings/homes may be a bigger opportunity than a single large inefficient building.  E: C: Other: Needs to come along with incentives and education about the ROI for making efficiency improvements.	B			

Buildings and Energy	TL-4	Encourage increased building energy efficiency.	1	TL-4.1	Consider passing an ordinance that requires home energy performance when a house is listed for sale.	Mitigation	Community	Policy/Regulation	The City did a small pilot for EPS scores earlier this year.  E: C: As a buyer, this would tell me about my energy bills to come. As a seller, I could tout my energy efficiencies. Other:	B			
Buildings and Energy	CW-1	Encourage increased building energy efficiency.	1	CW-1.1	Expand and prioritize energy conservation programs for rental housing. Support zero net energy apartments for low income renters that have better air quality and no utility bills.	Both	Community	Pricing/incentive	E: Finding effective and fair incentive programs might also include policy/regulations and rebates with pre agreements to pass on savings to both the renters and the owners. C: Everyone wins, the renters, the owners, and the planet. Other: Considering that rental housing is 50% of all housing in Ashland (7% of all building energy consumption this is no small group to work with). Combine this one and BE 6.1 and consider combining with BE 2.1	B			
Buildings and Energy	CW-3	Maximize efficiency of City buildings, facilities, and other energy-intensive equipment and operations.	1	CW-3.1	Continue to monitor and adjust load-shifting measures at the wastewater treatment facility, such as running systems (aeration, residuals pumping, lighting) during off peak hours, optimizing process control, and limiting pumping rates during the peak demand period.	Mitigation	Municipal	Operations	This was originally done in parallel with the Facilities Energy Audit with the use of the BPA–ESIP program consultants who specialize in wastewater treatment plants.	B			
Buildings and Energy	NS-1	Enhance energy reliability.	1	NS-1.1	Explore ways to balance diversity and resiliency of energy sources with the technology capabilities, the City's contractual obligations with BPA, and a cost-effective implementation timeframe.	Adaptation	Municipal	R&D	Current timeline: • BPA take or pay obligations through September 30, 2028 • Market predictions of higher efficiency and lower cost solar technology (2021-2026) • Market predictions of commercially viable/grid capable storage technologies (e.g. battery) (2024-2026) • Market predictions of commercially viable/grid capable storage technologies (e.g. battery) (2024-2026)	B			
Consumption and Waste	CW-4	Expand community recycling, composting, and reuse.	1	CW-4.1	Make recycling easier for people, such as by putting pictures on bins and increasing the number of recycling and compost bins available in city public areas.	Mitigation	Community	Capital/infrastructure	Part of Council approved plan from Recycle Center Committee work in 2014-15.	B			
Consumption and Waste	CW-4	Expand community recycling, composting, and reuse.	2	CW-4.2	Provide more information for the public on when to replace high energy-use appliances.	Mitigation	Community	Outreach/education		B			
Consumption and Waste	NS-1	Expand community recycling, composting, and reuse.	1	NS-1.1	Provide information on the City website on how to opt-out of junk mail.	Mitigation	Community	Outreach/education		B			
Consumption and Waste	NS-1	Expand community recycling, composting, and reuse.	2	NS-1.2	Increase public awareness of reuse stores and their benefit.	Mitigation	Community	Outreach/education		B			
Consumption and Waste	NS-1	Expand community recycling, composting, and reuse.	3	NS-1.3	Update the multi-family recycling ordinance to encourage more diversion.	Mitigation	Community	Policy/Regulation	Big room for improvement here. From the public's perspective, particularly tourists, the City does little in terms of recycling.  Part of Council approved plan from Recycle Center Committee work in 2014-15.	B			
Consumption and Waste	NS-1	Expand community recycling, composting, and reuse.	4	NS-1.4	Increase requirements and/or enforcement of the construction and demolition debris ordinance to require deconstruction, recycling, and/or reuse of C&D materials.	Mitigation	Community	Policy/Regulation		B			
Consumption and Waste	NS-1	Expand community recycling, composting, and reuse.	5	NS-1.5	Support "collaborative consumption" community projects like tool libraries and repair cafes, such as through mini-grant programs.	Mitigation	Community	Pricing/incentive		B			
Consumption and Waste	NS-1	Expand community recycling, composting, and reuse.	6	NS-1.6	Explore development of a cost-effective approach to deconstructing and recycling demolished buildings.	Mitigation	Community	R&D		B			
Consumption and Waste	HS-1	Support sustainable and accessible local production and consumption.	1	HS-1.1	Expand community gardening and urban agriculture opportunities at community gardens, schools, parks, common open spaces, and on rooftops.	Mitigation	Community	Outreach/education		B			
Consumption and Waste	HS-1	Support sustainable and accessible local production and consumption.	2	HS-1.2	Work with sustainability organizations to recognize restaurants that feature local produce and products.	Mitigation	Community	Partnership/coordination		B			
Consumption and Waste	HS-2	Support sustainable and accessible local production and consumption.	1	HS-2.1	Work with non-profits and universities to create education, outreach, and training materials about transitioning to agricultural practices that reduce greenhouse gas emissions.	Mitigation	Community	Partnership/coordination		B			
Consumption and Waste	HS-2	Support sustainable and accessible local production and consumption.	2	HS-2.2	Pilot small-scale urban agriculture programs on public land to encourage locally-sourced foods.	Mitigation	Community	R&D		B			
Consumption and Waste	HS-2	Support sustainable and accessible local production and consumption.	3	HS-2.3	Grow the existing plant-growing list on ashlandsavewater.org to focus on plants that can thrive under anticipated climate change impacts.	Adaptation	Community	Outreach/education		B			
Consumption and Waste	HS-2	Support sustainable and accessible local production and consumption.	4	HS-2.4	Support efforts of food-advocacy organizations, food growers, and state agencies to increase the diversity and drought resistance of food crops grown in the area.	Adaptation	Community	Partnership/coordination		B			

Consumption and Waste	HS-2	Support sustainable and accessible local production and consumption.	5	HS-2.5	Conduct a comprehensive community food security assessment to identify opportunities for improving food security.	Adaptation	Community	R&D		B			
Consumption and Waste	HS-2	Support sustainable and accessible local production and consumption.	6	HS-2.6	Consider local supply chains in implementation of the economic development strategy.	Both	Community	Operations	Connects with existing phase II action in approved Economic Development Strategy.	B			
Consumption and Waste	HS-2	Support sustainable and accessible local production and consumption.	7	HS-2.7	Implement a “buy climate-friendly first” food purchasing policy for public institutions, including city and county governments, schools, and hospitals.	Both	Community	Policy/Regulation	Could conflict with ORS 279.	B			
Consumption and Waste	HS-3	Reduce food waste.	1	HS-3.1	Facilitate the sharing of best practices among restaurants, caterers, and other commercial food preparation operations for minimizing and reusing and recycling food waste.	Both	Community	Outreach/education		B			
Consumption and Waste	HS-4	Reduce food waste.	1	HS-4.1	Work with the food bank to support edible food donations and gleaning.	Both	Community	Partnership/coordination	Gleaning is harvesting produce left over in fields and home/community gardens for donation.	B			
Consumption and Waste	HS-4	Improve sustainability of City purchases and procurement.	2	HS-4.2	Ensure that desk-side recycling stations are adequately placed at City employee workstations.	Mitigation	Municipal	Operations		B			
Consumption and Waste	HS-4	Improve sustainability of City purchases and procurement.	3	HS-4.3	Promote online citizen services (permitting, bill pay, etc.) to reduce paper use and vehicular trips to City offices.	Mitigation	Municipal	Outreach/education		B			
Consumption and Waste	HS-4	Improve sustainability of City purchases and procurement.	4	HS-4.4	Consider use of low-carbon concrete and/or recycled asphalt shingles on City buildings and fiberglass paving liner to reduce pavement depth.	Mitigation	Municipal	R&D		B			
Consumption and Waste	BE-1	Improve sustainability of City purchases and procurement.	1	BE-1.1	Explore use of 100% recycled aggregate in residential street construction and up to 50% recycled aggregate in concrete mix for sidewalks.	Mitigation	Municipal	R&D		B			
Consumption and Waste	BE-3	Improve sustainability of City purchases and procurement.	1	BE-3.1	Determine the greenhouse gas emissions profile associated with the current solid waste collection system and provide recommendations on how to reduce carbon emissions within the system.	Mitigation	Municipal	R&D		B			
Natural Systems	TL-1	Manage and conserve community water resources.	1	TL-1.1	Provide incentives for practices that reduce the use of potable water for non-potable purposes and <del>recharge ground water</del> , such as through rainwater collection and rain gardens.	Both	Community	Pricing/incentive	The City already has quite a bit on this.	B			
Natural Systems	CW-1	Manage and conserve community water resources.	1	CW-1.1	<del>Recharge ground water, such as through rainwater collection and rain gardens.</del>	Both	Community		Note to committee: Would the City do this directly? Or incentivize/regulate the community?  This might be important, but we don’t know enough about opportunities in our watershed for this.	B			
Natural Systems	CW-2	Manage and conserve community water resources.	1	CW-2.1	Explore <del>enhancing water quality, system efficiency (WISE) and other applications for irrigation water (TID).</del>	Both	Community	R&D	A big issue that warrants careful consideration.	B			
Natural Systems	CW-3	Manage and conserve community water resources.	1	CW-3.1	<del>Evaluate changes in reservoir management during extreme downpours and large storms to reduce potential of flooding downtown.</del>	Adaptation	Municipal	R&D	Note to committee: Revised to “evaluate changes in...” -- unless they City already knows how reservoir management should be adjusted?	B			
Natural Systems	NS-2	Manage and conserve community water resources.	1	NS-2.1	<del>Explore new technologies for treating wastewater for use.</del>	Both	Municipal	R&D		B			
Natural Systems	HS-2	Manage and conserve community water resources.	1	HS-2.1	<del>Encourage food production over landscaping and marijuana for water supply.</del>	Both	Community	Outreach/education		B			
Natural Systems	HS-2	Manage and conserve community water resources.	2	HS-2.2	<del>Support farmers in efforts to conserve water.</del>	Both	Community		Note to committee: through what mechanism? Outreach/education? Financial support/incentives?	B			
Natural Systems	CC-4	Conserve water use within City operations.	1	CC-4.1	Install rainwater collection systems for City facilities for graywater and outdoor uses. Investigate the opportunities for greywater reuse at existing and new City facilities and open spaces.	Both	Municipal	Capital/infrastructure		B			
Health and Social Services	CC-4	Manage ecosystems and landscapes to minimize climate-related health impacts.	2	CC-4.2	Evaluate and implement methods to remove slash without creating as much smoke, such as air curtain burners.	Adaptation	Municipal	Operations	What is an air curtain? How much power does it draw?	B			
Health and Social Services	CC-4	Manage ecosystems and landscapes to minimize climate-related health impacts.	3	CC-4.3	Develop an incentive program for conversion of fuel-burning lawn mowers, weed whackers, and blowers to electric.	Both	Community	Pricing/incentive	Conservation Commission has recently discussed this. Regulate or prohibit fossil fuel based weed eaters and leaf blowers for both air quality and noise impacts. Cash for clunkers concept – could include lawn mowers also.	B			
Health and Social Services	BE-6	Manage ecosystems and landscapes to minimize climate-related health impacts.	1	BE-6.1	<del>Consider agriculture for lands with higher flood risk.</del>	Both	Community		Note to committee: Moved this from Natural Systems section.	B			
Health and Social Services	TL-1	Optimize city services to minimize climate-related public health and safety impacts.	1	TL-1.1	Develop or enhance heat-warning systems for employees and the public. For example, create city-specific algorithms based on local health and climatological data to help trigger heat warnings or responses.	Adaptation	Community	Outreach/education	Feels like a subset of the reporting point. We should do this. The free press and iPhones does this as well. But a bigger footprint web presence on city website would be good. This needs to trigger a heat warning step.	B			

Health and Social Services	TL-1	Optimize city services to minimize climate-related public health and safety impacts.	2	TL-1.2	Increase efforts to educate homeowners about creating fire-defensible space around their homes.	Adaptation	Community	Outreach/education	<p>The City is doing this through the expansion of the WHZ expansion, but it is currently stalled. This also reinforces the importance of our efforts in the watershed.</p> <p>The City has a FireWise communities program that is very strong. Fire Dept is pushing now for an expansion of our wildfire hazards zone to prohibit certain vegetation and construction types (wood shingles).</p> <p>Is there a process by which people return to homes to help them chop down the vegetation. Is there incentive as well as education? Is there some type of ordinance to help people who have been education but still fail to act?</p> <p>Note to committee: Natural Systems section also has some actions related to FireWise (from an ecosystem resilience perspective).</p>	B			
Health and Social Services	TL-2	Optimize city services to minimize climate-related public health and safety impacts.	1	TL-2.1	Coordinate with adjacent cities, counties, and states around regional smoke and particulate impacts.	Adaptation	Community	Partnership/coordination	<p>The city just got an Ashland site-specific DEQ air quality monitor for smoke air health issues.</p> <p>Expand smoke to refer to all particulates that effect breathing. Ashland shouldn't be creating all these educational materials we should be collaborating more broadly.--- ADD : Prepare data on availability of Public Health resources</p> <p>A: Communicate with County/Regional/State Health Depts. Maximize this information</p>	B			
Health and Social Services	TL-2	Optimize city services to minimize climate-related public health and safety impacts.	2	TL-2.2	Continue to monitor emerging data on climate change-related health risks and revise adaptation plans as necessary.	Adaptation	Municipal	Planning	This HAS to happen but it's long term not immediate.	B			
Health and Social Services	TL-3	Optimize city services to minimize climate-related public health and safety impacts.	1	TL-3.1	Collaborate with non-profits to develop an educational campaign to raise awareness among private property owners about strategic planting of trees for energy savings and offer low-cost trees to residents to strategically plant for shade. Promote U.S. Department of Energy program, "Cool Communities".	Both	Community	Outreach/education	(does this belong in land use?) what about non-land owners. how can they access this? Are there levers we could provide renters some way to plant trees too	B			
Health and Social Services	TL-3	Optimize city services to minimize climate-related public health and safety impacts.	2	TL-3.2	Identify groups that provide needed services, but rely on elderly volunteers.	Adaptation	Community	R&D	Meals on wheels etc, orgs that rely on elderly volunteer support services Develop a plan for absences in these groups-who will take up the slack.	B			
Health and Social Services	TL-3	Optimize city services to minimize climate-related public health and safety impacts.	3	TL-3.3	Conduct education and outreach to prepare for changes in air quality.	Adaptation	Community	Outreach/education	Educate public in measures to protect Cardio/Pulmonary A: Educate the public on heat avoidance procedures A: Cooperate with the Ashland school district and SOU in the development of school/sport guidelines A: Educate day care and special needs homes on the impacts of extreme weather events A: Educate these providers in adaptive strategies. Educate preventive measures to avoid diseases ex: skin cancer and eye diseases due to effects of sun exposure, exacerbation of chronic diseases, vector and rodent diseases and microbe contamination.	B			
Health and Social Services	TL-3	Optimize city services to minimize climate-related public health and safety impacts.	4	TL-3.4	Identify and address climate change impacts on mental health.	Adaptation	Community	Partnership/coordination	A: Coordinate actions with county services A: Educate the public on the effects of deterioration of quality of life, economic stress, and societal problems due to C A: Coordinate with health adaptive strategies to deal with stressors related to CC A: Educate public how to support each other with Mental Health resiliency strategies A: Educate public to support each other with mental health resiliency strategies	B			
Health and Social Services	TL-3	Optimize city services to minimize climate-related public health and safety impacts.	5	TL-3.5	Distribute water purifiers for emergency situations.	Adaptation	Community	Operations	Note to committee: Note that this was added from the Natural Systems group.	B			
Health and Social Services	TL-4	Optimize city operations and programs to minimize climate-related employee health impacts.	1	TL-4.1	Enhance internal education and understanding of changing wildfire smoke and extreme heat risks.	Adaptation	Municipal	Outreach/education		B			
Health and Social Services	TL-4	Optimize city operations and programs to minimize climate-related employee health impacts.	2	TL-4.2	Formalize and disseminate City policy regarding employee time off during extreme heat and wildfire smoke events.	Adaptation	Municipal	Policy/Regulation	? Is that so employees need more time off for self-care or less time off to help community under stress?	B			
Health and Social Services	TL-4	Optimize city operations and programs to minimize climate-related employee health impacts.	3	TL-4.3	Include wildfire smoke health and safety measures in the city safety and health policy, and ensure that each department's policies and procedures are consistent and adequate. For example, align city-wide guidance and widely accepted thresholds related to health criteria.	Adaptation	Municipal	Policy/Regulation	what do we require of our businesses? Having the city disseminate protocols for others in the rogue valley would be helpful	B			
Health and Social Services	TL-4	Promote a sustainable local economy that minimizes emissions and vulnerability to climate impacts.	4	TL-4.4	Work with businesses to analyze their vulnerability to climate change and help them plan for the future.	Adaptation	Community	Partnership/coordination	Work with the Chamber of Commerce?	B			
Health and Social Services	TL-5	Promote a sustainable local economy that minimizes emissions and vulnerability to climate impacts.	1	TL-5.1	Launch efforts to seek and solicit innovative ideas for city cooling and other adaptation strategies.	Adaptation	Community	R&D	these are all great initiatives to promote good feelings and incientivise others to do the work.	B			

Health and Social Services	TL-5	Promote a sustainable local economy that minimizes emissions and vulnerability to climate impacts.	2	TL-5.2	Develop a climate-ready recognition program for the city's community leaders.	Both	Community	Outreach/ education		B			
Health and Social Services	TL-5	Promote a sustainable local economy that minimizes emissions and vulnerability to climate impacts.	3	TL-5.3	Engage leading employers in a dialogue on climate action, for example, by organizing and facilitating roundtables.	Both	Community	Partnership/ coordination		B			
Health and Social Services	TL-5	Promote a sustainable local economy that minimizes emissions and vulnerability to climate impacts.	4	TL-5.4	Promote sustainable gardening and farming practices and improve access to fresh, local food and healthy diets.	Both	Community	Partnership/ coordination	Note to committee: From Natural Systems group: Create more in town farming and educational opportunities for kids of all income levels (A)	B			
Health and Social Services	TL-5	Promote a sustainable local economy that minimizes emissions and vulnerability to climate impacts.	5	TL-5.5	Identify local food sources and their risk of interruption under climate change. Research new crops, technologies, and innovative approaches.	Both	Community	R&D	A: Evaluate food availability to at risk groups A: Prepare educational materials-or publicize available information (CERT/County) for the public on changes in water quality/quantity/well failures, ground water contamination.	B			
Health and Social Services	TL-5	Promote a sustainable local economy that minimizes emissions and vulnerability to climate impacts.	6	TL-5.6	Help farmers to support wine industry, fruit growers, and other climate-dependent local industries as they need to adapt.	Both	Community		Note to committee: Note that this was added from the Natural Systems group. Also, how would the City provide support, exactly?	B			
Buildings and Energy	BE-1	Support cleaner energy sources and improved demand management	1	BE-1.1	Consider a recognition program for neighborhoods meeting a certain percentage of electricity needs above the amount currently provided by the utility through renewable energy .	Both	Community	Outreach/ education	Better to recognize Conservation/Efficiency/Demand Response on an individual/neighborhood case. All City customers are currently receiving electric energy from 85% renewable energy.  Can/should Renewable Energy Credits (RECs) be used as part of this process?  E: C: could encourage neighborhood renewable energy cooperatives. 1. Get neighbors to install solar at the same time. 2. Get city government, local business and environmental groups to support efforts. 3. Find a solar contractor who would give the Solar Coop a discount because of economies of scale. 4. Install panels. (http://blogs.scientificamerican.com/solar-at-home/the-pleasant-way-to-go-solar-neighborhood-cooperatives/) Other: May be unfair to poor neighborhoods	C			
Buildings and Energy	BE-3	Support cleaner energy sources and improved demand management	1	BE-3.1	Evaluate triple bottom line cost-benefit analysis for benefits of solar energy production vs. temperature benefits associated with greater tree canopy cover.	Both	Community	R&D	E: C: Other: Evaluation considerations (http://www.directenergysolar.com/blog/post/should-i-go-solar-if-i-have-trees-and-shading/)	C			
Buildings and Energy	BE-4	Encourage increased building energy efficiency.	1	BE-4.1	Encourage City staff participation in statewide conversations coordination with Oregon cities to promote and reinforce higher energy standards.	Mitigation	Municipal	Operations	The building code is a state code; the City can't touch energy efficiency in the codes. The Oregon Energy Efficiency Specialty Code provides avenues for both prescriptive and performance-based energy conservation.  We can incentivize higher code standards through density bonus opportunities in the land use code, however (action in transportation and land use).  E: It takes time to participate, but participation is essential in order to continue the trend in developing Oregon energy efficiency codes. C: We all gain from this Other:	C			
Buildings and Energy	TL-1	Encourage increased building energy efficiency.	1	TL-1.1	Continue and enhance partnership with the school district to support programs that promote energy efficiency and installation of solar panels on rooftops and parking lots.	Mitigation	Community	Outreach/ education	E: C: Other:	C			
Buildings and Energy	TL-2	Encourage increased building energy efficiency.	1	TL-2.1	Continue and enhance facilitation of retailer, contractor, and building professional training, skill growth, awareness of energy conservation rebates, and value of adding solar panels to parking lots.	Mitigation	Community	Outreach/ education	E: C: Other:	C			
Buildings and Energy	CW-3	Encourage increased building energy efficiency.	1	CW-3.1	Increase outreach efforts to expand participation in commercial energy and water conservation programs.	Both	Community	R&D	E: C: a sticker showing that they invested in energy and water conservation may be incentives for shoppers to purchase at their stores. Other: on new and existing construction have some means of capturing/reducing roof runoff (e.g. bioswales, rain gardens, green roofs, or put money into a fund to offset the impacts of runoff.	C			
Buildings and Energy	NS-1	Adapt buildings to a changing climate.	1	NS-1.1	Hold a citywide contest to become "coolest block."	Adaptation	Community	Outreach/ education	For example, the prize could be home sealing or white roofs.  E: C: Other: Great idea, needs sponsorship in the community (maybe community driven)	C			



Buildings and Energy	NS-1	Adapt buildings to a changing climate.	2	NS-1.2	Designate publically accessible cooling centers through the city, such as libraries.	Adaptation	Community	Planning	E: Not needed in short term C: Good for homeless Other:	C			
Transportation and Land Use	NS-3	Make streets and development more bike- and pedestrian-friendly.	1	NS-3.1	Consider providing valet bike parking at City public events.	Mitigation	Community	Operations		C			
Consumption and Waste	NS-1	Expand community recycling, composting, and reuse.	1	NS-1.1	Study current waste generation through modeling, physical sampling, or direct measurement techniques.	Mitigation	Community	R&D		C			
Consumption and Waste	HS-2	Support sustainable and accessible local production and consumption.	1	HS-2.1	Plant non-invasive food-bearing trees and shrubs on public lands.	Both	Community	Capital/ infrastructure	Could be an issue with deer.	C			
Consumption and Waste	HS-2	Reduce food waste.	2	HS-2.2	Donate edible leftover foods from City public events to non-profits.	Both	Community	Operations		C			
Consumption and Waste	HS-4	Improve sustainability of City purchases and procurement.	1	HS-4.1	Install methane capture at landfills and wastewater treatment facilities.	Mitigation	Municipal	Capital/ infrastructure	There are no landfills within the City. Ashland WWTP design does not allow for methane capture.	C			
Natural Systems	BE-3	Promote ecosystem resilience.	1	BE-3.1	Assess whether and how ecosystem market approaches can enable the city to more efficiently and effectively protect and restore ecosystems.	Both	Community	R&D	We don't know enough about this and what it might mean.	C			
Health and Social Services	TL-1	Optimize city services to minimize climate-related public health and safety impacts.	1	TL-1.1	Educate citizens about wildfire smoke and controlled burn smoke trade-offs along with strategies to manage smoke exposure.	Mitigation	Community	Outreach/ education	Do we need to educate people about work already happening?	C			
Health and Social Services	TL-1	Optimize city services to minimize climate-related public health and safety impacts.	2	TL-1.2	Improve cooling options in schools and senior centers.	Adaptation	Community	Capital/ infrastructure	(e.g. A/C, cooling towers, fans blowing air into buildings during cool mornings).  Would be role of the school district-- how can the City engage the school district around this issue? Is this a problem or a gap of missing services?  A: Provide shelter with adequate heating/air conditioning during extreme weather events ex: heat/cold /flooding events A: Monitor statistics from local hospitals re: ER visits/hosp admissions r/t CC A: Identify cause of leading visits A: Identify areas for education or collaboration with Health care facilities	C			
Health and Social Services	TL-1	Optimize city services to minimize climate-related public health and safety impacts.	3	TL-1.3	Utilize federal and state reporting and monitoring assets, such as NOAA's Hazard Mapping System, the Wildland Fire Decision Support System, Inciweb, Incident Management Situation Reports, and MODIS Large Incident Maps to prepare for impacts.	Adaptation	Community	Operations	What does leverage mean, what does prepare mean, what impacts are we referring to? door to door checks on elderly? Is this something we are already doing?  Note to committee: Changed from "leverage" to "utilize."	C			
Health and Social Services	TL-1	Optimize city services to minimize climate-related public health and safety impacts.	4	TL-1.4	Adjust City-sponsored outdoor activity schedules to accommodate longer and hotter summer seasons. Plan for outdoor activity and event cancellations, with indoor alternative locations pre-decided.	Adaptation	Municipal	Operations		C			
Health and Social Services	TL-2	Optimize city services to minimize climate-related public health and safety impacts.	1	TL-2.1	Review and incorporate changes to incentives for buildings, land use and design elements to accelerate the adoption of cooling strategies for both indoor and outdoor environments, including "cool" infrastructure such as cool roofs, cool pavements, and trees.	Adaptation	Community	Pricing/ incentive	Also in "Buildings and Energy" section.	C			
Health and Social Services	TL-2	Optimize city services to minimize climate-related public health and safety impacts.	2	TL-2.2	Conduct further research into "urban heat islands" to identify and eliminate potential hot spots.	Adaptation	Community	R&D		C			
Buildings and Energy	BE-3	Support investment in clean renewable energy.	1	BE-3.1	Develop a large-scale solar project (solar pioneer III) where residents can invest into a solar fund in which they can earn an attractive interest rate.	Both	Community	Capital/ infrastructure	E: C: Develop solar pioneer III where residents can invest \$\$ (10-20) into a solar fund in which they can earn an attractive interest rate (e.g. 6%?). This would be a large scale solar project. Consider having private party investments so that we can get 30% rebate.	A?			
Buildings and Energy	BE-4	Support investment in clean renewable energy.	1	BE-4.1	Develop marketing material and presentations that encourage solar investments and emphasize the return on investment.	Both	Community	Outreach/ education	E: C: Develop marketing material and presentations that encourage solar investments of money as a ROI. E.g. \$18K with \$13K tax and other incentives, then leaves \$5K investment with a typical return on investment of \$500/yr (10% ROI for 5 years until payoff), and continued \$500 profit per year.	A?			
Buildings and Energy	TL-4	Encourage increased building energy efficiency.	1	TL-4.1	Promote passive house construction principles, such as use of passive solar for heating and cooling in new and existing housing and commercial building stocks.	Mitigation	Community	Pricing/ incentive	Could also be Policy/Regulation  E: C: Other: Combine this with net zero energy efficiency promotion. Consider orientation to sun over orientation to street.	No rating?			

Buildings and Energy	TL-4	Encourage increased building energy efficiency.	2	TL-4.2	Work with property and business owners to identify strategies that reduce or remove barriers to energy efficiency in multi-family and commercial rent/lease properties.	Mitigation	Community	R&D	What are some available vehicles for this? Incentives? Education? Leasing practices?  E: C: Other: consider having the landlord pay utility bills, also giving the landlords incentives to make their buildings more efficient. Do this for single family homes as well. Consider Policy and Regulation, density bonus, as well as financial support as incentives.	No rating?			
Cross-Cutting Strategies	CW-1	Educate and empower the public.	1	CW-1.1	Create an formal public outreach and education plan to inform the community about climate actions, what they accomplish, how they can be accessed/used, how the community is progressing on the targets.	Adaptation	Community	Outreach/education	Include: - Create and distribute on an ongoing basis effective multi-media outreach tools related to preparedness for climate change.				
Cross-Cutting Strategies	NS-1	Educate and empower the public.	1	NS-1.1	Create an formal public outreach and education plan to inform the community about climate actions, what they accomplish, how they can be accessed/used, how the community is progressing on the targets.	Both	Community	Outreach/education	Education with objective (key) information will be the best bang for the buck. This needs to be to all elements of the community.		Administration	Energy Team	Short-term
Cross-Cutting Strategies	NS-2	Educate and empower the public.	1	NS-2.1	Support capacity of neighborhood and community groups to implement climate mitigation and adaptation initiatives.	Both	Community	Outreach/education	Has a potential natural tie-in with current CERT training and neighborhood outreach.				
Cross-Cutting Strategies	NS-2	Educate and empower City staff.	2	NS-2.2	Ensure all City departments educate their staff about the Climate Action and Energy Plan and identify the expectation, role, and responsibility of each department in meeting specific community and City operations actions.	Both	Municipal	Outreach/education					
Cross-Cutting Strategies	NS-2	Mainstream climate considerations.	3	NS-2.3	Consider climate change in all Council policy, budgetary, or legislative decisions (e.g., triple bottom line evaluation). Incorporate climate action considerations/relationship as part of the Council Communication document template.	Both	Municipal	Operations	Will want to carefully balance priorities.				
Cross-Cutting Strategies	NS-2	Ensure implementation of the Climate and Energy Action Plan.	4	NS-2.4	Form a City leadership advisory team to shepherd the City's climate action plan goals and actions.	Adaptation	Municipal	Operations					
Cross-Cutting Strategies	NS-3	Ensure implementation of the Climate and Energy Action Plan.	1	NS-3.1	Establish a full-time City position dedicated to coordination, promotion, implementation and reporting of the Climate and Energy Action Plan, including both community and City operations.	Both	Municipal	Operations	Reporting level of the staff person will be crucial.				
Cross-Cutting Strategies	NS-1	Ensure implementation of the Climate and Energy Action Plan.	1	NS-1.1	Designate an existing, reconfigured or new Advisory Commission to assist City staff and community with plan implementation, reporting, and updates.	Both	Municipal	Operations					
Cross-Cutting Strategies	CC-1	Ensure implementation of the Climate and Energy Action Plan.	1	CC-1.1	Establish an ordinance tied to the CEAP.	Both	Municipal	Policy/Regulation					
Cross-Cutting Strategies	CC-1	Prepare for climate impacts.	2	CC-1.2	<del>Continue to update</del> Customize the City's emergency response plan and ensure that preparation and updates recognize and address likely for climate change impacts.	Adaptation	Municipal	Planning	Ashland is relatively well positioned to manage local and regional emergencies and we have the highest functioning EOC in the county. However, there is room for improvement relating to climate and energy emergencies. We will be updating the Natural Hazards Mitigation Plan soon and this is the document that will help guide changes.  This action is the weakest of the group.				
Buildings and Energy	NS-2	Adapt buildings to a changing climate.	1	NS-2.1	Encourage new construction of public building to consider white or cool roofs to minimize urban heat island.	Adaptation	Municipal	Pricing/incentive	We can promote, not require. The Oregon Structural Specialty Code contains the prescriptive requirements for roof assemblies.  E: C: Other: Combine with BE 1.7 Energy Master Plan				
Buildings and Energy	NS-2	Adapt buildings to a changing climate.	2	NS-2.2	Consider future climate conditions when designing City buildings, and identify current or future opportunities to incorporate elements that build resilience.	Both	Municipal	Operations	Elements could include distributed power generation and passive solar. Distributed generation (also known as distributed energy) refers to power generation at the point of consumption. Generating power on-site, rather than centrally, eliminates the cost, complexity, interdependencies, and inefficiencies associated with transmission and distribution.  E: C: Other: Combine with BE 1.7 Energy Master Plan				
Transportation and Land Use	NS-2	Make streets and development more bike- and pedestrian-friendly.	3	NS-2.3	Consider introduction of a pedestrian and bike-friendly bridge across Ashland Creek.	Mitigation	Community	Capital/infrastructure					
Transportation and Land Use	NS-2	Make streets and development more bike- and pedestrian-friendly.	4	NS-2.4	Implement a project reallocating a portion of the public right-of-way to a public/pedestrian space such as a plaza or parklet.	Mitigation	Community	Capital/infrastructure	What would the objective/result be? Seems like it needs co-benefit.				
Transportation and Land Use	NS-2	Make streets and development more bike- and pedestrian-friendly.	5	NS-2.5	Evaluate options for reducing vehicle use downtown, such as by establishing vehicle-free streets.	Mitigation	Community	Capital/infrastructure	A contentious issue; would need to determine whether it is a placemaking action or truly does reduce VMT (depends on where and how parking would be provided).				

Transportation and Land Use	NS-2	Make streets and development more bike- and pedestrian-friendly.	6	NS-2.6	Explore opportunities to convert to shared streets where appropriate to reduce pavement and provide multi-modal connectivity.	Mitigation	Community	Capital/ infrastructure	"Shared streets" typically refer to spaces where slow motorized traffic and car parking are still permitted on the street, but pedestrians have the priority.				
Transportation and Land Use	HS-1	Make streets and development more bike- and pedestrian-friendly.	1	HS-1.1	Examine pedestrian crossing times at intersections to ensure pedestrians have sufficient time to cross.	Mitigation	Community	Operations	This may have a negative impact on vehicle idling at intersections.				
Transportation and Land Use	HS-1	Make streets and development more bike- and pedestrian-friendly.	2	HS-1.2	Conduct a community survey to understand barriers to biking.	Mitigation	Community	R&D					
Transportation and Land Use	HS-2	Make streets and development more bike- and pedestrian-friendly.	1	HS-2.1	Establish dedicated safe bike routes to schools.	Mitigation	Community	Planning					
Transportation and Land Use	HS-2	Make streets and development more bike- and pedestrian-friendly.	2	HS-2.2	Encourage employer-provided bicycle programs.	Mitigation	Community	Pricing/ incentive	For example, Standing Stone's. Note to committee: Through what "levers" would the City encourage? Education/outreach? Pricing/incentives?				
Transportation and Land Use	HS-2	Support better public transit and ridesharing.	1	HS-2.1	Provide additional park-and-ride lots to promote the use of public transit and reduce downtown congestion.	Mitigation	Community	Capital/ infrastructure	This idea has been discussed with decent research.				
Transportation and Land Use	HS-2	Support better public transit and ridesharing.	2	HS-2.2	Expand use of carpooling and car sharing systems and opportunities.	Mitigation	Community	Outreach/ education	What viable avenues for this? Incentives? Providing vehicles? Education? Right now categorizing this as education.				
Transportation and Land Use	HS-4	Support better public transit and ridesharing.	1	HS-4.1	Work with neighboring local governments to coordinate regional public transit opportunities including mass transit, shuttle buses, carpooling and vanpooling, bicycle, and pedestrian infrastructure.	Mitigation	Community	Planning	Related to this, it was suggested to develop a Transportation Demand Management (TDM) policy to be used in evaluation of development proposals which addresses parking requirements.				
Transportation and Land Use	HS-2	Support better public transit and ridesharing.	1	HS-2.1	Develop equitable development policies to support growth and development near transit hubs without displacement of disadvantaged populations.	Mitigation	Community	Policy/ Regulation	The City has a TOD/Pedestrian Places ordinance that went into the land use code 3-4 years ago.				
Transportation and Land Use	BE-3	Support better public transit and ridesharing.	1	BE-3.1	Evaluate introduction of a City owned and operated trolley.	Mitigation	Community	R&D	For reference: <a href="http://www.lindenavenue.com/db/article/31.html">http://www.lindenavenue.com/db/article/31.html</a> An A-level idea but not necessarily as a City-owned and operated endeavor.				
Transportation and Land Use	BE-3	Support more efficient vehicles.	2	BE-3.2	Include information on the City website about the value of electric vehicles and directions for receiving rebates for electric and hybrid vehicles.	Mitigation	Community	Outreach/ education					
Transportation and Land Use	BE-3	Support more efficient vehicles.	3	BE-3.3	Explore a city-facilitated carbon offset program whereby drivers can offset the GHG impact of driving through the purchase of renewable energy credits.	Mitigation	Community	Outreach/ education	The electric utility may have RECs available for sale.				
Transportation and Land Use	BE-4	Support more efficient vehicles.	1	BE-4.1	Work with contracted waste haulers to reduce emissions from trucks that haul waste, such as integration of more efficient trucks as they are replaced.	Mitigation	Community	Partnership/ coordination	The City didn't put this into the franchise agreement, but has been working with Recology to improve this. This would be a good one to keep in, but recognize that it would happen over a long timeframe as truck life cycles permit.				
Transportation and Land Use	CW-1	Support more efficient vehicles.	1	CW-1.1	Encourage expansion and increased enforcement of anti-idling policy.	Mitigation	Community	Policy/ Regulation					
Transportation and Land Use	CW-1	Support more efficient vehicles.	2	CW-1.2	Support the transition of taxi, for-hire, and limousine vehicles to low-carbon fuels and technologies.	Mitigation	Community		Through what vehicle? Incentives? A recognition program?				
Transportation and Land Use	CW-1	Support more efficient vehicles.	3	CW-1.3	Implement a local gas tax in part as a tracking mechanism for fossil fuel use.	Mitigation	Community	Pricing/ incentive	Should also consider autonomous vehicles as taxis, such as Uber.				
Transportation and Land Use	CW-1	Support more efficient vehicles.	4	CW-1.4	Contact Tesla to request partnering in installing a supercharging EV station.	Mitigation	Community	Partnership/ coordination					
Transportation and Land Use	CW-1	Increase efficiency of City fleet and commuting.	5	CW-1.5	Provide employee parking and charging stations for personal EV vehicles.	Mitigation	Municipal	Capital/ infrastructure					
Transportation and Land Use	CW-1	Increase efficiency of City fleet and commuting.	6	CW-1.6	Introduce City employee carpool and vanpool parking spaces.	Mitigation	Municipal	Capital/ infrastructure	We currently have none in the downtown. The downtown parking and circulation plan will be going to Council this fall and does not contain any content for EV charging/parking or carpool spaces.				
Transportation and Land Use	CW-1	Increase efficiency of City fleet and commuting.	7	CW-1.7	Participate in the new state clean fuels program implementation and develop a local plan to take advantage of opportunities.	Mitigation	Municipal	Planning					
Transportation and Land Use	CW-2	Increase efficiency of City fleet and commuting.	1	CW-2.1	Consider establishing a car-sharing program, such as Zipcar, at City Hall for use by City employees and residents.	Mitigation	Municipal	R&D					
Transportation and Land Use	CW-2	Increase efficiency of City fleet and commuting.	2	CW-2.2	Set up carbon offset purchases to offset City staff travel.	Mitigation	Municipal		Could also apply to citizens. Note to committee: Who would purchase them? City? Staff? Are we talking about educating about available platforms or setting up the City's own platform?				

Transportation and Land Use	CW-2	Support more climate-friendly development and land use.	3	CW-2.3	Introduce a Brush Ordinance that requires property upkeep over time and fire codes to require defensible space and best practices for fire-wise construction in the city.	Adaptation	Community	Policy/Regulation					
Transportation and Land Use	CW-2	Support more climate-friendly development and land use.	4	CW-2.4	Explore modification of the Wildland-Urban Interface (WUI) code to include construction techniques and materials appropriate for wildfire-prone areas.	Adaptation	Community	Policy/Regulation	California has done this.				
Transportation and Land Use	CW-2	Support more climate-friendly development and land use.	5	CW-2.5	Consider regulating further construction or expansion in the WUI part of the urban growth boundary (UGB).	Adaptation	Community	Policy/Regulation					
Transportation and Land Use	CW-3	Support more climate-friendly development and land use.	1	CW-3.1	Evaluate climate impacts to transportation infrastructure and operations, including critical needs for emergency response, goods and services movement, and community access. Identify and prioritize strategies for enhancing resilience.	Adaptation	Community	R&D					
Transportation and Land Use	CW-3	Support more climate-friendly development and land use.	2	CW-3.2	Preserve open space and restore converted grasslands and forestland on vacant developable lands in the city where it does not conflict with urban density priorities.	Both	Community	Operations	Would apply outside UGB or on vacant developable lands within the City?				
									Could be in conflict with urban development priorities and action to install solar energy production on vacant lands. Actions that potentially identify land inside the Urban Growth Boundary (UGB) that is currently designated for housing or job creation to uses that don't provide housing and/or projected job densities (e.g., farming, open space and forest land) would require modification of the City's Comprehensive Plan. The City is required by the Oregon Statewide Planning Program to have adequate land inventory to provide for at least the next 20 years of population and job growth. Options would need to be developed (e.g., increasing density inside the current UGB, enlarging the UGB) to address lands removed from those inventories.				
									Consider from Natural Systems group: Place renewable energy development and other development on already degraded and fragmented lands. Preserve ands for agriculture and open space.				
Transportation and Land Use	CW-4	Support more climate-friendly development and land use.	1	CW-4.1	Explore opportunities for planting additional trees in strategic locations around city facilities to maximize energy savings and minimize urban heat island.	Both	Community	R&D	One current large tree planting project is cooling Ashland and Bear Creek to meet DEQ temperature requirements for waste water effluent.				
Transportation and Land Use	CW-4	Support more climate-friendly development and land use.	2	CW-4.2	Consider introducing an "environmental" surcharge or fee as a funding mechanism for City climate action.	Mitigation	Community	Pricing/incentive	Question for committee: What would this fee apply to? What kinds of purchases? Also, assumed that funding would go to climate action?				

## Leadership and Connection Overarching Goal

**Continually strive to connect with other governments on a regional, statewide, national and international level so that we may mutually inspire and inform each other.**

### Justification:

We are looking at doing some dramatic change which will no doubt be a sacrifice for many. If we are successful it is critical others know of it. Hopefully we will help Oregon be a leader, and this will inspire the U.S. to be a leader and this will inspire other countries to take climate change seriously. If the nations of the world do not take on this challenge, we will experience the worst effects of climate change during this century.

If we do take on consumption, we may be the first City in the Northwest to take this on and be totally carbon neutral by 2047. This could inspire other cities.

In my recent research on Carbon offsets I learned that Obama administration just put in place last July a rule that addresses methane emissions from almost all landfills in the U.S. That is very good news.

Certainly Eugene inspired us to have our city operations be carbon neutral much sooner than the community.

Our State has already taken the lead on climate change in many ways:

1. Oregon is going to close its only coal plant in 2020.
2. Oregon is the first state in the nation to pledge to be free of all electricity coming from coal both in and out of state by 2035.
3. In 2016 Oregon expanded its Renewable Portfolio Standard (RPS) to have 50% of its electricity from large utilities come from Non-hydro Renewables by 2040. Smaller utilities have similar but smaller requirements.
4. **When the RPS was passed in 2007, only 2 percent of Oregon's electricity needs were met through renewables; today, it's 15 percent in 2016. The RPS has spurred utility investment in renewable resources in Oregon and neighboring states.**
5. **Under the Oregon's RPS, renewable resources such as wind, solar, micro-hydro, offshore wind, biomass, and more are helping the state generate and use renewable power. The biggest jump has been in wind power, which increased from 1.38% in 2007 to 5.92% in 2015.**