AD-HOC CLIMATE ACTION AND ENERGY PLAN COMMITTEE

Meeting Agenda September 2, 2015 – 6:00 PM

Community Development Building, Siskiyou Room 51 Winburn Way

- 1. Call to Order
- 2. Introductions
- 3. Meeting Format and Schedule
 - Chair Duties/Responsibilities
 - Agenda/Packet Materials
 - Regular Meeting Schedule Date/times/frequency
- 4. Committee Charge/Scope of Work
 - Review/Discuss Council Approved Committee Scope/Charge
- 5. Conservation Commission Proposed Project Plan Elements and Process
 - Review of prior work & Council direction
 - Consultant RFP scope of work Direction to staff
- 6. Climate Plan Kick Off Event
 - Review GEOS grant application (\$10,000 City grant award)
 - Key alignment/compatibility issues
 - Committee involvement in event
 - Event data/outcomes for Committee use
- 7. Greenhouse Gas Inventory Project Update
- 8. Agenda Items for Next Meeting
 - Review/Recommend final draft consultant scope of work
 - Kick-off committee requests of Ad-Hoc Committee
 - ???????



Ad Hoc Committee on Climate Change and Energy Action Plan Scope of Work, August 19, 2015

The ad hoc Climate Change and Energy Action Plan Committee is charged with making recommendations to the City Council regarding a climate change and energy action plan intended to identify existing and potential vulnerabilities and develop an organized and prioritized set of actions to protect people and resources from the ongoing impacts of climate change. The plan shall include targets and strategies for reduction of greenhouse gas emissions in Ashland. These targets and strategies may be short- mid- or long-term, and shall consider cost, feasibility, community acceptance and likelihood of success, with an emphasis on voluntary measures that can be undertaken by different sectors of the community. The plan shall include specific, measurable actions that citizens and local institutions can undertake immediately upon adoption of the plan.

The Committee shall review similar plans in comparable communities, consult as necessary with local subject matter experts in the areas of transportation, energy, land use and infrastructure (and other areas as the Committee deems advisable), and identify implementation steps as appropriate.

The Committee shall, in consultation with City staff and consultants, determine its own work plan and project timeline, however while the Committee may consult with and advise on its needs for consultant services, City staff shall be the sole point of contact for consultants hired to work on the plan or technical reports associated with the plan. Unless otherwise directed by the City Council, the Climate Change and Energy Action Plan shall be delivered to the City Council by January 31, 2017.

The Committee shall, in the course of its work:

- Provide ample opportunity for public input and feedback; and
- Present its recommendations in writing so they can be easily shared with the public.



Council Communication June 2, 2015, Business Meeting

Community Climate and Energy Action Plan Ad-Hoc Committee Formation Request

FROM:

Adam Hanks, Management Analyst, Administration – adam@ashland.or.us

SUMMARY

At the March 16, 2015 Council study session, the Conservation Commission, through its Climate/Energy sub-committee, presented a plan framework for a community climate action and energy plan. As a stated follow-up task, the Commission is requesting that Council approve the formation of an ad-hoc committee.

Approving the creation of this ad-hoc committee is a key initial step in moving the project from concept framework to active plan development and begins the process of seeking interested community members to contact the Mayor for his appointments tentatively scheduled to be announced and confirmed at a future Council meeting in late July or early August.

BACKGROUND AND POLICY IMPLICATIONS:

The Conservation Commission has for some time been interested in the City increasing its in the area of sustainability and has spent many years working on both individual sustainability related projects as well as the development and approval of broad policy level sustainability principles for City and community decision making.

Climate Action and Energy Plan (CAEP) – Current Status

The Commission's most recent work culminated in a presentation to the Council on March 16, 2015, outlining a process and content framework for a community climate action and energy plan. Along with and central to the Commission's request to move forward with such a community plan was a funding request to move the plan from concept to reality.

The funding request of \$120,000 over the 2015-17 biennium was approved by the Citizen's Budget Committee on May 21, 2015. As this funding request moved through its review process, the climate energy sub-committee worked with two local environmental non-profits to submit a grant application for a City Economic, Cultural, Tourism and Sustainability grant. The grant review committee awarded the groups \$10,000 of the \$28,540 that was requested.

As proposed, the grant recipients intend to utilize the \$10,000 grant award to organize and manage a significant kick-off event and other supporting efforts to garner support for the plan development process. Additionally, the kick-off is intended to provide a forum to collect names of community members that may be interested and qualified to be among the pool of people for the Mayor's consideration for appointment to the ad-hoc committee.

A



CAEP Project Schedule

To provide context for the creation of the ad-hoc committee and the proposed kick-off events, the Commission created a draft CAEP planning schedule. The schedule is intentionally aggressive in order to meet the self imposed one year plan development target.

Staff is in general agreement with the plan schedule with a few exceptions and will work with the Commission and its sub-committee to address several of the identified modifications, such as:

- Role of the grant recipients in the plan development;
- Timing and use of data collected by grant recipients as part of the initial kick off steps;
- Responsible party for the charge and role of the ad-hoc committee (City Administrator is designated by Ashland Municipal Code); and
- Role of the Conservation Commission and sub-committee in plan development (possibly resolved by inclusion on the ad-hoc committee).

Coordination of roles and tasks associated with the proposed kick-off events will be critical as this will set the tone for much of the plan development. The grant award contract and the RFP for consultant services will need to be aligned and carefully delineated to ensure maximum value of the kick-off event and a smooth transition between the two separate entities.

Ad-Hoc Committee Timeline and Responsibilities

The Ad-Hoc Committee will act as the central hub for the plan development and will be made up of community members who have the time, ability and interest in serving the community over a 9 to 12 month period in developing recommendations from a variety of community sources. The oversight committee will be the official sounding board for staff and consultant plan development efforts and will function as the final recommendation body prior to the final draft plan presentation to Council for adoption. Key committee dates include:

- Approval of Ad-Hoc Committee formation June 2, 2015
- Establishment of committee scope of work July 2015
- Committee member appointments August 4, 2015
- First Committee meeting September 2015
- Meeting Schedule One to two meetings per month
- Draft plan presentation to Council July 2016

Ad-hoc Committee Municipal Code Reference

AMC 2.04.090 B.

The Mayor shall have the authority, with the consent of the Council, to form ad-hoc committees or task forces to deal with specific tasks within specific time frames. Such ad hoc committees shall abide by uniform rules and procedures set forth in AMC 2.10 and such other rules as prescribed by the order establishing such ad hoc entities. Committees shall make recommendations by way of a formal report to the City Council. The Mayor or City Administrator may refer matters to the appropriate ad hoc committee. The Mayor with the consent of the Council shall appoint the membership of such committees. Members of Regular Boards and Commissions may be appointed to ad hoc committees. The City Administrator shall by order establish the ad hoc body's scope of the work and rules of





procedure, if necessary. The Council has the authority to follow the recommendations, change the recommendations, take no action, remand the matter back to the ad hoc body or take any other action it sees fit. The Council by majority vote may remove a member of an ad hoc committee at any time, with or without cause. The City Council by majority vote may amend or dissolve an ad hoc committee.

COUNCIL GOALS SUPPORTED:

Energy and Infrastructure

- 22. Prepare for the impact of climate change on the community
 - 22.1 Develop and implement a community climate change and energy plan

FISCAL IMPLICATIONS:

The approved BN 2015-17 budget includes \$120,000 for the use of contract employment, consultant or staff work depending on need as the plan development moves forward.

Additionally, the Budget Committee recommended a grant award to the GEOS Institute of \$10,000 for a proposed community kick-off event for the plan. Plan development will also require varying levels of staff time commitment from multiple City departments including Administration, Public Works, Electric and Community Development.

STAFF RECOMMENDATION AND REQUESTED ACTION:

Staff recommends the formation of a Climate Action & Energy Plan Oversight Committee to allow adequate time to generate community interest in serving on the committee for appointment by the Mayor in August. Having a committee in place and ready to act by early September is critical in maintaining the schedule and meeting the final plan presentation date of July 2016.

SUGGESTED MOTION:

I move to authorize Mayor Stromberg to form an ad hoc Climate Action & Energy Plan Oversight Committee.

ATTACHMENTS:

- 1) Conservation Commission Proposed CAEP Planning Schedule
- 2) Community Climate and Energy Action Plan Study Session Packet March 16, 2015
- 3) GEOS Institute City of Ashland 2015 Grant Application
- 4) March 16, 2015 Council Study Session Minutes



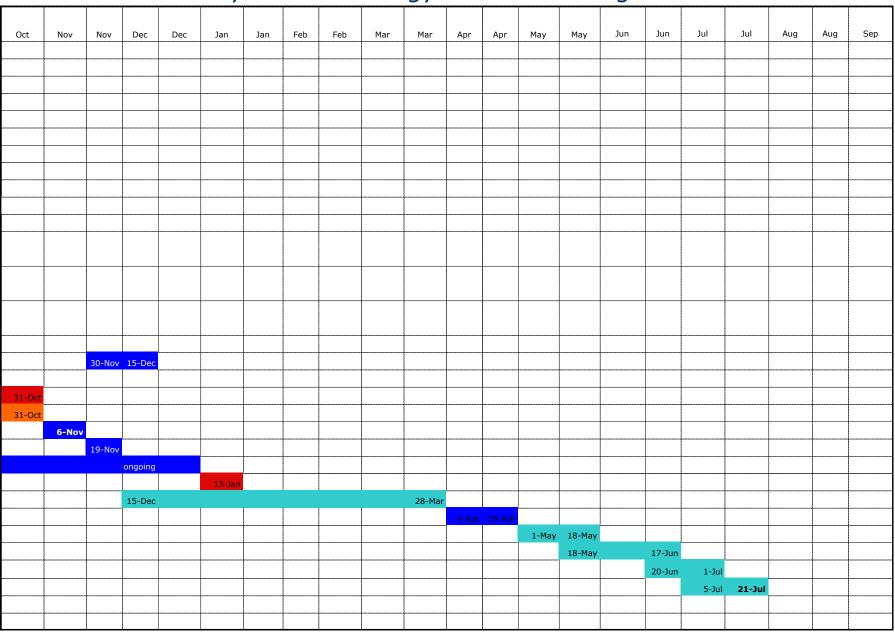
Ashland Community Climate Energy Action Planning Schedule

| | | Responsible | | | | | | | | | | | | |
|--------|---|-------------------|-----|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------|--------|
| Step # | Description | Party | Apr | May | May | June | June | July | July | Aug | Aug | Sep | Sep | Oct |
| prelim | Bring next steps to CC for vote | SC | | | 27-May | | | | | | | | | |
| prelim | City Coucil agrees on steps | SC, Council | | | | 2-Jun | | | | | | | | |
| prelim | Develop consultant RFP | Staff | | | | 15-Jun | 30-Jun | | | | | | | |
| prelim | Release RFP | Staff | | | | | | 1-Jul | 31-Jul | | | | | |
| prelim | Contract awarded | Staff | | | | | | | | 1-Aug | | | | |
| 1a | Greenhouse Gas Inventory RFP | Staff | | 15-May | | 15-Jun | | | | | | | | |
| 1b | Greenhouse Gas Inventory Report | Staff | | | | | 30-Jun | | | | 31-Aug | | | |
| 1c | Greenhouse Gas Inventory Draft | Contractor, Staff | | | | | | | | | 31-Aug | | | |
| 1d | GHG Inventory Review | SC, GIRC | | | | | | | | | 31-Aug | 15-Sep | | |
| 1e | GHG Final Report Release | Contractor, Staff | | | | | | | | | | | 15-Sep | 15-Oct |
| 2a | Identify Ashland CEAP Champions | SC, GIRC | | | | 1-Jun | 30-Jun | | | | | | | |
| | Build a list of potential leadership | | | | | | | | | | | | | |
| 2b | participants for GIRC process | SC, GIRC | | | 20-May | | | | 31-Jul | | | | | |
| | Create charter, roles, responsibilities | | | | | | | | | | | | | |
| 2c | for Oversight Committee | GIRC, SC | | 4-May | | | 17-Jun | | | | | | | |
| | Outreach and collect potential | GIRC, CC, | | | | | | | | | | | | |
| 2d | Oversight Committee names | Council, Staff | | | | 20-Jun | 15-Jul | | 31-Jul | | | | | |
| 2e | Appoint Oversight Committee | Mayor | | | | | | 15-Jul | 31-Jul | | | | | |
| 3a | Set Emissions Reductions Targets | OC w/Tech exper | ts | | | | | | | | | | | |
| 4a | ID partner orgs. for kickoff event | GIRC | | | | 1-Jun | | | | | | | 20-Sep | |
| 4b | Public outreach for event | GIRC, CC | | | | | | 1-Jul | | | | | | |
| 4c | | CC? | | | | | | | | | | 1-Sep | | |
| 4d | Public Outreach Kickoff Event | GIRC, OC | | | | | | | | | | | | |
| 4e | Feedback based on kickoff event outco | GIRC, OC | | | | | | | | | | | | |
| 5a | Engage Local Technical Experts | OC | | | | | | | | 1-Aug | | | | |
| 6a | Consult with City Council and Staff | | | | | | | | | | | | | |
| 7a | Consultant to draft plan | CON | | | | | | | | | | | | |
| 7b | Review Draft Plan | OC | | | | | | | | | | | | |
| 7c | Feedback and revision | CON | | | | | | | | | | | | |
| 7d | Attain Public Feedback on Plan | CON, OC, CC | | | | | | | | | | | | |
| 7e | Provide feedback from public | CON, OC, experts | | | | | | | | | | | | |
| 7f | Finalize Plan | CON, OC | | | | | | | | | | | | |
| 8a | Public Feedback/Outreach | TBD | | | | | | | | | | | | |
| 9a | Begin Implementation | TBD | | | | | | | | | | | | |

Orange=Conservation Commission (CC), Red=Geos Institute and Rogue Climate (GIRC), Blue=Oversight Committee (OC), Turquoise=Contractor (CON), Purple=Climate and Energy Subcommittee (SC), Green=City Staff or Council

Draft 5/22/15

Ashland Community Climate Energy Action Planning Schedule



Orange=Conservation Commission (CC), Red=Geos Institute and Rogue Climate (GIRC), Blue=Oversight Committee (OC), Turquoise=Contractor (CON), Purple=Climate and Energy Subcommittee (SC), Green=City Staff or Council

Draft detailed steps in the proposed Climate and Energy Action Planning (CEAP) process. These steps align with CEAP timeline and Gantt chart.

Preliminary

- a. Bring next steps to Conservation Commission for vote
- b. City Council agrees on steps
- c. Develop consultant RFP for planning process Consultant will gather data from public input, local experts and emissions reductions targets. RFP should contain: skills in running interactive workshops/meetings with diverse backgrounds that encourages ownership and transfer of knowledge to all involved. Knowledge of climate change/energy planning. Depending on timing of the hiring of the consultant, the consultant agrees to enter into the process during or after the grantees efforts. The consultant agrees to consult the topic groups that were formed at the kickoff event
- d. Release RFP
- e. Contract awarded Consultant to start work in August
- 1. **Greenhouse Gas Inventory (GHGI)** The City conducts or contracts a greenhouse gas inventory that includes a subset for city operations (transportation is included); this inventory will also benefit the city operational sustainability plan that has already been adopted by City Council. The purpose of the GHGI is to identify local sources of GHG emissions so we can direct resources in the most efficient and cost-effective manner possible.
 - a. GHGI RFP Specific reporting requirements should be identified in RFP (e.g. seasonal variations, transportation, electricity, scope 3 emissions).
 - b. GHGI Report The City conducts or contracts a greenhouse gas inventory (GHGI) following GHGI standards. The Oversight group enters into the scene after they are up and running. The GHGI that includes a subset for city operations (transportation is included); this inventory will also benefit the city operational sustainability plan that has already been adopted by City Council. The purpose of the GHGI is to identify local sources of GHG emissions so we can direct resources in the most efficient and cost effective manner possible.
 - c. GHGI Draft Release draft
 - d. GHGI Review Small team review
 - e. GHGI Final Report Release
- 2. **Leadership** Appoint a City/Citizen Oversight Group, which will create a Technical Advisory Committee to set scientifically valid GHG emission goals, engage community members, interface with other groups, conduct outreach, guide strategy development, and prioritize actions. City Staff will support the Oversight Group as needed. See Appendix III for more information.
 - a. Identify Ashland CEAP Champions Seek City Council member(s) and others who agree to be active champions of the Ashland CEAP process.

- b. Build a list of potential leadership participants for GIRC process Based on the list of categories in the original CEAP process, we will develop a list of potential kickoff (GIRC) leadership members to ask to serve. This group's role will be to provide recommendations for the Oversight Group membership, get citizen input on GHG emissions targets, and provide guidance and leadership for a successful Kick-off Event. This initial GIRC leadership group will convene through the end of the kick-off event, but the Oversight Group will guide the process during later stages. There may be overlap in membership.
- c. Create charter, roles, responsibilities for Oversight Committee Review by SC.
- d. Outreach and collect potential Oversight Committee names Outreach includes names and interest. GIRC leadership group reviews list
- e. Appoint Oversight Committee Appointing may help to keep people involved and on task. There is a risk that it may become bureaucratic.
- 3. **Set Emissions Reduction Targets** Many communities use targets set by state government, while others decide on more stringent targets for their community. The Technical Advisory Committee will investigate and recommend appropriate targets for Ashland.
 - a. Set emissions reductions targets a team of experts will set emissions reduction targets based on input from the OC and the public from the Kick-off event. We will collect public input through outreach, polling, and kickoff participants.
- 4. **Public Outreach** Hold a public kick-off event that informs community members about the effort, engages them on the issue, collects their input on areas of highest priority, and showcases positive stories and successes in energy savings and renewable energy.
 - a. Identify partner organizations for kickoff event
 - b. Public outreach for event Aug. for general public. Oct. for SOU students.
 - c. Public Survey on Climate and Energy SOU assist in the design components: questions, type, etc. The survey should be conducted in a variety of means
 - d. Kick off event large event as planned by GIRC, OC, and other local partners
 - e. Feedback based on kickoff event outcomes Communication back to the public on findings.
- 5. **Engage Local Experts** Convene sector specialists to develop initial lists of strategies and prioritize them in a collaborative manner, based on cross-sector discussions of synergies, short- vs. long-term goals, areas with the greatest/fastest potential energy savings, most vulnerable resources and populations, and issues of equity and local values.
 - a. Convene sector specialists to develop initial lists of strategies and prioritize them in a collaborative manner, based on cross-sector discussions of synergies, short- vs. long-term goals, areas with the greatest/fastest potential energy savings, most vulnerable resources and populations, andissues of equity and local values. Categories of Expertise: human health, climate, energy, transportation, emergency response, natural resources, water, etc.

- 6. **Consult with City Council and City Staff** Hold a working session with City Council and City Staff to further refine and prioritize emissions reduction strategies and climate change preparedness strategies. City to identify a number of actions for immediate implementation.
 - a. Consult with City Council and City Staff (see above)
- 7. **Finalize the Plan** The plan should include emissions targets, a timeline, high level goals, specific strategies, and actions that are organized by short and long term implementation horizons. The plan should include an implementation plan that specifies who is responsible for specific actions, a monitoring plan to assess progress, and periodic updates to the plan.
 - a. Consultant to draft plan
 - b. Review Draft Plan Technical Experts, Commission(s) and City Council Study Session(s)
 - c. Feedback and revision Feedback as appropriate and revisions, as needed
 - d. Attain Public Feedback on Plan Obtain public feedback via public meetings and other avenues
 - e. Provide feedback from public as needed to Tech Experts/Commissions/City Council
 - f. Finalize plan
- 8. **Get Feedback/Conduct Outreach** Hold an open forum workshop(s) to share information and collect feedback. Also use online forums, local TV and radio, printed media, and other outreach tools. Report the results online in other venues, as appropriate, with recap of the process, detailed strategies, and timeline.
- 9. **Implement** Implement strategies in phases, following implementation plan.
- 10. **Assess performance** Measure and report on results periodically (every 1-3 years)
- 11. **Reassess** Revise based on new information, ongoing trends, new technologies, and results from monitoring. Develop additional measures to protect the community from climate change impacts.
- 12. **Educate** Continue with public outreach and education for sustained efforts.



Council Communication March 16, 2015, Study Session

Ashland Conservation Commission Community Climate and Energy Action Plan Proposal

FROM:

Adam Hanks, Management Analyst, Administration – adam@ashland.or.us

SUMMARY

Based on direction from Council at the September 15, 2014 Study Session, the Conservation Commission began a focused effort to develop a process, goals and resources framework for a community climate and energy action plan. The plan includes high level goals, sectors to be addressed, project scope, timeline, resource requirements and an outline of suggested steps to begin implementation of the plan process. Also included in the plan proposal is a review of climate action planning in other communities within the state and beyond, which were utilized to develop the community plan proposal for Ashland.

The Commission is seeking comment and feedback on the plan framework and recommends that the project to be funded in the upcoming biennial budget process (FY2015-17).

BACKGROUND AND POLICY IMPLICATIONS:

The Conservation Commission has for some time been interested in the City increasing its efforts and focus in the area of sustainability and has spent many years working on both individual sustainability related projects as well as the development and approval of more broad policy level sustainability initiatives to embed sustainability principles into City and community decision making.

This current proposal and request is a result of the Commission's request for Council consideration for the 2011-12 Council goal setting process. The following goal was approved as part of the final Council goals for 2011-12, as amended by Council in May of 2012:

"Develop a concise sustainability plan for the community and for City operations, beginning with development of a plan framework, suggested plan format, timeline and resource requirements for City Operations that can be used as a model for a community plan to follow"

In November of 2012, Council approved the Commission's suggested Operational Sustainability Plan Framework, Plan Format and Process Outline document that staff has subsequently used as the basis for development and implementation of a formal Operational Sustainability Plan.

In September of 2014, the Commission presented Council with a proposal to adopt and utilize the STAR Communities framework, a tool developed originally by ICLEI, Sustainability for Local Governments, then spun off as its own national template for local government sustainability planning,

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implementation and measurement. At that meeting, Council reviewed the broad matrix of topics/issues covered by STAR Communities and, rather than moving forward with the complete set, asked the Commission to instead develop a plan that would address climate and energy action specifically (one of seven major topic categories of STAR).

The Conservation Commission re-focused the existing sustainability sub-committee of the Commission and began work on developing a plan to address climate and energy action that would meet the goals and objectives of the Council and the community. The sub-committee met twice a month over the past five months and provided three reports to the full Commission with the end result being the Climate and Energy Action Plan included in this meeting packet.

A significant component of their work involved research and review of other community level Climate and Energy plans from different communities within Oregon and beyond. The results of this research can be found in Appendix II of the document and include the following summary:

Overall assessment:

MOST plans are:

- Based on a long-term positive vision for the community
- Sponsored and/or led by City or County government
- Based on a community-wide greenhouse gas assessment
- Focused on time horizons of 15-25 years (mostly due to California mandates)
- Iterative in nature, with regular monitoring and reassessing to track progress
- Both City and Community in scope
- Based on greenhouse gas emissions targets set at the state level

But SOME communities go further and create more robust plans. MANY plans have:

- Goals/strategies specific to near, mid, and long term time horizons
- Greenhouse gas savings calculated for each specific action
- Cost and/or cost savings calculated for each specific action
- Adaptation strategies incorporated in with mitigation strategies for each sector
- Strategies developed from highly collaborative community-based workshops and meetings
- Education on climate change as a primary strategy
- Social equity goals also addressed
- Population and business growth calculated into the emissions savings equation
- Goals for carbon neutrality
- Acknowledgement of the urgency of the issue
- Plans for more adaptation strategies to be developed over time

Additionally, the sub-committee found the Eugene Climate and Energy Plan especially relevant and has provided a more in depth review of that document as well, which can be found in Appendix V of the action plan.





COUNCIL GOALS SUPPORTED:

Energy and Infrastructure

22. Prepare for the impact of climate change on the community

22.1 – Develop and implement a community climate change and energy plan

FISCAL IMPLICATIONS:

The Commission recommendation includes a funding request for the FY2015-17 biennium based on the equivalent of a .5 FTE project coordinator level position. This funding would allow for the use of contract employment, consultant work or new City staff depending on need as the plan development moves forward. Staff has estimated the equivalent cost of the .5 FTE position at \$60,000 per fiscal year for a total proposed resources request of \$120,000 for the FY2015-17 biennium.

This would be in addition to existing staff participation in the plan development, including general project management, subject matter staff expertise (Public Works, Electric, Conservation, Administration)

STAFF RECOMMENDATION AND REQUESTED ACTION:

No formal action requested of Council, this item is for discussion, feedback and general direction.

SUGGESTED MOTION:

N/A

ATTACHMENTS:

Conservation Commission Community Climate and Energy Action Plan – March 9, 2015 Rogue Climate, Oregon Action – Letters of Support September 15, 2014 Council Study Session Minutes http://www.ashland.or.us/Agendas.asp?Display=Minutes&AMID=5788



Conservation Commission Recommendations for a Climate and Energy Action Plan for the Community of Ashland, Oregon March 9, 2015

Background: Climate change poses a severe threat to the health, safety and livelihoods of current and future residents of Ashland, as well as people around the globe. Climate change also severely threatens the natural world and the resources we depend on. We are already feeling the impacts of climate change at the local level. Without emissions reductions, severe drought, floods, and wildfires are all expected to worsen and accelerate over time. Local impacts are already being felt, including a lack of snow and loss of revenue at Mt. Ashland; water restrictions during severe drought, such as those in 2014; and smoke from forest fires affecting the tourist industry when plays are cancelled and rivers are closed for rafting. By reducing emissions locally we can contribute to preventing increasingly severe impacts. Because many changes are inevitable due to gases already emitted, we also need to prepare our community for the changes ahead. The community of Ashland, with its strong history of conservation and a population engaged in the issue, is poised to take truly meaningful action on this extremely important issue.

State Level Efforts and Policies: In 2004, the state of Oregon passed a resolution to combat climate change by setting short and long term targets for reducing greenhouse gas emissions statewide. The state has goals to reduce emissions by 10% below 1990 levels by 2020 and 75% below 1990 levels by 2050. A recent report (Oregon Global Warming Commission 2013) shows that progress has been made and our state is on a trajectory to meet its targets, but that success is tenuous and sustained efforts are not yet in place. Success at the state level relies heavily on actions taken at the local level. See Appendices I and II for more information on state and local actions. The vast majority of state universities in Oregon, including SOU, has created Climate Action Plans and has dedicated sustainability staff.

Why our community needs to take action: As climate change has progressed unabated and new scientific evidence has become available, the urgency of immediate and forceful action has become increasingly clear. The state will not be able to meet its short and long term goals without action on greenhouse gas (GHG) emissions at the local level. Many communities in Oregon are already taking action to reduce emissions. Because of this, there are numerous plans and frameworks that Ashland can model its efforts after, reducing the investment in planning and moving more quickly to action. Action on climate change provides numerous benefits besides greenhouse gas emissions reductions – it also provides cleaner air and water, locally sourced energy that creates a stronger local economy, and monetary savings for residents that conserve energy. In addition to GHG emissions reductions, the community needs to become more resilient in the face of increasing likelihood of extreme events such as heat waves, drought, severe wildfire and floods. Addressing community vulnerabilities and developing cross-sector strategies are both vital for increased community resilience.

Goals of a plan for Ashland:

- 1. Conduct a highly collaborative cross-sector effort on climate change, driven by a City/Citizen Oversight Group, which in turn is supported by a Technical Advisory Committee and City Staff (Appendix III); and with extensive community input, engagement and ongoing educational outreach.
- 2. Develop a Climate and Energy Action Plan for the Community of Ashland (including city operations as well as all residents, businesses, schools, and others) that includes greenhouse gas emissions targets, specific goals and strategies, an implementation plan, timelines, and monitoring requirements for reducing GHG emissions throughout the Community of Ashland.
- 3. Identify risks and vulnerabilities of a changing climate to the community and resources of Ashland; develop, prioritize, and implement strategies to protect the community from climate change impacts.
- 4. Participate in regional efforts to reduce emissions across jurisdictions, including city and county.

Specific sectors to be addressed:

- ◆ Infrastructure
- Economics & Tourism
- ◆ Natural Resources

- Renewable Energy & Energy Efficiency
- ◆ Food & Agriculture
- ◆ Land use & Transportation
- ◆ Consumption & Waste
- ◆ Health & Social Services

Scope: The Community of Ashland, City Operations, the Ashland watershed and other areas of influence.

Timeline: Planning to begin in spring of 2015 with implementation of initial actions to begin no later than spring 2016. The plan will continue to be revised over time to include more adaptation strategies and update mitigation strategies, as needed.

Resource needs: At least 0.5FTE staff time or equivalent in contracted assistance this FY15-17 to manage the development of the Climate and Energy Plan (year 1) and begin to implement the plan (year 2).

Steps in chronological order:

- 1. **Greenhouse Gas Inventory** The City conducts or contracts a greenhouse gas inventory that includes a subset for city operations (transportation is included); this inventory will also benefit the city operational sustainability plan that has already been adopted by City Council. The purpose of the GHG inventory is to identify local sources of GHG emissions so we can direct resources in the most efficient and cost-effective manner possible.
- 2. **Leadership** Appoint a City/Citizen Oversight Group, which will create a Technical Advisory Committee to set scientifically valid GHG emission goals, engage community members, interface with other groups, conduct outreach, guide strategy development, and prioritize actions. City Staff will support the Oversight Group as needed. See Appendix III for more information.
- 3. **Set Emissions Reduction Targets** Many communities use targets set by state government, while others decide on more stringent targets for their community. The Technical Advisory Committee will investigate and recommend appropriate targets for Ashland.
- 4. **Public Outreach** Hold a public kick-off event that informs community members about the effort, engages them on the issue, collects their input on areas of highest priority, and showcases positive stories and successes in energy savings and renewable energy.
- 5. **Engage Local Experts** Convene sector specialists to develop initial lists of strategies and prioritize them in a collaborative manner, based on cross-sector discussions of synergies, short- vs. long-term goals, areas with the greatest/fastest potential energy savings, most vulnerable resources and populations, and issues of equity and local values.
- 6. **Consult with City Council and City Staff** Hold a working session with City Council and City Staff to further refine and prioritize emissions reduction strategies and climate change preparedness strategies. City to identify a number of actions for immediate implementation.
- 7. **Finalize the Plan** The plan should include emissions targets, a timeline, high level goals, specific strategies, and actions that are organized by short and long term implementation horizons. The plan should include an implementation plan that specifies who is responsible for specific actions, a monitoring plan to assess progress, and periodic updates to the plan.
- 8. **Get Feedback** Hold an open forum workshop(s) to share information and collect feedback. Also use online forums, local TV and radio, printed media, and other outreach tools. Report the results online in other venues, as appropriate, with recap of the process, detailed strategies, and timeline.
- 9. **Implement** Implement strategies in phases, following implementation plan.
- 10. **Assess performance** Measure and report on results periodically (every 1-3 years)
- 11. **Reassess** Revise based on new information, ongoing trends, new technologies, and results from monitoring. Develop additional measures to protect the community from climate change impacts.
- 12. **Educate** Continue with public outreach and education for sustained efforts.

Appendix I – Roadmap 2020

In 2010, the Oregon Global Warming Commission developed the Roadmap 2020 with recommendations on how to meet its 2020 greenhouse gas emissions goals and get a head start on its 2050 goals. Six technical committees were convened to address actions in specific sectors (energy/utilities, industry, forestry, agriculture, materials/waste management, and transportation/land use). Recommended actions came from each technical committee as well as additional "integrating" actions that work across sectors.

Some key actions included:

- Work with state agencies and local governments to conduct greenhouse gas inventories across the state
- Advocate for a carbon price signal across goods and services, through an emissions cap or a carbon tax
- Reduce (prevent) waste of food at the retail and consumer level by 5-50%
- Ramp down emissions associated with coal generation
- \bullet Provide financial incentives to reduce lifecycle building-related greenhouse gas emissions by 80%
- Eliminate reliance on a gas tax for funding transportation infrastructure
- Develop new funding streams to support climate-friendly transportation options, including high speed rail from Eugene to British Columbia
- Encourage agricultural practices that increase carbon sequestration in soils
- Prepare the agricultural industry for reclining reliability of water resources

For more information on the Roadmap 2020 and the full report go to this link (http://www.keeporegoncool.org/content/roadmap-2020).

For the third biennial report (2013) to Legislature from the Oregon Global Warming Commission go to this link (http://www.keeporegoncool.org/view/ogwc-reports).

Appendix II – Review of Climate Action Planning in other Communities

The Climate and Energy Subcommittee of the Conservation Commission reviewed numerous Climate and Energy Action Plans from other communities. We found certain aspects of the different plans to be informative in our efforts to develop strategies for Ashland. We have listed plans that we think are good examples in Table 1, along with some of their more outstanding or unique features (shown in bold in Table 1).

Definitions

- <u>Mitigation</u> refers to reduction in greenhouse gas concentrations in the atmosphere in order to reduce the overall magnitude of climate change. Effective mitigation requires concomitant emissions reductions throughout the U.S. and other key nations, as well as increased carbon uptake in forests. Mitigation is needed to protect people from the most severe impacts over the long term.
- <u>Adaptation</u> refers to actions taken to protect people and resources from the impacts of climate change. As climate change is already being felt and impacts will worsen for decades based on emissions already released, adaptation is needed along with mitigation.

Overall assessment:

MOST plans are:

- Based on a long-term positive vision for the community
- Sponsored and/or led by City or County government
- Based on a community-wide greenhouse gas assessment
- Focused on time horizons of 15-25 years (mostly due to California mandates)
- Iterative in nature, with regular monitoring and reassessing to track progress
- Both City and Community in scope
- Based on greenhouse gas emissions targets set at the state level

But SOME communities go further and create more robust plans.

MANY plans have:

- Goals/strategies specific to near, mid, and long term time horizons
- Greenhouse gas savings calculated for each specific action
- Cost and/or cost savings calculated for each specific action
- Adaptation strategies incorporated in with mitigation strategies for each sector
- Strategies developed from highly collaborative community-based workshops and meetings
- Education on climate change as a primary strategy
- Social equity goals also addressed
- Population and business growth calculated into the emissions savings equation
- Goals for carbon neutrality
- Acknowledgement of the urgency of the issue
- Plans for more adaptation strategies to be developed over time

| City | Pop. | Year | Lead Entity & Partners | Mitigation, Adaptation or both? | GHG Inventory? | Targets |
|----------------------------------|--|-------------------------------------|---|--|---|---|
| Austin, TX | 845,000 | 2014 | City | Mitigation | Yes in 2010 | City fleets and operations carbon neutral by 2020 Net Zero community wide by 2050 |
| addressed: tar assess (energy | gets (the real use, trans) put and adv | esolution portation visory gr | n specified th n, landfills, m oups, accoun | e targets, as anufacturing | listed above), sp g, with commun | e following topics to be ecific sectors and populations to ity growth factored in), monitoring and updates, and |
| Chico, CA | 100,000 (includes rural areas) | 2010 | City, CSU Chico, Community members | Mitigation | Yes | 5% below 2005 by 2015 20% below 2005 by 2020 |
| Waste sectors breakdown fo | . Their plan r City vs. C olan and co | provide ommun uld be a | ed specific en ity emission useful guid | missions tar s. The Chico e for Ashlan | gets for each se plan provides de | the Energy, Transportation, and ector and also provided a etailed steps for how they o includes a cost-benefit |
| contracting fo | r city proje | cts; (3) <u>j</u> | oursue install | ation of pure | | onsider carbon emissions in eements on city property; (4) t plan. |
| Corvallis, OR | 55,000 | 2014 draft | Task Force (volunteer) | Both | Yes in 2012 | 10% below 1990 by 2020 75% below 1990 by 2050 Reduce fossil fuel use 50% by 2030 |
| | - | _ | | | | with the Urban Services reated with a sense of urgency |

renewable by 2030 by supporting renewable energy projects and carbon tax efforts; (4) establish car-free streets downtown.

| Eugene, OR | 160,000 | 2009 | City, | Both | Yes in 2007 | City Ops carbon neutral by 2020 |
|--------------|---------|------|--------------|------|-------------|------------------------------------|
| _ugo::0, 01: | | | Springfield, | | | 10% below 1990 by 2020 |
| | | | other | | | Communitywide |
| | | | partners | | | Fossil fuel 50% below 1990 by 2030 |

Details: Eugene City Council asked City Staff to develop a Climate Action Plan. They worked with **many** partners, from universities to NGOs and private citizens to develop a joint mitigation and adaptation plan for the whole community. The sectors they looked at included Buildings and energy, Food and agriculture, Land use and transportation, Consumption and waste, Health and natural resources, and Urban natural resources.

Some notable actions include: (1) target multi-family housing for energy efficiency upgrades; (2) public institutions purchase climate friendly goods and services; (3) create 2-minute neighborhoods for basic needs and services in walking distance; (4) support electric charging stations in multi-family housing; (5) conduct a Vulnerability Assessment for health and Human Services impacts from climate change.

| | | | | | | 801 |
|-------------|---------|------|------|------------|-----|------------------------|
| Fort | 152,000 | 2008 | City | Mitigation | Yes | 20% below 2005 by 2020 |
| Collins, CO | | | | | | 80% below 2005 by 2050 |

Details: Fort Collins created a Climate Action Plan that works across the community with **both mandates** and voluntary measures and a significant public outreach campaign. They are currently working on

Adaptation strategies to complement their mitigation strategies. They showed the cost savings of the measures in their plan. Some notable actions include: (1) increase tree canopy to reduce energy demand; (2) outreach to business community; (3) require green building to get public financing; (4) aim for 50% waste diversion; (5) promote Net Zero ready homes. 188.000 City and Both Yes in 2009 7% reduction in emissions by 2012; 2013 Grand ICLEI Continue to reduce emissions 1% per Rapids, MI **Details:** Grand Rapids was awarded the Climate Protection Award by the U.S. Conference of Mayors. They completed a "Climate Resiliency" Report that outlines cross-sector strategies for preparing for climate change impacts and reducing their emissions. They addressed economics (energy, infrastructure. transportation, agriculture, risk management), environmental issues (water, land use, wetlands, forests, parks), and social impacts (emergency response, health, crime). Some notable actions include: (1) increase tree canopy by 40% to reduce energy use; (2) use porous pavement as flood abatement; (3) power 100% of city operations with renewable power by 2020; (4) Protect underserved, minority, and low income populations from the disproportionate climate change impacts; (5) Restore rivers to more natural state to improve water quality and enhance flood protection. Both Yes in 2008 10% below 2008 by 2015 69,000 2012 City Missoula, Operations 50% below 2008 by 2020 MT carbon neutral by 2025 **Details:** The City of Missoula, Montana committed to become **climate neutral** by 2025. Their Conservation and Climate Action Plan focuses on conservation and energy reduction measures, along with carbon offsets. They plan to track costs, energy/monetary savings, and avoided emissions over time, specific to each implemented strategy. Their plan focuses on city operations. They used the Climate and Air Pollution Planning Assistant (CAPPA) online tool available through ICLEI, to calculate energy savings, avoided emissions, and dollar savings. Some notable actions include: (1) need for immediate action; (2) they dedicated a FULL TIME staff position to implementing the plan; (3) replace city vehicles with electric/hybrid vehicles over time; (4) recommission city buildings to reduce energy use 16%; (5) incentives for ridesharing and flexible work schedules; (6) include sustainability measures in all job descriptions and performance reviews; (7) increase PV systems on city buildings from 2 buildings to 23; (8) expand Conservation Lands Program. 2011 Mitigation Yes in 2007 50% below 2007 by 2015 Oberlin, OH 8,400 City 70% below 2007 by 2030 100% below 2007 by 2050 **Details:** Oberlin College committed to become **climate neutral** by 2025. The city joined the pledge in 2011 with their Climate Action Plan that focuses on renewable energy, energy efficiency, transportation, green building, waste management and education. Some notable actions include: (1) increased efficiencies in heating, cooling, and lighting; (2) embrace the Architecture 2030 Challenge; (3) reduce solid waste 2% per year; (4) create community and business environmental awards; (5) hold community workshops. Yes in 2008: 15% reduction from 2005 baseline by 46,000 2012 City, Cal Both San Luis City/Community Poly, Obispo, CA Contractor

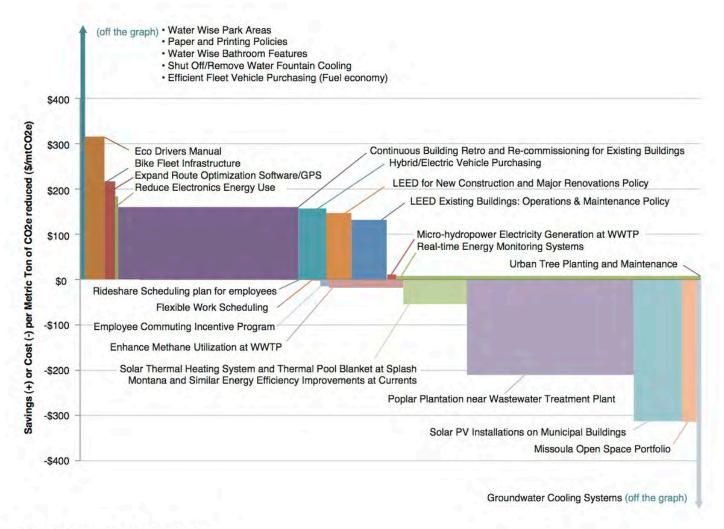
Details: The city provides specific greenhouse gas emissions goals for each sector (Buildings, Renewable

energy, Transportation and Land Use, Waste, Government Operations, and State Policies) and details the carbons saved with EACH strategy. A table on pages 59-62 shows the **GHG savings for each strategy**, timescale for each, cost, and the responsible entity.

Some notable actions include: (1) expand energy efficiency retrofits; (2) work with the County to develop network for renewable energy financing; (3) mandate electric vehicle charging stations; (4) install renewable energy systems on City buildings; (5) allocate/hire staff to implement CAP programs.

Fig. 1. Example from Missoula, Montana's Climate Action Plan. Comparative energy and cost savings/monetary costs for each proposed strategy.

Figure 3-1: Comparison of Conservation and Climate Action Strategies



Visual Comparison of Strategies

This graph is a visual comparison of strategies based on annual emissions reduction and cost. The benefit of having this graph is the ability to quickly compare strategies to see which have larger emissions reductions and best cost benefits.

The width of each bar is relative to the amount of emissions reduced annually. The wider the bar, the more emissions are avoided every year. The height of each bar above or below the horizontal axis is relative to the savings (positive) or cost (negative) per metric ton of emissions avoided. The savings/cost value is a way to take three important metrics from each strategy (implementation cost, annual savings, and annual emissions reduction) and combine them into one value that can be used to compare all of the strategies at once. Bars extending above the axis generate a net savings. Bars extending below the axis generate a net cost.

The strategies are listed in order of greatest savings (left) to greatest cost (right).

Appendix III – Oversight Group, Advisory Committee and City Staff

Recommendation – City/Citizen Oversight Group and Technical Advisory Committee to be comprised of a mix of people from many the following areas. The Oversight Group will create a Technical Advisory Committee to help set scientifically valid GHG emission goals, engage community members, interface with other groups, conduct outreach, guide strategy development, and prioritize actions. City Staff will provide support to the Oversight Group, as needed.

- Ashland School District
- Chamber of Commerce
- Transportation and Planning Commissions
- Conservation Commissioners from the Climate/Energy Subcommittee
- Watershed oversight
- Jackson County Housing Authority and/or ACCESS
- Utilities
- SOU

- Rogue Climate and/or SOCAN
- RVTD
- Clean Energy Works
- City Councilors
- City building/engineering experts
- OCF, other community foundations
- Tourism sector (e.g. OSF, hotel facilities experts)
- Recology Ashland Sanitary Service
- Community at large

Appendix IV – Some initial actions that other cities are taking and that Ashland could consider implementing quickly

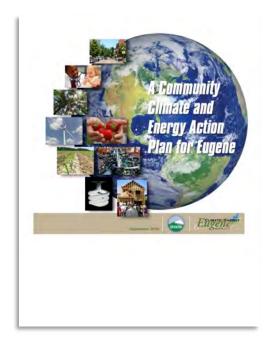
- <u>Virtual net metering</u> allows for renewable energy to be generated on a separate site but owned by people with other accounts and in other areas. Allows cooperatives and other investment sharing opportunities (Eugene)
- Expanded <u>education and outreach</u> on climate change impacts, preparedness, renewable energy opportunities, and energy conservation (San Luis Obispo)
- Evaluate incentives for <u>highly energy efficient buildings</u> aiming for net-zero construction and retrofits (Eugene and Corvallis)
- Energy performance score program for new residential construction voluntary
- Explore possibilities for utility scale solar
- Assess viability of Bonneville hydroelectric generation with climate change
- Conduct a pilot project at waste water treatment plant to determine the system ability to <u>co-digest food waste and bio-solids</u> to generate electricity (Eugene)
- Develop and implement master pedestrian and bike plan (Eugene)
- Ultimate goal for becoming platinum level bike friendly city
- Diversify funding sources to increase long term reliability and affordability of <u>mass</u> <u>transit</u> (Eugene)
- Conduct a climate and energy <u>vulnerability assessment</u> that assesses the mid-term and longer-term climate and energy vulnerabilities of essential services water, food, health, housing, and sanitation.
- Install <u>renewable energy systems on city buildings</u> (Grand Rapids, Oberlin, San Luis Obispo, Missoula, etc.) and/or school district buildings
- Strategically increase <u>tree canopy cover to reduce cooling costs</u> over time, especially near schools and other public buildings without air conditioning (Fort Collins, Missoula)
- Work with Jackson County to develop a <u>network of renewable energy financing and</u> <u>joint projects</u> (San Luis Obispo)
- Support mitigation and adaptation measures at the state level (San Luis Obispo, etc.)

Appendix V – OUTLINE OF CLIMATE AND ENERGY PLAN FOR EUGENE, OREGON

Population – 160,000 Plan developed – Winter 2008/2009 City Council asked staff to develop plan

Plan Development - Assembled in May 2009. 11 team members.

City of Springfield
UO Climate Leadership Initiative
Eugene Area Chamber of Commerce
Eugene Water and Electric Board
Friends of Eugene
Eugene Human Rights Commission
Lane Transit District
Lane County
Neighborhood Leaders Council
City of Eugene Planning Commission
City of Eugene Sustainability Commission



Goals:

- 1. All city operations and City-owned facilities were to be carbon-neutral by 2020.
- 2. Reduce community-wide greenhouse gas emissions 10 percent below 1990 levels by 2020.
- 3. Reduce community-wide fossil fuel use 50 percent by 2030.
- 4. Identify strategies that will help the community adapt to a changing climate and increasing fossil fuel prices.

Action Areas:

- 1. Buildings and Energy
- 2. Food and Agriculture
- 3. Land Use and Transportation
- 4. Consumption and Waste
- 5. Health and Social Services
- 6. Urban Natural Resources

Public Engagement Process:

- 1. Kickoff event September 2009
- 2. One public forum held on each of the six identified action areas between Oct 2009 and March 2010.
 - a. 8-12 topic specialists were identified in each of the six topic areas.
 - b. Strategy list was compiled using information submitted by regional experts and gleaned from municipal and state level climate and energy plans from

across the nation. The list was reviewed and refined by the topic specialists and used as a starting place for the public forums.

- c. Public forums in each of the topic areas.
 - i. Attended by topic specialists
 - ii. Neighborhood leaders
 - iii. Sustainability Commissioners
 - iv. 50-120 community members.
- d. Topic specialists reviewed proposed actions and strategies that emerged from public forums, provided input on priorities, clarified ideas, identified opportunities and challenges, and helped to ground the process in Eugene's unique economic, social, and environmental conditions.
- e. Advisory team members weighed information form background documents, input for the public forums, and topic specialist meetings. Team completes a final review of strategies and comments on the draft Community Climate and Energy Action Plan.
- f. Additional research was conducted after the draft was released to clarify some of the relative costs and benefits of actions. Targets and measures were also added.
- 3. Final plan only includes action items expected to reduce fossil fuel consumption and Greenhouse Gas Emissions, and to prepare Eugene for the impacts of energy price volatility and climate uncertainty.
- 4. Funding In 2011 \$200,000 of one-time funding was earmarked for use in implementing the Community Climate and Energy Action Plan.

Unique Factors in the Eugene Plan -

- 1. Internal Climate Action Plan. City of Eugene operations will be climate neutral by 2020. Strategies include:
 - a. Increase energy efficiency
 - b. Increase waste prevention
 - c. Improve purchasing methods
 - d. Offset energy use by purchasing quality carbon offsets.
- 2. Waste reduction plan Reduce waste 90% by 2030.
- 3. Food Scope Document. Worked towards improving food security in Eugene.
- 4. Inventory of Community Greenhouse Gas Emissions Report done in 2007

Objectives and Actions for Buildings and Energy

- 1. Reduce total GHG emissions from existing buildings by 50% by 2030.
- 2. Reduce total GHG emissions from new construction by 50% by 2030.
- 3. Expand Development of Renewable and District Energy Systems
- 4. Increase the implementation of climate change preparation strategies for the built environment (adaptation)

Objectives and Actions for Food and Agriculture

- 1. Reduce consumption of carbon-intensive foods
- 2. Reduce GHG emissions associated with agriculture and food waste

- 3. Increase food security by preserving the productive capacity of the local and regional *foodsheds*.
- 4. Prepare food systems for the uncertainties created by climate change and rising energy prices.
- 5. Increase availability of home-grown and locally-sources food in Eugene

Objectives and Actions for Land Use and Transportation

- 1. Create 20-minute neighborhoods, where 90 percent of Eugene residents can safely walk or bicycle to meet most basic, daily, non-work needs, and have safe pedestrian and bicycle routes that connect to mass transit.
- 2. Increase density around the urban core and along high-capacity transit corridors
- 3. Include the potential for climate refugees when conducting land use planning.
- 4. Continue to expand and improve Eugene's bicycle and pedestrian infrastructure and connectivity to increase the percentage of trips made by bike and on foot.
- 5. Increase the supply of integrated, convenient, efficient, and cost- effective public transit
- 6. Expand outreach, marketing and education about climate-friendly transportation alternatives
- 7. Ensure maximum efficiency in current and future freight systems
- 8. Increase the use of low-carbon vehicles and fuels to improve overall fuel-efficiency and reduce vulnerability to fluctuating oil prices.

Objectives and Actions for Consumption and Waste

- 1. Reduce greenhouse gas emissions by addressing purchasing habits
- 2. Increase waste diversion by improving recycling
- 3. Increase waste diversion rate for organic wastes
- 4. Conduct research to determine the most effective next steps in the area of consumption and waste
- 5. Reduce greenhouse gases in municipal operations by changing purchasing practices and reducing waste

Objectives and Actions for Health and Social Services

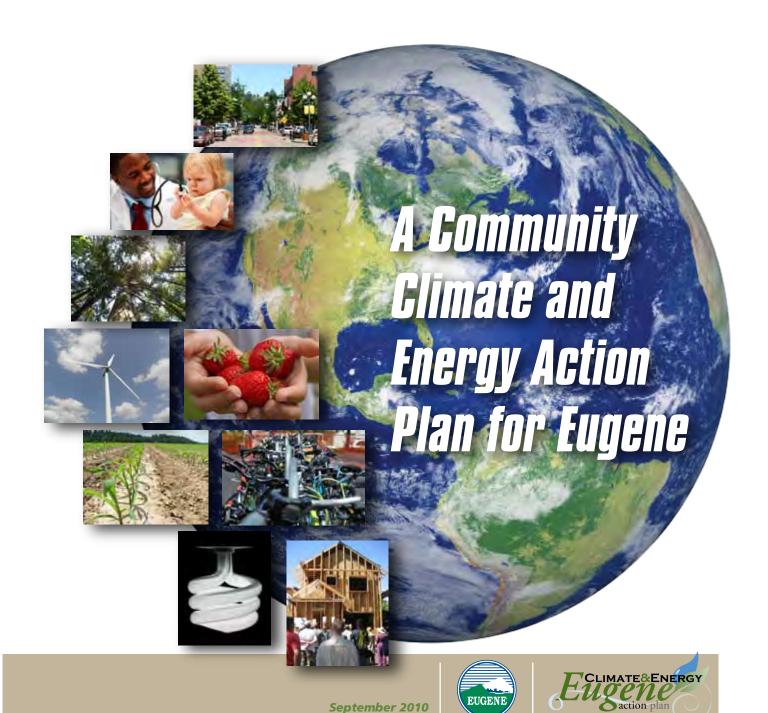
- 1. Prepare community systems for longer-term climate and energy challenges including fuel shortages, increased summer drought and increased storm intensity
- 2. Reduce *exposure* of human populations to climate-related disasters
- 3. Increase the capacity of Eugene's health sector, and the community at large, to meet the health-related challenges of climate change and rising fuel prices by fostering greater involvement of the public health system in climate change and energy planning

Objectives and Actions for Urban Natural Resources

- 1. Protect sensitive urban natural areas including riparian areas, wetlands, and floodplains, for multiple benefits including improved water and air quality, reduced water and air temperatures, and reduced flooding
- 2. Manage and update urban natural resource information, and make data available to public and policy-makers

- 3. Update vegetation management plans.
- 4. Educate community members about the importance of urban natural resources
- 5. Manage stormwater to reduce flooding, recharge groundwater, and improve water quality
- 6. Expand public and private programs to manage, and invest in, trees to cool buildings, pavement, and waterways
- 7. Encourage ongoing water conservation
- 8. Strengthen protections of drinking water sources.

Following are select introductory pages from Eugene's plan.
The full plan is available at https://www.eugene-or.gov/Archive/ViewFile/Item/80



Executive Summary

The decade from 2000 to 2009 was the warmest ever recorded.^[1] Over the last three decades, each has been warmer than the one before and science is telling us that this trend will continue.^[2] In addition, the inexpensive fossil fuels that our community and country depend on for transportation, food production, and industry are projected to become increasingly expensive.^[3] Eugene is joining a growing list of cities around the world that are addressing these climate change and energy concerns with a plan to meet the challenges with vision and creativity. In developing this local plan, community leaders and citizens have clearly recognized the need to re-imagine how we live, eat, travel, and play. As we work to adapt to the uncertainties ahead, we can be sure that the boldness of our actions today will determine the quality of life in Eugene now and into the future.

Eugene's first Climate and Energy Action Plan:

In 2008, in response to increasing concern about global climate change and the potential for volatile and rising fuel prices, Eugene's City Council asked staff to develop Eugene's first Community Climate and Energy Action Plan.

The Community Climate and Energy Action Plan goals:

- 1. Reduce community-wide greenhouse gas emissions 10 percent below 1990 levels by 2020.
- 2. Reduce community-wide fossil fuel use 50 percent by 2030.
- 3. Identify strategies that will help the community adapt to a changing climate and increasing fossil fuel prices.

The Six Action Areas:

Buildings and Energy looks at energy used in residential, commercial, and industrial buildings in Eugene. This section includes recommendations to reduce energy use in existing buildings and new construction, expand use of renewable energy, and prepare buildings for climate change.

Food and Agriculture includes everything related to our food production, delivery, distribution, and waste disposal. This section includes recommendations to reduce consumption of meat and dairy foods, reduce greenhouse gas emissions associated with agriculture and food waste, protect regional farmland, increase home- and locally-grown foods, and prepare our food systems for an uncertain future.

¹ "State of the Climate Global Analysis," National Oceanic and Atmospheric Administration, June 2010.

² "IPCC Fourth Assessment Report: Climate Change 2007," Intergovernmental Panel on Climate Change, 2007.

³ "Peaking of World Oil Production: Recent Forecasts," US Department of Energy, 2007.

Land Use and Transportation considers the use of land and the transportation of people and goods. This section includes recommendations to increase urban density and mixes of land use and a focus on improving systems for bike, pedestrian, transit, and electric vehicles.

Consumption and Waste looks at everything in the lifecycle of consumer goods from extraction of raw materials to manufacturing, packaging, distribution, product use and finally, disposal. This section includes recommendations to reduce greenhouse gas emissions associated with consumption of goods, improve recycling and composting, improve municipal purchasing practices, and adapt consumption strategies based on new findings.

Health and Social Services addresses mental and physical health care and assistance programs for disadvantaged populations. This section contains recommendations to prepare health and social systems for a different future and reduce the impacts of *climate*-related disasters.

Urban Natural Resources considers the soil, air, water, plants, and animals of our city. This section contains recommendations to manage land, trees, and water for multiple benefits, update resource management plans, improve access to natural resource data, and expand drinking water and stormwater management programs.

From the Mayor

The City of Eugene has a long history of environmental stewardship. It is a legacy to be proud of. Our planet faces both finite resources and *climate change*, and the Eugene City Council has committed to an entire new level of local action.

The impacts of climate change and increased energy costs affect all of us, regardless of politics, background, or socioeconomic status. These are not simply environmental issues. They are health, economic, social equity and environmental issues.

We have learned that climate change is affected by carbon emissions, and that carbon footprints are linked to the food and goods we purchase. All of us need to rethink our consumption of goods, we consume too much and at an unsustainable rate.

Our city is part of a broader community, we are part of a world that requires each of us to make significant changes in our lives as governments, businesses, and social service agencies and as individuals - we must all work together more effectively to meet these challenges and to mitigate negative impacts.

"These are not simply environmental issues. They are health, economic, social equity and environmental issues."

Four years ago we began this journey with the Sustainable Business Initiative to foster our city's leadership in sustainable practices, the triple bottom line of environmental stewardship, economic success and social equity. The Sustainability Commission was formed. Innovative policies and practices moved forward throughout the city, but none more ambitious than the Climate and Energy Plan.

The steps outlined in this plan will not only help us reduce our contribution to climate change and improve community resilience, they will also save taxpayer dollars through improved energy efficiency and less expensive transportation options. They will help build the local economy, provide jobs, improve air quality and public health, and community livability.

This plan is a true collaborative endeavor and the result of many hours of hard work. I am very appreciative of the remarkable efforts of everyone involved in its creation. Thank you all for this investment in our community.

We join over 100 cities in developing emissions reduction targets and creating climate action plans. Together we are a powerful force. Each city, small and large must do its part. Eugene, though modest in size is large in its commitment to the future. We move forward with optimism and a commitment to do our part to ensure a quality future for our city, our country, and our planet.

Red Pur Country

September 2010



Mayor Kitty Piercy

Timeline and Goals

Oregon legislature first establishes carbonreduction goal

Rio Earth Summit (United Nations framework convention on climate change)

Eugene Sustainable Business Initiative recommends creation of 1) sustainability commission and 2) metropolitan climate action plan

- Climate Leadership Initiative, et.al. creates report: "Preparing for Climate Change in the Upper Willamette Basin of Western Oregon" highlighting impacts of climate change to Eugene and surrounding
- Eugene City Council instructs staff to create a Community Climate and **Energy Action Plan**
- City of Eugene creates the first Internal (city operations) Climate Action Plan

State of Oregon Goal: Reduce greenhouse gas emissions 10% below 1990 levels

State of Oregon Reduce greenhouse 1990 levels

• Eugene Mayor signs the US conference of Mayors "US mayor's climate protection agreement", striving locally to meet or beat the Kyoto protocol targets

• City of Eugene creates a greenhouse gas inventory for internal municipal operations

 Oregon strategy for Greenhouse Gas Reductions

• Eugene sustainability commission is established

"City of Portland Descending the Oil Peak" report highlights challenges of fossil fuel depletion

• City of Eugene completes a community greenhouse gas inventory

create Eugene's first Community Climate and Energy Action

City of Eugene

works with

community

partners to

Plan

City of Eugene Goal: Reduce fossil fuel use



Introduction

Preparing For Change

In the winter of 2008/2009, Eugene's City Council unanimously directed staff to develop a Community Climate and Energy Action Plan (CEAP).^[4] All City operations and City-owned facilities were to be carbon-neutral by 2020. During the same year, the Council committed the City to work with its partners to develop a plan to set carbon emission goals, to suggest effective emission reduction strategies, and to identify ways in which the community can adapt to the anticipated changes. Four months later, the Council expanded the action plan to include steps for achieving a 50 percent reduction in community-wide *fossil fuel* consumption by 2030. This plan is the product of those efforts to understand what climate change and fuel cost increases could mean for Eugene, and to find ways that lessen the expected impacts and meet the goals for reducing emissions and fossil fuel consumption.

While there is considerable discussion and some debate on the issues of climate change in the community and beyond, this plan was undertaken in response to Council direction and is informed by the scientific evidence available at the time of its publishing.

THE COMMUNITY CLIMATE AND ENERGY ACTION PLAN (CEAP)

Goals

- 1. Reduce community-wide *greenhouse gas* emissions to 10 percent less than 1990 levels by 2020 and 75 percent below 1990 levels by 2050.^[5]
- 2. Reduce community-wide fossil fuel use 50 percent by 2030. [6]
- 3. Identify strategies that will help the community adapt to a changing climate and increasing fossil fuel prices.^[7]

Geographic Scope and Timeline

Citizens, topic experts and partners from inside and outside of the City of Eugene were invited to develop a plan for the broader community. This public engagement process identified challenges and opportunities and presented options and action items that will require partnerships and joint efforts across the community.

The CEAP establishes general directions and offers specific actions over the next three to five years; however, the scientific and general community's understanding of climate and energy challenges are evolving rapidly and Eugene's direction and goals will likely need to be updated.

^[4] More policy detail and background can be found in Appendix 9.

^[5] This goal matches Oregon's stated GHG reduction targets from House Bill 3543. While this target is not equivalent to the fossil fuel reduction target, it reflects the degree of GHG reductions that are necessary, according to scientific research. Additional discussion of relative greenhouse gas targets begins on page 14 of Appendix 8.

⁽⁶⁾ This goal, unanimously adopted by Eugene City Council February 2009, will use the base year 2005, the year of data used for the 2007 community greenhouse gas inventory.

^[7] The full text of the City Council directives related to the CEAP can be found in Appendix 9.



How was the Plan Developed?

The Climate and Energy Action Plan Advisory Team

The CEAP advisory team was assembled in May 2009 and was composed of 11 community members and representatives of partner agencies. In June 2009, the team began providing input on the public outreach and general planning processes. The group brought expertise to the public meetings, observed and participated in topic discussions, provided feedback on the development of the plan and the plan document, and provided background data.

| Team Member | Partner Agency/Group |
|-------------------------------|---|
| Chuck Gottfried | City of Springfield |
| Sarah Mazze | Resource Innovation Group and The UO Climate Leadership Initiative |
| Joshua Proudfoot | Eugene Area Chamber of Commerce |
| Jason Heuser | Eugene Water and Electric Board |
| David Hinkley | Friends of Eugene |
| Lorraine Kerwood/Twila Souers | Eugene Human Rights Commission |
| Joe McCormack | Lane Transit District |
| Mike McKenzie-Bahr | Lane County |
| Jan Wostmann | Neighborhood Leaders Council |
| Heidi Beierle/Bill Randall | City of Eugene Planning Commission |
| Shawn Boles | City of Eugene Sustainability Commission |

The Public Engagement Process

News releases, print and online calendars, website announcements, and emails invited members of the public to participate in seven public forums. A kickoff event was held in September 2009 and one public forum was held on each of the six topics between October 2009 and March 2010. More than 500 members of the public participated, sharing concerns about climate uncertainty and fuel price volatility, and weighing in on what should be the community's highest priorities. Below are the six topics or action areas:

- Buildings and Energy
- Food and Agriculture
- Land Use and Transportation
- Consumption and Waste
- Health and Social Services
- Urban Natural Resources

The process for identifying action items for each of the six topic areas was as follows:

- 1. A strategy list was compiled using information submitted by regional experts and gleaned from municipal- and state-level climate and energy plans from across the nation. The list was reviewed by the topic specialists, refined, and then used as a starting place for the public forums.
- 2. Topic specialists were identified from across the community. Eight to twelve expert community members with broad knowledge of the topic and the ability to bring a variety of perspectives to the public forums were invited to assist with the plan. The topic specialists contributed to the development of the strategy lists, provided technical information support at the public forums, and assisted with the prioritization of strategies. A complete list of Topic Specialists can be found in Appendix 3.
- 3. Public forums were held to engage members of the community who are interested in climate and energy challenges as they relate to each of the six topics. Each of the forums were attended by 50 to 120 community members, including topic specialists, CEAP advisory team members, neighborhood leaders, and Sustainability Commissioners. Forum participants reviewed the strategy list for the subject topic, provided perspectives on which actions should be given the highest priority, identified missing actions or strategies, and provided detail on how individual actions could be implemented.
- 4. Topic specialists reviewed proposed actions in greater detail, provided input on priorities, clarified ideas, identified opportunities and challenges, and helped to ground the process in Eugene's unique economic, social, and environmental conditions.
- 5. Advisory team members weighed information from background documents, input from the public forums and the topic specialist meetings, and offered their varied perspectives on each topic area. The team completed a final review of the strategies and reviewed and commented on the draft Community Climate and Energy Action Plan.
- 6. Additional Research was conducted after the draft was released to clarify some of the relative costs and benefits of actions. This adds confidence that the priorities included in the plan are the best places for our community to take action. Targets and measures were also added. [8] This information is compiled in the attached spreadsheet, Appendix 1.

THE OUTCOMES

Of the several hundred possible action items suggested, reviewed, and discussed in the public engagement process, the plan only includes those that are expected to best reduce fossil fuel consumption and GHG emissions, and to prepare Eugene for the impacts of energy price volatility and climate uncertainty. A strict cost-benefit analysis wasn't feasible, but the project team designed a process that weighs the relative importance of potential actions in the context of the three stated goals.

^[8] The targets associated with objectives and actions in the Plan reflect best estimates of the reductions necessary. Creating targets that are carefully calibrated to the overall GHG and fossil fuel reduction goals will require additional research.

WHAT HAPPENS NEXT?

Funding: In the 2011 fiscal year budget, \$200,000 of one-time funding was earmarked for use in implementing both the Community Climate and Energy Action Plan and the City's Diversity and Equity Strategic Plan. These funds are in addition to the work already underway across the City organization in Solid Waste management, the Green Building program, Stormwater Management, Urban Forestry, and many other existing City programs.

Reporting back: The City Council will receive annual reports assessing the progress being made on each of the multiple objectives included in the plan.

Updating the plan: Our understanding of the complex issues around climate change and greenhouse gas *sources* is continually improving, and as our community moves forward on the priorities included in this plan, it will be important to revisit, revise, and update Eugene's Community Climate and Energy Action Plan every three to five years.

How is the Community Climate and Energy Action Plan Organized?

The strategies are divided into six action areas. The first four are the primary targets for greenhouse gas emissions and fossil fuel reductions, and the last two focus on actions necessary to adapt to climate change and rising fuel prices.

- Buildings and Energy
- Food and Agriculture
- Land Use and Transportation
- Consumption and Waste
- Health and Social Services
- Urban Natural Resources

Please note that the actions in each area are not organized by priority. The first action in each section is not necessarily the most important, nor is the last the least important.

A table containing all of the actions and associated targets, measures, estimated financial impacts, and estimated greenhouse gas reductions data is available in the Compiled Priority Action Items Tables in Appendix 1.

Terms in *italics* are defined in the glossary located in Appendix 2.



PO Box 1980 Phoenix, Oregon 97535

(541)-840-1065

Info@rogueclimate.org

City of Ashland City Council 20 East Main St. Ashland, Oregon 97520

March 5th, 2015

Re: Climate and Energy Action Plan

Dear City of Ashland City Council,

It is with great pleasure that we extend the support of Rogue Climate to the Conservation Commission and the City Council to develop a Clean Energy and Climate Action plan for the City of Ashland.

Cities and counties across the country are taking the lead in stepping up to the challenge of climate change and transitioning to cleaner energy. Due to Ashland's municipally owned utility, Ashland's strong history of leading the state in terms of energy efficiency, and the local impacts we are already feeling in regards to climate change, we are in a great position to take the next step by developing a Community Energy and Climate Action Plan.

We look forward to supporting Ashland in these efforts, and believe that any efforts taken in Ashland will have a positive impact in demonstrating to other communities in the Rogue Valley what is possible. We will support this effort by using our network to educate local citizens about the initiative. We will promote participation to our members both through email and at meetings. We can help with publicity efforts by writing about it on our website and facebook page. We can provide a volunteer or staff member to sit on the advisory council and we will continue to work with the conservation commission to find other appropriate roles for our group as they arise.

Sincerely,

Hannah Sohl

Director, Rogue Climate



33 N Central Ave Medford, Oregon 97501

(541)-772-4029 alex@oregonaction.org

City of Ashland City Council 20 East Main St. Ashland, Oregon 97520

March 9th, 2015

Re: Climate and Energy Action Plan

Dear City of Ashland City Council,

Oregon Action would like to express our support to the Ashland City Council and the Conservation Commission for your desire and efforts to develop a Clean Energy and Climate Action plan for the City of Ashland.

As a grassroots, member-led organization dedicated to advancing economic, racial, health, and social equity for everyone throughout the Rogue Valley, we recognize that climate change does not and will not affect everyone equally. Those members of our community already vulnerable or marginalized will likely be hit sooner and harder by the impacts of climate change in the Rogue Valley and will have fewer resources to adapt to a changing climate. We believe our collective efforts to combat climate change—such as municipal Climate and Energy plans—need to account for this.

Those most directly affected—including low-income members of our community and those with limited access to political processes—need to be at the table and a part of the process of developing solutions and strategies to address climate change. As such, we appreciate the emphasis put on collaboration and community engagement in the Conservation Commission's recommendations to the City Council, and we look forward to engaging our members, supporters, and the broader community in the planning process.

We believe Ashland is in a unique position to take bold leadership as a community in responding to climate change, and we are proud to see Ashland moving forward with that process. Oregon Action and our members look forward to supporting the City in these efforts, and to participating and engaging in that process.

Sincerely,

Alex Budd Oregon Action

MINUTES FOR THE STUDY SESSION ASHLAND CITY COUNCIL Monday, September 15, 2014 Siskiyou Room, 51 Winburn Way

Mayor Stromberg called the meeting to order at 5:32 p.m. in the Siskiyou Room.

Councilor Morris, Rosenthal, Marsh, Voisin, and Lemhouse were present. Councilor Slattery was absent.

1. Look Ahead review

City Administrator Dave Kanner reviewed items on the Look Ahead.

2. Public Input (15 minutes maximum)

Winston Friedman/935 Oak Street/Thanked the Council for considering the resolution supporting fossil fuel divestment. Southern Oregon Climate Action Now (SOCAN) was a group that strongly supported divestment and were concerned with the bigger picture of climate change. He read from a document submitted into record on the impacts of climate change, fossil fuel extraction and how major corporations negatively affected sustainability efforts.

Ken Deveney/206 Terrace Street/Spoke in support of the Conservation Commission's Community Sustainability Framework proposal and explained mental health was a major component of climate change preparedness. Many people will experience stress that could result in an increase of domestic abuse and crime due to the heat. The climate change will affect illness, food prices, changes in employment, and acute trauma from extreme weather events. The National Wildlife Federation collaborated on a report regarding the psychological effects of climate change that stated the affects of global warming will require a large-scale mental health care response and no one was prepared.

3. Discussion of a Resolution in support of fossil fuel divestment

City Recorder Barbara Christensen explained the resolution would not change the City's investment policy and only support the position Southern Oregon Climate Action Now (SOCAN) was taking on fossil fuel divestment. SOCAN was asking Council to move the resolution to a regular Council meeting for approval. If approved, the resolution would go to the Oregon Short Term Board and the Public Employee Retirement System (PERS). Ms. Christensen used the City of Eugene's resolution on divestment as a template for the one before Council.

Council noted an opinion editorial from State Treasurer Ted Wheeler that concluded divestment was not in the best interest of the state. That made the resolution more of a symbolic gesture. However, an earlier conversation with Mr. Wheeler and the governor revealed they needed the support of municipalities in order to give the resolution power. The Mayor expressed concern regarding unintended results due to divestment.

Council supported putting the resolution on a formal agenda.

4. Community Sustainability Framework proposal from the Conservation Commission

Management Analyst Adam Hanks provided history on the Conservation Commission's interest and efforts regarding sustainability. With the approval of the Operational Sustainability Plan Framework, Plan Format, and Process Outline November 2012, the Commission shifted focus to a community sustainability plan using the STAR Framework.

Conservation Commission Vice Chair Roxane Beigel-Coryell defined sustainable as something able to be

used without being completely used up or destroyed involving methods that did not completely use up or destroy natural resources or able to last or continue for a long time. A sustainable community included common elements that were healthy environment, strong economy, and the well-being of the people living in the community. She shared several guiding principles of sustainable communities.

Conservation Commissioner Jim McGinnis provided an overview of the STAR Framework that consisted of Guiding Principles, Goals, Objectives, Measures, and Actions. STAR was Sustainability Tools for Assessing and Rating communities.

The STAR Framework was a current and comprehensive way to track and assess sustainability. The STAR approach represented a multiyear process and was not a plan. The Guiding Principles served as a reference point when planning or taking actions. The STAR Framework was based on the following goals:

- Built Environment
- Climate & Energy
- Education, Arts & Community
- Economy & Jobs
- Equity & Empowerment
- Health & Safety
- Natural Systems

Each goal contained several objectives with measurable items and best practices.

Vice Chair Beigel-Coryell reviewed a matrix of goals and actions taken by the City and Southern Oregon University (SOU) and submitted an example of Climate & Energy and Health & Safety into the record. Commissioner McGinnis further explained the Conservation Commission had followed through on the 2011-2012 City Goal of developing a concise sustainability plan for city operations and community. The city operation was underway and the next step was the community portion.

The STAR Framework created a network with other communities. The Conservation Commission was asking Council to adopt the framework as a successor to the Valdez Principles, instruct staff to provide regular reporting within the STAR Framework, and allocate adequate resources to administer the program. Resource allocation would start with half of a Full Time Equivalent (FTE) employee for the 2015-2017 budget and grow to a FTE in the 2017-2019 budget.

Council comments thought the STAR Framework was too broad and complex, wanted the focus on Climate and Energy only while other comments noted STAR could serve as a good resource.

Council directed the Conservation Commission to bring back a proposal on what steps they would take to develop a Climate and Energy Plan.

Meeting adjourned at 7:18 p.m.

Respectfully submitted, Dana Smith Assistant to the City Recorder

ASHLAND





Application for Economic Development, Cultural, Tourism and Sustainability Grants

DUE March 27, 2015 by 4:00 pm

One (1) signed hard copy to

City of Ashland, Finance Department
Attn: Kristy Blackman
Titled: Grant Application
20 East Main Street, Ashland, OR 97520
and one electronic PDF copy to
kristy.blackman@ashland.or.us

| Applicant/Organization | Geos Institute | | |
|------------------------|---------------------------------|--------------------------------------|-------------------------|
| Mailing Address | 84 Fourth St. Ashland, OR 97520 | | |
| Contact Name | Tonya Graham | Contact E-mail | tonya@geosinstitute.org |
| ontact Phone No | 541-482-4459 x301 | | |
| Contact Name #2 | Marni Koopman | Contact E-mail #2 | marni@geosinstitute.org |
| Contact Phone No#2 | 541-482-4459 x303 | | |
| Federal Tax ID | 93-0880205 | IRS Class (Exemption) | 501 c(3) |
| | | | |
| | | Total Grant Request (\$5,000 min) | \$27,040 |

Application Submittal Checklist

In addition to the completed application form to be mailed and emailed, all submittals must contain the following;

- 1. List of all board members, their occupations, and years on the board;
- 2. Organizational client demographic profile;
- Grant program budget (for activities/programs/events that are part of this grant application);
- 4. Organization 501© letter verifying your no-profit status;
- 5. Organization corporate bylaws;
- 6. Organization's most recent Form 990 IRS filing (summary page only);
- 7. Organization's previous year financial statement summarizing expenses and revenues.

Application for Economic Development, Cultural, Tourism and Sustainability Grants

1. Briefly describe the purpose and objectives of your organization and mission statement (from bylaws, articles of incorporation or board adopted mission statements).

The Geos Institute uses science to help people predict, reduce, and prepare for climate change. We engage through three initiatives. The initiatives address the challenges of climate change in freshwater systems, communities, and forests.

ClimateWise engages local communities in preparing for climate change. We provide the science needed to identify likely future climate conditions and local impacts, facilitate the development of an actionable, integrated plan, and work across sectors to create co-benefits and new avenues for communication. We have worked in many cities and counties, including the Rogue and Klamath Basins OR, Austin TX, Fort Collins CO, Missoula County MT, and San Luis Obispo County CA.

Green Solutions addresses the needs of people and fish as they relate to freshwater systems. We have completed 25 restoration projects improving over 1,100 miles of stream in the Rogue Basin over the past ten years. This program also addresses municipal water needs using watershed restoration to improve the quality and dependability of municipal water supplies.

Banking on Forests works to slow climate change by protecting the carbon sequestered and stored in forests, especially the carbon dense forests of the temperate rainforest region.

2. Provide a short history of your organization.

The Geos Institute began in 2005, as a merger between the grassroots watershed protection organization, called Headwaters, Inc. and the World Wildlife Fund's Klamath-Siskiyou Field Office. Then named the National Center for Conservation Science and Policy, the organization worked on forest and river restoration and protection. Soon, climate change emerged as the greatest threat to natural systems and we realized that our communities are also threatened. Because the solutions to climate change stem from protecting our most vital resources, our Banking on Forests and Green Solutions programs became even more vital. In 2008 we added ClimateWise to our suite of programs to protect both human and natural systems from the accelerating impacts of climate change.

3. Describe the purpose and objectives of this grant request.

We are applying for s Sustainability Grant for this project. The purpose of this grant request is to kick-start a highly collaborative Climate and Energy Action planning process for the community of Ashland, pursuant to the steps of the plan put forward by the Conservation Commission during a March 16, 2015 Study Session with City Council (the steps are listed in the next section of the proposal, and also available at this link http://www.ashland.or.us/SIB/files/031615_Climate_Energy_Plan_CC.pdf).

The specific objectives include:

• Convene an informal group of NGO and university partners that will help to design and implement the Climate and Energy Action Planning Kick-off Event. Potential partners include Rogue Climate, ACCESS, Chamber of Commerce, SOU Center for Sustainability, Lomakatsi, Clean Energy Works, Rogue Energy Alliance, Oregon Community Foundation, and more. We would welcome City Staff, Council, and/or Commission participation in the leadership group as well so this effort can be coordinated with the next steps in the Climate and Energy Action planning process. The leadership group convened for this project can be engaged, if appropriate, to participate in the City/Citizen Oversight Group (see Step #2 in the next section) as part of the Climate and Energy Action planning process, but the decision to do so rests with the Conservation Commission and/or City Council. For purposes of this project, this leadership group is limited to the roles outlined in this proposal.

- Create outreach materials, including printed and online interactive materials, that summarize local climate change projections, results from the City's Greenhouse Gas (GHG) Inventory, results from the Renewable Energy Assessment for Jackson and Josephine Counties from 2011, and other relevant reports and data that help to set the stage for why action is needed and what direction we might want to take. Please see examples of some materials created for efforts in Austin, TX (https://prezi.com/tavfbaikives/hot-enough-yet/) and Fort Collins, CO (video can be found at www.climatewise.org).
- Create outreach materials, including printed and online interactive materials, with positive messaging about new approaches to energy conservation, renewable energy opportunities, emergency preparedness (for flooding, wildfire, drought, and heat waves), and a positive future for Ashland. These materials would also include links to surveys to get public input on actions our community can take, desired targets for greenhouse gas emissions reductions, and collective ways that the public and businesses can get involved and challenge one another. We will also create a tracking page for voluntary reporting of actions taken and GHG pollution avoided. We will develop catchy names and branding for the effort to make sure the public recognizes it as an attractive and cohesive effort that people want to engage with. There may be opportunities for competition, prizes, and community recognition this will be decided by the leadership group.
- Hold a 1-day public workshop and event to:
 - o showcase GHG inventory results
 - o feature speakers from another community with positive examples of energy and monetary savings
 - o share information on climate change trends at the local level, including risks to vulnerable people and resources
 - o consider options for future greenhouse gas emissions targets for Ashland
 - brainstorm and prioritize innovative approaches to energy conservation and renewable energy production
 - o develop ideas for cross-sector approaches that also address many ongoing societal issues in Ashland
 - o develop new ideas for engagement, funding mechanisms, and action
 - o showcase local foods, goods, and services that save energy and support the local economy
- Compile information collected during the outreach steps and the public workshop to inform the next steps in the Climate and Energy Action planning process, as outlined by the Conservation Commission. The information will be delivered to the Conservation Commission and City Staff, as needed. Prior consultation with the Conservation Commission and City Staff will be conducted to ensure that any data and information collected is provided in the most useful manner for ongoing work on Climate and Energy Action planning.
- 3.1 If your grant request is for date specific events, programs or activities, please complete the following table: (If completing electronically, double click the table to enter data)

| Program/Event Title | Anticipated Dates of Event | Funding Request | Total % of budget |
|---|-------------------------------|--------------------|--|
| Ashland Climate and Energy Action Kick-off and Workshop (Catchy name TBD) | Fall 2015 | \$28,540 | 100% including salaried time for planning and implementation |

3.2 Describe how the program/event/activity listed above meets the purpose and objective of this grant request, i.e. connect event/activity to overall purpose/objective of grant request.

The Climate and Energy Action planning process for the City of Ashland was presented by the Conservation Commission during a City Council study session on March 16, 2015. An outline of the proposed project is available at this link http://www.ashland.or.us/SIB/files/031615_Climate_Energy_Plan_CC.pdf. The process includes 8 steps that take place during the first year, and 4 more that continue into the future. Our project aims to further the city's sustainability goals by supporting that planning process by assisting with implementation of steps #2-4.

The 12 steps in the Climate and Energy Action planning process are as follows: (from the Climate and Energy Action Plan framework presented by the Conservation Commission for City Council on March 16, 2015):

- Greenhouse Gas Inventory The City conducts or contracts a greenhouse gas inventory that includes a
 subset for city operations (transportation is included); this inventory will also benefit the city operational
 sustainability plan that has already been adopted by City Council. The purpose of the GHG inventory is to
 identify local sources of GHG emissions so we can direct resources in the most efficient and costeffective manner possible.
- 2. **Leadership** Appoint a City/Citizen Oversight Group, which will create a Technical Advisory Committee to set scientifically valid GHG emission goals, engage community members, interface with other groups, conduct outreach, guide strategy development, and prioritize actions. City Staff will support the Oversight Group as needed. See Appendix III for more information.
- 3. **Set Emissions Reduction Targets** Many communities use targets set by state government, while others decide on more stringent targets for their community. The Technical Advisory Committee will investigate and recommend appropriate targets for Ashland.
- 4. **Public Outreach** Hold a public kick-off event that informs community members about the effort, engages them on the issue, collects their input on areas of highest priority, and showcases positive stories and successes in energy savings and renewable energy.
- 5. **Engage Local Experts** Convene sector specialists to develop initial lists of strategies and prioritize them in a collaborative manner, based on cross-sector discussions of synergies, short- vs. long-term goals, areas with the greatest/fastest potential energy savings, most vulnerable resources and populations, and issues of equity and local values.
- 6. **Consult with City Council and City Staff** Hold a working session with City Council and City Staff to further refine and prioritize emissions reduction strategies and climate change preparedness strategies. City to identify a number of actions for immediate implementation.
- 7. **Finalize the Plan** The plan should include emissions targets, a timeline, high level goals, specific strategies, and actions that are organized by short and long term implementation horizons. The plan should include an implementation plan that specifies who is responsible for specific actions, a monitoring plan to assess progress, and periodic updates to the plan.
- 8. **Get Feedback** Hold an open forum workshop(s) to share information and collect feedback. Also use online forums, local TV and radio, printed media, and other outreach tools. Report the results online in other venues, as appropriate, with recap of the process, detailed strategies, and timeline.
- 9. Implement Implement strategies in phases, following implementation plan.
- 10. Assess performance Measure and report on results periodically (every 1-3 years)
- 11. **Reassess** Revise based on new information, ongoing trends, new technologies, and results from monitoring. Develop additional measures to protect the community from climate change impacts.
- 12. Educate Continue with public outreach and education for sustained efforts.

This proposal would provide support from a large group of NGOs and Southern Oregon University for steps #2-4 of the city-sponsored planning process. Specifically, many participants in our leadership group could become part of City/Citizen Oversight Group convened in Step #2. We would initiate discussions of greenhouse gas emissions targets in the leadership group and also survey participants at the event and in an online survey, contributing to Step #3 – Set greenhouse gas emissions targets. The event described below would complete Step #4 – Public Outreach. All information collected during this project would feed into the ongoing Climate and Energy Action planning process that is City-supported, so we would consult with City Staff to ensure compatibility and information transfer, as needed.

The kick-off event is an important step in the Climate and Energy Action planning process, as it

- informs community members about the community planning process,
- provides a venue for collecting input and feedback,
- stimulates the development of innovative ideas,
- · allows us to gauge peoples' level of support for different actions, and
- provides a strong educational component.

This event will also provide a venue to showcase the successes and energy savings that Ashland has already accomplished, as well as those of similar communities from other areas. We will highlight positive stories of energy and monetary savings, job creation, environmental benefits, and social benefits. We will invite leaders from other communities, such as Bend, Eugene, Austin, and/or Fort Collins to speak at the event and answer questions about their climate and energy plans, implementation, performance tracking, and lessons learned.

Events focused on climate change can be daunting, as the topic is quite serious and people experience intense emotions of loss and sadness when they begin to really understand the consequences. The Geos Institute and Rogue Climate have both had extensive experience in planning and implementing events that are built around the topic of climate change. We have learned that such events need to focus on positive solutions and keep participants engaged in a positive and constructive manner, yet still create space for grief to be acknowledged and held.

We envision that the Ashland Climate and Energy Action Kick-off event will showcase positive examples from around the country while also focusing on the values that are important to our community – including local food, the environment, water, and good health. The event will be active (not a lot of sitting and listening), will allow for small groups to get to know each other and work together, will feature good food from local sources, and will focus on innovation and collaboration as the solutions to climate change. We see this as a very positive event that will result in new relationships being formed throughout the community. Rogue Climate is led by young and energetic leaders in our community – their enthusiasm, passion, and energy is contagious and will create a positive platform for real action on this issue. Geos Institute has extensive experience organizing large groups in ways that facilitate innovative thinking and the organization of ideas for future use.

The specific speakers, facilitators, format, and opportunities for outreach are still to be worked out with our leadership group. The Climate and Energy Action planning process was purposefully designed to be highly collaborative and participatory, with a focus on innovation and fun. The leadership group will determine how to engage the community in new and effective ways.

Before and after the event, we will provide numerous engagement opportunities including a Facebook page and other social media, online surveys, and outreach materials with our contact information for people wanting to get more involved. We will create an online energy use tracker that allows residents and businesses to report changes they make and their links to energy savings over time. We will create a database with the names, contact information, specialized areas of interest and expertise for each contact, and what they are willing to contribute (time, money, design help, tabling, physical labor, etc.) during this phase of the project and over the coming years. Ashland is a generous and cohesive community that is ready for action on climate change – we will begin to harness and organize that energy and goodwill so that it is ready to be deployed during future phases of the Climate and Energy Action Plan.

4. Utilizing the list of eligible activities provided in the **2012 Policy for Economic, Cultural, Tourism and Sustainability Grants** (attached), please describe how your grant application meets the listed <u>eligible activities</u> for each funding category(s) requested in this application.

The proposed activities meet the eligible activities for Sustainability grants in numerous ways. First, the Climate and Energy Action Planning process for the community of Ashland needs to quickly get started in order to meet its aggressive timeline (planning in year 1, implementation starting in year 2). The proposed activities will kick-start the planning process using education and outreach as the mechanism to develop new and innovative strategies for energy conservation and renewable energy. The proposed activities will assist local businesses in conservation and renewable energy production, as they will be one of the target community sectors for brainstorming and for gauging where their needs and interests lie. The business sector will also have a role in the NGO and university leadership group, especially through the Chamber of Commerce. Businesses, such as solar installers, building contractors, architects, electric car dealers, and others, will be able to participate in the process and share information about new innovations and services they can provide for the community. Finally, the community workshop will feature local and sustainable foods and other products and show how their carbon footprint is much lower than foods produced elsewhere.

Describe how your grant proposal meets and accomplishes the desired outcomes detailed in the <u>Criteria for Evaluation</u> section for each of the Grant categories applied for from the **2012 Policy for Economic, Cultural, Tourism and Sustainability Grants**.

The outcomes of this project meet the Criteria for Evaluation in a variety of ways. First, the project will bring the community together to acknowledge the severity of the threat of climate change and the need to take immediate and drastic action to cut GHG emissions in a collaborative and positive way. The immediate effects of the workshop will be a renewed and increased motivation for individuals to reduce their carbon footprints at home and in their businesses, plus ongoing reminders, motivators, and information that helps them continue to do that. The workshop will result in new and innovative ideas for how to make Ashland a more sustainably city, what GHG emissions targets to aim for, and how local residents envision the path to meeting those targets. The information, new contacts, and new leadership that will be gained from the kick-off event are directly relevant and transferable to continuing with the Climate and Energy Action planning process through spring, 2016, as well as during the implementation phase starting immediately afterwards.

The most measurable outcome will be GHG emissions reductions over time, with any savings linked to energy conservation and/or renewable energy production. State targets of 10% below 1990 levels by 2020 and 75% below 1990 levels by 2050 are targets often adopted by local communities, but Ashland may choose to adopt more aggressive targets. Regardless of which targets are adopted, tracking of Ashland's progress over time will be vital to determining which actions are most effective and whether or not we are on track to meet our goals. These goals take time and will not be tracked during the implementation of this specific project (which only encompasses Steps #2-4 of the Climate and Energy Action planning process).

Our project will lead to lessons and experiences that can be tracked over time to learn about effective actions to reduce GHG emissions at the local level. We will also learn what actions create co-benefits for other issues, such as air pollution, hunger, homelessness, and compromised health. Actions that are developed to address these issues and to save energy and install locally-produced renewable energy undoubtedly will support local business, create jobs, and increase locally-sourced goods and services. These long-term benefits cannot be measured in the time of this project, but they will be central to the innovation and discussion at the workshop.

The outreach materials and presentations at the workshop will provide education on climate change, climate change vulnerabilities, and positive approaches to increasing community resilience to the general public. We will strive to reach diverse audiences including local businesses, homeowners, renters, students, decision makers, healthcare providers, NGOs, retirees, low-income residents, and many others.

6. If you do not receive the full amount of your request, describe how your organization would use a smaller amount of funds in each of the categories being applied for.

With the full amount, we will contribute to Step #2 – Creating the City/Community Oversight Group and Step #3 – Setting GHG Emissions Targets and also complete Step #4 – Public Outreach. With a lesser amount, we can still hold a kick-off event, but it would be a smaller and less ambitious event created primarily by Rogue Climate and the Geos Institute, with input also from the Conservation Commission and ACCESS. This event would get the Climate and Energy Action Plan going in a positive and collaborative way, but it would not create as much initial momentum, engagement, and community buy in for the planning process as our full proposal. This would leave more work for those tasked with the next steps in the Climate and Energy Action planning process.

7. Describe what, if any, actions your organization takes in developing and securing other revenue sources beyond the City of Ashland Economic, Cultural, Tourism and Sustainability Grants. (both one time and ongoing revenue sources)

The Geos Institute supports its programs through foundation grants, government grants and contracts, and individual donors. In addition, we have a consulting arm that provides climate change support for communities through a fee-for-service format. Most of our individual donors reside in the Rogue Valley and we would put out a special request for contributions to help fund this project.

8. What percentage of your organizations total annual revenue would come from this grant if it were fully awarded?

The funding requested represents a little over 1% of our organization's annual budget for 2015. It is important to note, however, that of our roughly \$2.1 million budget, over \$800,000 of that budget is expenses related to a restoration project for which we are serving as fiscal agent. Our core budget for staff is typically around \$1 million to \$1.2 million. This grant represents over 2% of our core budget.

While the Geos Institute needs this grant to provide this particular service to our community, it does not need this grant to stay operational. We would very much like to work in our own hometown of Ashland by providing the services and expertise that we provide for other communities. This includes helping to get climate change planning off the ground and supporting residents and city staff through the engagement, education, and action components of an effective response to climate change. We believe Ashland can position itself as a real leader in this area and we would like to help since our core competencies align so well with the City's sustainability goals.

9. Describe your organization's strategies and efforts to minimize administrative overhead costs for your organization in general and for the specific programs, activities or events being applied for in this application, including collaboration and/or leveraging of other partner organizations.

The Geos Institute incurs minimal overhead costs through numerous measures. We own our own building in Ashland reducing the cost of office space. We rent out offices to the Southern Oregon Land Conservancy and also rent our event space to community groups and individuals during evenings and weekends. Administrative costs are shared among programs to keep them low. Finally, we have undergone an energy audit and taken action to tighten up our building and reduce our energy use and the costs associated with it. Given that we are located in Ashland, there will be no travel expenses for our staff associated with this particular project.

10. Describe data collection and reporting systems that will be utilized for gathering the data for the outcomes on the use of the grant funds (please reference criteria for evaluation and reporting requirements detailed in the 2012 Policy for Economic, Cultural, Tourism and Sustainability Grants)

One of the most important components of this effort, and of the Climate and Energy Action planning effort as a whole, is the tracking, documentation, and data collection aspect of the work in order to determine the most effective strategies for reducing GHG emissions and also to determine that GHG emissions efforts are creating co-benefits across diverse community sectors. We will start this effort off on the right track with careful documentation and analysis of the steps that we lead, which will then be transferred to those who lead the other steps of the process as well.

We will track the following variables:

- Grant fund allocations for staff time and services, such as food, venue rental, and supplies
- Number and contact information for people participating in each leadership meeting
- Number and contact information for people participating in the public workshop
- Number (and contact information, when possible) of people participating online in open forums, surveys, and other outreach
- Number and contact information for business representatives involved in meetings and workshop
- Information on what individual people and businesses have to offer to the effort (time, money, skills, etc.)
- Survey information from participants on preferred levels of GHG emissions targets for Ashland
- Workshop outcomes, including prioritized lists of potential actions that reduce GHG emissions, as well as their potential costs, co-benefits (such as cleaner air or reduced home heating costs for low income people), target populations, potential partners, and other information that is vital to implementation.
- Immediate business growth as a result of the workshop, including solar installation contracts, electric car leases, and/or home energy consultations (for example, after a Hearth storytelling event, True South Solar reported immediate sales of new solar installations directly linked to the event)
- Self-reported energy savings and specific actions that residents have taken this will be implemented during this project and will continue as one of the data collection resources during Climate and Energy Action plan implementation over the coming years

11. What are the current insurance coverage limits on your organizations general liability insurance coverage for bodily injury, personal injury, and property damage?

Bodily Injury: 20,000

Personal Injury: 1,000,000 Property Damage: 500,000

Per Occurrence: \$100,000

Aggregate Limit: \$2,000,000

Thank you for your time and efforts in preparing this information for the consideration of the Grants Committee.

I understand that a grant may be conditioned on submission to the City of a Certificate of General Liability Insurance in the amount of up to \$2,000,000 naming the City of Ashland, its officers and employees as additional insured.

I also certify that the undersigned has legal authority to submit the above information on behalf of the organization named above.

Name (print) Tonya Graham

Name (signature) Jonya Graham

Title Executive Director

CITY OF ASHLAND

GRANTS PROGRAM BUDGET

Please use this form to identify costs associated with the program, activity or event that you are requesting unds for. This form is provided as a template to use. If your organization tracks grant related financials in a different reporting format, please submit in that format if you choose.

APPLICANT/ORGANIZATION: Geos Institute

PROGRAM/EVENT TITLE: Climate and Energy Action Planning First Steps and Kick-off Event

PROJECT PERIOD: July 1, 2015 to June 30, 2016

| REVENUE | |
|---|-----------|
| City of Ashland Grant Funds | \$ 27,040 |
| Jackson County Funds /Identify: | \$ |
| Other State or Federal Funds /Identify: | \$ |
| Other Funds /Identify – Local individual donor contributions | \$1,500 |
| Other Funds (cont) | \$ |
| | \$ |
| TOTAL REVENUE | \$28,540 |
| EXPENDITURES | |
| A. PERSONAL SERVICES (List costs by job title or function) | |
| Total Salaries % of time to project | \$21,060 |
| Geos Institute Project Manager 5% | N 25 |
| 2. Rogue Climate Project Manager 7% | |
| Geos Institute Media Outreach Coordinator 2% | 11 |
| Rogue Climate Media Outreach Coordinator 2% | |
| Total Benefits | \$4,980 |
| Geos Institute Project Manager | 50 E |
| Rogue Climate Project Manager | |
| Geos Institute Media Outreach Coordinator | |
| Rogue Climate Media Outreach Coordinator | |
| TOTAL PERSONAL SERVICES | \$26,040 |
| B. MATERIALS & SERVICES: | |
| Printed materials | \$500 |
| Online Prezi consulting | \$500 |
| Venue – this could be lower if City venue is used | \$1000 |
| Food – We will supplement this line item with donations from local businesses | \$500 |
| TOTAL MATERIALS & SERVICES | \$2,500 |
| TOTAL EXPENDITURES | \$28,540 |

MINUTES FOR THE STUDY SESSION ASHLAND CITY COUNCIL Monday, March 16, 2015 Siskiyou Room, 51 Winburn Way

Mayor Stromberg called the meeting to order at 5:35 p.m. in the Siskiyou Room.

Councilor Lemhouse, Morris, Rosenthal, Voisin, Seffinger, and Marsh were present.

1. **Public Input (15 minutes maximum)** - (None)

2. Look Ahead review

City Administrator Dave Kanner reviewed items on the Look Ahead.

3. WISE Project Update

Steve Mason, program manager for Water for Irrigation Streams and Economy (WISE) explained WISE was a new irrigation infrastructure project that would pipe irrigation throughout the Rogue Valley. The Bureau of Reclamation owned half of the 35,000 acres of water including the Talent Irrigation District (TID). Rogue Valley received approximately 30,000-acre feet of water from the Klamath Basin annually. He explained water flow throughout the valley and provided a presentation that included the following:

Why Wise?

- 2001 Water crisis in Klamath Basin
- Protect Agriculture amid urban growth
- Protect and restore local streams

How WISE?

- Proactive approach
- Inclusive partnerships
- Think big
- Long term solutions: Technology, Economies, Regulations

WISE Project Goals

- Increase summer stream flows
- Improve water quality
- Improve water temperature
- Improved irrigation water reliability
- Improved irrigation water availability

WISE Project Area Map

Possible Sources of Additional Water

- Conserved Water: Piped/lined irrigation canals
 - o Increased reservoir storage capacity: Agate
- Pumped water
 - o Regional Water Reclamation Facility
 - o Lost Creek Reservoir via Rogue River

WISE Piping Layouts Map

Specific Irrigation Benefits

• Conserved water available for irrigation: 22,297 – 30,998 – 39710 (A/F)

Piping open canals would save 31,000-acre feet of water in a normal weather year.

- Gravity pressure system
- Reduced shortages: 77 4,674 8,019 (A/F)
- Extended drought protection
- More flexible water availability
- Minimal moss and algae in system
- Greatly reduced canal/pipe maintenance
- Hydropower generation

Instream Benefits

- More water instream
- Potentially increased flows in tribs
 - \circ 2,103 9,895 20,207 (A/F)
 - o Stored water component in reservoirs
 - o Conserved water from surface rights
 - Water exchange from reuse component
- Elimination of mixed canal and live flows
- Significantly improved water quality

Ashland Creek had a diversion accessed by the irrigation district. The WISE project would eliminate the need for the diversion and the water would remain in the creek. Water rights would stay the same. Conversion reduction would significantly decrease fertilizers getting into the water. People getting their water from the streams would have new laterals and require easements.

Issues

- Stormwater management
- Perceptions regarding use of Reclaimed effluent
- Environmental impacts vernal pools, wetlands, canal-side vegetation
- Shallow wells

WISE Project Timeline

- 2010 Complete Prefeasibility Study
- 2012 Begin Cost Benefit Analysis
- 2014 Being FS/EIS
- 2015 Complete CBA
- 2015 Construct WISE Pilot Project
- 2016 Complete FS/EIS

The project would pipe most of the canals coming from Immigrant Creek to Starlite Place. From Starlite Place on there was a chance for Ecoli and unless the City piped, those influences would continue. Mr. Mason confirmed no piping until the power plant. They would line some of the canals coming from the mountain lakes. Piping the water would not affect wildlife. Currently, the canals were dry for six months each year already. Riparian areas and wetlands would be significantly healthier and fish instream would do well.

Private water users would not see a change in their water rights. Funding would from the Bureau of Reclamation, WISE, the state, developers and commercial growers.

4. Ashland Conservation Commission – Community Climate and Energy Action Plan proposal

Conservation Commissioner Jim McGinnis provided the background on the Council goal for sustainability planning, the Conservation Commission's framework proposal, and Council's earlier request for the Commission to determine the steps needed to develop a climate and energy action plan.

The Conservation Commission reviewed several plans from other communities. Highlights from the overall assessment was that both the community and city government were involved in the planning and implementation process that was sponsored and lead by city or county government. They dedicated sustainability staff to lead the process, performed communitywide greenhouse gas assessments and set local emission targets to align with state emission targets. Activities that would fit well in Ashland included community workshops and meetings, education on climate change, goals and strategies for the next 5, 20, and 50 years, and adaptation strategies integrated with mitigation strategies.

Conservation Commissioner Brian Sohl addressed the Eugene Climate and Energy Plan adopted by the City of Eugene. The Plan contained four initial goals and targets. Goal 1 was all city operations and facilities were carbon-neutral by 2020. Goal 2 aligned targets for greenhouse gas emissions reductions with the state. The third goal would reduce levels of fossil fuel use 50% by 2030. Goal 4 identified adaptation strategies for climate change.

City of Eugene staff identified six action areas that included Buildings and Energy, Food and Agriculture, Land Use and Transportation, Consumption and Waste, Health and Social Services and Urban Natural Resources. Eugene established a Climate and Energy Action Plan Advisory Team and a public engagement process that involved each of the six action areas.

Eugene City Council endorsed the plan instead of formally adopting it due to the detail. When the plan went into implementation, the City of Eugene hired another staff person. Commissioner Sohl went on to explain how actions taken by two Eugene citizens group called Our Children's Trust and the Youth Climate Action Now (YouCan) resulted in a climate recovery ordinance passed July 2014. By 2030 the city organization, businesses, and residents living or working in Eugene will collectively reduce fossil fuels 50%.

Conservation Commission Chair Marni Koopman addressed next steps, explained the plan needed to be community driven, collaborative, and recommended an oversight group with members from different sectors. The group would deal with greenhouse gas emission, hunger, homelessness, air quality, water shortages, and traffic congestion. Local experts would help set greenhouse gas emissions targets for the community.

Another important component of the plan was ongoing outreach. The plan was iterative with reassessments occurring every three years. The planet would already experience 30 years of worsening climate change. Emission cuts would prevent the most serious consequences 50-100 years from now. It would take a long time to change. The Commission estimated the effort would require .5 FTE full time equivalent (FTE) in staff time or the equivalent in contractor assistance during this biennium to manage the development of the plan in year one and implement the plan year two in the spring of 2016.

The Conservation Commission would include the senior community for transportation input. The education component would begin with the kick off in 2015. They would use similar tactics used in the economic development strategy to form the committee and contact local experts. If the committee formed through the City, the Mayor would participate in appointing members.

The Commission was not sure how the City would handle the consequences for missed goals. Eugene City Council endorsed the plan and adopted the ordinance later. The ordinance had three mandates that provided more flexibility. The departments for the City of Eugene were responsible for meeting goals.

City Administrator Dave Kanner explained a contracted .5 FTE was the better option for City staff.

Mr. McGinnis noted the STAR framework the Conservation Commission proposed to Council previously and explained the Commission would address the framework during the process.

Mr. Kanner would include the plan in the budget. A Council appointed committee made it subject to public meetings laws. Staff could add the committee to the website. The City would form the committee first then hire a contract consultant to facilitate the process.

Council and Mayor expressed concern that the plan have actual actions the City and community could initiate and complete within a short period. One comment suggested including the work the Ashland Forest Resiliency (AFR) performed as part of the plan.

5. Discussion of utility billing surcharge for Ashland Forest Resiliency project

Councilor Marsh was interested in further developing a utility fee as a long term funding mechanism for the Ashland Forest Resiliency (AFR). There was a significant nexus between watershed health that enabled the municipal water system and a utility fee. The fee would be transparent and dedicated. Increasing property taxes would not allow the City to dedicate specific funds to the watershed since the funds went into the General Fund. There was concern the fee was regressive. Councilor Marsh thought it could be structured to become less regressive. This already occurred in the fee structure for storm water. It would cost an estimated \$1.50 per residential household with a gradation that implemented different fee structures for commercial and government.

City Administrator Dave Kanner explained a utility tax had the advantage of bringing in revenue from a broader base because everyone depended on the watershed, but not everyone paid property tax. Having a flat fee was regressive. The City could use a methodology where larger water users paid more. It would not be exact. The City could look at meter size or charge a percentage of use but that was difficult to manage. Another possible issue were individuals refusing to pay the surcharge. Was Council willing to shut off someone's water if that happened. If Council approved a utility tax, he recommended it as a watershed maintenance fee instead of a fuels reduction fee.

Forest Resource Specialist Chris Chambers addressed other funding options. The US Forest Service hosted Collaborative Forest Restoration Partnerships that affected larger landscapes and consisted of \$4,000,000. It would require a mobilized regional effort to apply and was a possibility in the future. The Merkley-Wyden bipartisan bill protected the existing money and did not create a new funding source. The state had the Oregon Watershed Enhancement Board grant that provided a smaller amount, approximately \$3,700.

Mr. Kanner explained increasing the existing water fund fee 1% would produce \$50,000-\$60,000 in revenue.

Council wanted to see more funding options, future grants, ways to make the utility fee more progressive, and the possibility of a two-year sunset on the fee with the potential to extend. Other comments preferred a fixed amount on the utility bill and that it applied to everyone.

Meeting adjourned at 7:16 p.m.

Respectfully submitted, Dana Smith Assistant to the City Recorder



CLIMATE ACTION PLAN

for

Corvallis, Oregon

Prepared by the

Corvallis Climate Action Plan Task Force

January 2015

Corvallis Climate Action Plan

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Introduction

Nearly 15 years ago, Corvallis agreed to work collaboratively with other cities and agencies to address climate change by signing on to the Cities for Climate Protection campaign (2000). The City pledged to take a leadership role in increasing energy efficiency and reducing greenhouse gas emissions from municipal operations and to develop and implement a local climate action plan outlining steps for the community to reduce greenhouse gas (GHG) emissions. Corvallis made similar commitments when it subsequently signed the U.S. Mayors Climate Protection Agreement (2005) and became a member of ICLEI—Local Governments for Sustainability (2008) (see Figure 1). The City has taken many actions to increase energy efficiency and completed municipal and community greenhouse gas inventories, but it has yet to develop a climate action plan.

Why a Climate Action Plan?

On November 2, 2014, the U.N. *Intergovernmental Panel on Climate Change (IPCC)* released the "synthesis" report of its fifth full scientific climate assessment since 1990. More than 100 governments signed off line by line on this review of more than 30,000 studies on climate science, impacts, and solutions. In the report, the world's top scientists and governments issued their bluntest plea yet to the world: Slash carbon pollution now or risk "severe, pervasive and irreversible impacts for people and ecosystems." The risks include substantial species extinction, global and regional food insecurity, and consequential constraints on common human activities, such as growing food and working outdoors. Scientists have "high confidence" that these devastating impacts will occur—"even with adaptation"—if we keep doing little or nothing.

The IPCC report and others make clear that climate change is already leaving its mark and that future generations cannot plausibly undo the damage already done: carbon dioxide and other *greenhouse gases* currently in the atmosphere and produced today will remain and continue to affect the climate for decades. The IPCC echoes the warnings of the National Climate Assessment (NCA) report released in May by the U.S. Global Change Research Program. The Assessment outlines the effects climate change is having in the United States and the dire consequences that can be expected if no action is taken to mitigate global warming:

Climate change, once considered an issue for a distant future, has moved firmly into the present. Corn producers in Iowa, oyster growers in Washington State, and maple syrup producers in Vermont are all observing climate-related changes that are outside of recent experience. So, too, are coastal planners in Florida, water managers in the arid Southwest, city dwellers from Phoenix to New York, and Native Peoples on tribal lands from Louisiana to Alaska.²

¹ "Climate Change 2014 Synthesis Report," *IPCC Fifth Assessment Synthesis Report*, November 2014: http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_SPM.pdf.

² *National Climate Assessment*, U.S. Global Change Research Program, May 2014: http://nca2014.globalchange.gov/report/regions/northwest.

The Corvallis area will see a number of important changes:

- Average annual temperatures will increase by 8 to 12° F by around 2080.
- Reduced snowpack and changing snowmelt will result in lower stream flows in summer.
 This will reduce the availability of irrigation water even as higher temperatures increase the demand for water for agricultural uses.
- More intense storms (rain and snow) will increase flood risk and *stormwater* management challenges.
- Increased river flooding and winter flows, decreased summer flows, and higher stream temperatures will threaten many species, particularly salmon, steelhead, and trout.
- Field crops, fruit trees, and livestock will face an increased probability of heat stress.
- The combined impacts of increasing wildfire, insect outbreaks, and tree diseases will increase forest mortality and transform forest landscapes.
- Humans will suffer higher rates of heat-related illness, exhaustion, asthma, and respiratory diseases. 3,4

(See Appendix A for more detail on how climate change will affect the Pacific Northwest.)

In addition to these physical impacts, climate change is expected to have significant financial impacts, particularly if it accelerates and if we don't prepare for the impacts. Multiple studies illustrate why it is necessary to act on climate change as soon as possible:

- An Overview of Potential Economic Costs to Oregon of a Business-As-Usual Approach to Climate Change says, "If spread evenly, Oregon's households, on average, could incur annual costs of \$1,930 per year by 2020. Of this amount, \$830 relate to expenditures on energy, \$460 relate to health-related costs, and \$370 to the adverse effects of climate change on salmon populations. These costs are not negligible. The 2020 average of \$1,930 represents more than 4 percent of the current median household income in Oregon." ⁵
- The White House Council of Economic Advisors estimates that the US will suffer \$150 billion in economic damages each year if we fail to prevent global temperatures from increasing two degrees Celsius above pre-industrial levels. 6
- The Risky Business Project determined that a "business as usual" approach to climate change will cost the nation up to \$507 billion in property damages by 2100.7

³ Preparing for Climate Change in the Upper Willamette River Basin of Western Oregon: Co-Beneficial Planning for Communities and Ecosystems, US Department of Agriculture, Climate Leadership Initiative, and National Center for Conservation Science and Policy, March 2009: http://uonews.uoregon.edu/sites/uonews2.wc-sites.uoregon.edu/files/uploads/UpperWillamette_REPORT.pdf

⁴ National Climate Assessment, 2014.

⁵ An Overview of Potential Economic Costs to Oregon of a Business-As-Usual Approach to Climate Change, Climate Leadership Initiative, University of Oregon, February 2009:

http://uonews.uoregon.edu/sites/uonews2.wc-sites.uoregon.edu/files/uploads/OR-Fnl_Rpt.pdf.

⁶ The Cost of Delaying Action To Stem Climate Change, White House Council of Economic Advisors, July 2014: http://www.whitehouse.gov/sites/default/files/docs/the_cost_of_delaying_action_to_stem_climate_change.pdf.

⁷ *Risky Business: The Economic Risks of Climate Change in the United States*, Risky Business Project, June 2014: http://riskybusiness.org/uploads/files/RiskyBusiness_PrintedReport_FINAL_WEB_OPTIMIZED.pdf.

The Opportunity for Climate Prosperity

As alarming as the IPCC synthesis report is, it is also hopeful. The world's top scientists and governments make clear—as they have in a number of previous reports—that the cost of action is relatively trivial: "Mitigation scenarios that are *likely* to limit warming to below 2°C" entail "an annualized reduction of consumption growth by 0.04 to 0.14 (median: 0.06) percentage points over the century relative to annualized consumption growth in the baseline that is between 1.6 percent and 3 percent per year (*high confidence*)." In other words, the cost of even the most aggressive action—the kind needed to stave off irreversible disaster—is so low that it would not noticeably change the growth curve of the world economy this century. The authors say with high confidence that reducing annual consumption growth as little as, for example, 2.4 percent per year down to 2.34 percent per year, would be effective in limiting warming.

Other reports suggest that taking action now will result in significant savings. "Washington Western Climate Initiative Economic Impact Analysis" and "Pathways to a Low-Carbon Economy," suggest that reducing energy use and preparing for climate change will quickly save citizens, businesses, and governments millions of dollars by reducing energy costs and creating sorely needed jobs.

Recognizing the risks and opportunities that climate change poses, cities all over the country are committing to address climate change at the local level. By implementing innovative programs to reduce the GHG emissions, or "carbon footprint" of government operations and the community, they also are saving money and improving the economic, environmental and social sustainability of their communities.

A Vision for Today, 2020, and Beyond

In 1997, our community articulated its desired future in the *Corvallis 2020 Vision Statement*. Although it was adopted the same year as the Kyoto Protocol, the Vision Statement does not specifically address climate change; at that time, most Americans simply did not believe that global warming was going to affect them in their lifetimes. However, the seven focus areas of the Vision Statement provide many openings for emissions reduction (see Appendix B for details). Anticipated updates of the *Corvallis 2020 Vision Statement*, the Comprehensive Plan, and the Transportation System Plan—along with development of a climate action plan—offer opportunities for our community to respond to the challenge of climate change with a new vision of integrated action, led by local government in partnership with business and civil society.

http://www.corvallisoregon.gov/modules/showdocument.aspx?documentid=14

⁸ Washington Western Climate Initiative Economic Impact Analysis, ECONorthwest, February 2010: http://www.ecy.wa.gov/climatechange/docs/20100707_wci_econanalysis.pdf.

⁹ Pathways to a Low-Carbon Economy: Version 2 of the Global Greenhouse Gas Abatement Cost Curve, McKinsey and Company, 2009: download from

http://www.mckinsey.com/client_service/sustainability/latest_thinking/greenhouse_gas_abatement_cost_curves.

¹⁰ Corvallis 2020 Vision Statement:

¹¹ "Americans' Global Warming Concerns Continue to Drop," *Gallup Politics*, March 11, 2010, www.gallup.com/poll/126560/americans-global-warming-concerns-continue-drop.aspx.

This Climate Action Plan is an attempt to create a framework that offers direction and focus on the most serious threat facing the world today and to set priorities and a course for progress for our community. Drawing on similar plans developed by other cities, the state of Oregon and other states, it pinpoints issues critically important not only to reducing greenhouse gas emissions, but to maintaining our quality of life in the face of a changing climate that threatens food and water sources, power supplies, public safety and health, forests and local economies. Identifying strategies and actions that can feasibly and effectively reduce our community's greenhouse gas emissions would achieve numerous benefits that not only would move Corvallis toward realizing its 2020 vision but also would build a more secure and resilient community for future generations.

Corvallis Climate Action Policy

Cities for Climate Protection Campaign (CCP). Initiated in 1993 by the United Nations Environment Program and the International Council for Local Environmental Initiatives (ICLEI), the Campaign was the first international initiative that aimed to facilitate emissions reduction of local governments through a five milestone process of measurement, commitment, planning, implementing and monitoring. The City of Corvallis passed its resolution joining the CCP in April 2000. As of 2009, the CCP Campaign had grown to more than 1000 local governments worldwide.

U.S. Mayors Climate Protection Agreement. Established by Seattle Mayor Greg Nickels in 2005, the Agreement challenges participating cities to meet or beat the Kyoto Protocol targets and to urge the state and federal government and U.S. Congress to enact policies and programs to reduce greenhouse gas emissions. Corvallis Mayor Helen Berg signed the Agreement in 2005, and Mayor Charles Tomlinson reaffirmed the City's participation 2007. As of October 2009, 1,000 mayors representing more than 86 million residents had signed the agreement.

City of Corvallis *Greenhouse Gas Inventory for Municipal Government Operations.* ¹² In 2008, the City contracted with Merit System Services for an inventory of emissions from government operations. In early 2010, City staff completed the final report for presentation to the City Council and assumed responsibility for future inventories. The City planned to update the inventory every two years, but thus far no updates have been completed.

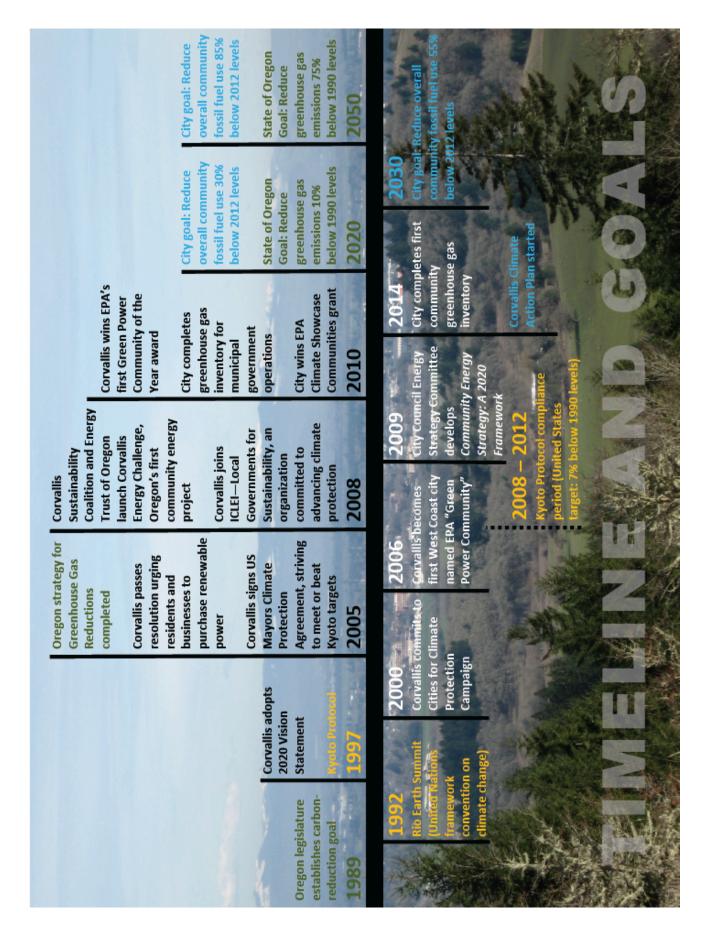
Community Energy Strategy: A 2020 Framework. In 2009, the City Council created the Energy Strategy Ad Hoc Committee (ESAHC), which completed the Community Energy Strategy "in a context of increasing urgency and a strong sense that we need to begin acting now to increase our energy security and reduce our contribution to global climate change." The 10-year plan focuses on energy conservation and efficiency, renewable and/or low carbon energy sources, and local cleanency business. The ESAHC also compiled existing energy and sustainability policies and conducted a gap assessment of current policies and where the City could be in terms of achieving community energy goals. In January 2010, the City Council approved the Strategy and adopted the compilation of existing policies as a reference guide to the Corvallis City Council Policy Manual.

Corvallis Community Greenhouse Gas Emissions Inventory Report. ¹⁴ In 2014, with support from a grant provided by the Environmental Protection Agency's Climate Showcase Communities Program, City staff and community partners completed an inventory of the community's greenhouse gas (GHG) emissions. The inventory accounts for emissions related to buildings, energy use, and transportation, and attempts to measure the energy and associated emissions used to make, transport, store, distribute and dispose of the consumer goods and services we use.

¹² *Greenhouse Gas Inventory for Municipal Government Operations*, City of Corvallis, October 2010 http://archive.corvallisoregon.gov/0/doc/285255/Electronic.aspx.

¹³ "Draft Energy Strategy," Memorandum from Energy Strategy Ad Hoc Committee to Mayor and City Council, 17 December 2009: http://archive.corvallisoregon.gov/0/doc/260963/Electronic.aspx.

¹⁴ City of Corvallis 2012 Community Greenhouse Gas Inventory Report, City of Corvallis, May 2010: http://archive.corvallisoregon.gov/0/doc/420074/Electronic.aspx.



The Corvallis Climate Action Plan

Plan Development

In early 2013, when the Corvallis City Council solicited input from the community on goals for its two-year term, the Corvallis Sustainability Coalition Steering Committee submitted the following:

Adopt a City Council goal to assess the status of the City's greenhouse gas reduction efforts, set significant greenhouse gas reduction goals, and identify action items that will help move the City toward those goals.

The Council did not adopt a climate action goal, but the Coalition Steering Committee decided to proceed with work on a climate action plan via a task force because it did not want to wait another two years to see progress. Meanwhile, other efforts to address climate change were emerging or coalescing in Corvallis, such as the founding of 350Corvalls and a chapter of the Citizens Climate Lobby, and initiatives by the Sierra Club, the League of Women Voters, and the environmental and stewardship committees of a number of faith groups.

Representatives of these groups came together in May 2013 to form the Corvallis Climate Action Plan Task Force. In June 2014, when City staff presented the results of the community greenhouse gas inventory to the City Council, the Task Force requested that the City follow up on the inventory with the next steps in ICLEI's five-milestone process, namely by adopting an emissions reduction target and developing a local climate action plan. The Council referred the request to the Urban Services Committee, and the Task Force worked with the Committee over the summer to develop a Scope of Work for proceeding with a community-led process of developing a climate action plan.

Task Force Members

Membership in the Climate Action Plan Task Force has changed since the initial meetings, and the current Task Force is grateful and indebted to all who have participated (see Acknowledgements) for their expertise and input on planning processes, topic areas, development of the plan and the plan document, public outreach, and general support. The current Task Force members who researched and drafted sections of this plan are:

| Team Member | Partner Agency/Group |
|---------------------|---|
| Julie Arrington | Marys Peak Group—Sierra Club |
| Zachariah Baker | Member at Large |
| Dan Blaustein-Rejto | Member at Large |
| Glencora Borradaile | Member at Large |
| Claudia Keith | League of Women Voters |
| Linda Lovett | Corvallis Sustainability Coalition |
| Annette Mills | League of Women Voters |
| Kris Paul | 350 Corvallis |
| Marge Stevens | First United Methodist Church Natural Step Ministry |

Drafting Process

Research. The process of drafting the CAP began with research into other municipal and state climate and energy action plans so that we might build on the best practices and research of other successful efforts. The Task Force also researched existing local policies and plans in order to build on and incorporate previous efforts, such as the City's greenhouse gas inventories, and align with existing efforts, such as Benton County's Climate Change Adaptation Plan.

The lead author on each topic area compiled information from some key sources:

- Community Sustainability Action Plan. This long-range, visionary document was developed in 2008 by the Corvallis Sustainability Coalition to meet the Corvallis City Council's goal "to develop a community-wide sustainability initiative." The plan was the result of a landmark community process that revolved around three town hall meetings and involved hundreds of Corvallis residents and thousands of volunteer hours. The 2008 Action Plan was revised in 2012-13 and again received public review and feedback through a series of "Community Conversations." The revised document, titled Community Sustainability: A Framework for Action, was published in 2013.
- *Climate action plans from other cities.* Of the many municipal climate action plans that Task Force members reviewed, those from the cities of Portland and Eugene were particularly useful. For example, the objectives and actions in the topic areas of this plan draw upon the strategy lists that Eugene compiled using information from regional experts and municipal- and state-level climate and energy plans from across the nation. Corvallis Task Force members saved a great deal of time by not having to duplicate this effort.
- *Oregon Global Warming Commission "Roadmap to 2020."* This document offers recommendations for how Oregon can meet its 2020 greenhouse gas reduction goal (10% below 1990 levels), get a head start toward its 2050 goal (at least 75% below 1990 levels), and build a prosperous, clean-energy-based 21st century state economy. Six technical subcommittees drawn from business, academia, non-governmental organizations, local government and state agency staff did the initial work of describing scenarios, sifting through possible recommendations and evaluating them. In October 2010, the Commission unanimously adopted the Interim "Roadmap to 2020" Report.

Review. The lead authors of the topic areas in this plan invited community members with broad knowledge of the topic and the ability to bring a variety of perspectives to review their sections. The topic specialists reviewed proposed actions in greater detail, provided input on priorities, clarified ideas, identified opportunities and challenges, and helped to ground the process in Corvallis's unique economic, social, and environmental conditions. A complete list of Topic Specialists can be found in Appendix F.

The Task Force also developed an Advisory Panel composed of people with expertise in the process of developing a climate action plan and/or climate change mitigation and adaptation. As the Advisory Panel reviews the draft of the plan, it is providing technical information, helping to prioritize strategies and actions, and advising on implementation. A list of Advisory Panel members is in Appendix G.

October 29 and November 12, 2014—to engage community members interested in climate and energy challenges as they relate to each of the six topic areas. About 60 community members, including Task Force members, topic specialists, and City Councilors attended each forum. Participants reviewed the strategy list for each topic area, provided perspectives on which actions should be given the highest priority, identified missing actions or strategies, and offered suggestions on how to implement individual actions.



Equity Principles

The Task Force has attempted to draft this climate action plan such that it expresses the urgency for integrated action at the local level, led by local government in partnership with business and civil society. While the plan is directed primarily toward the Corvallis City Council and staff, climate action is an effort the entire community needs to support and act on, not something that only the local government adopts and implements.

Therefore, the Task Force attempted to view strategies and actions to address climate change through the lens of social equity. As noted in the Introduction and in the City Council's Community Sustainability Policy, sustainable communities are ones that "encourage and develop connections between environmental quality, economic vitality, and social equity" and that "equitably distribute the costs of improving sustainability." Therefore, when considering action on climate change, it is important to consider the following equity principles: ¹⁶

- Healthy: Mitigate environmental factors leading to health disparities, such as barriers to
 active lifestyles and transportation, pollution exposure, disparate access to green space and
 other natural resources.
- **Safe and Livable:** Promote investments in housing energy efficiency that will make them safer, more comfortable and affordable, and in community infrastructure that enhances pedestrian and bike safety, and other elements of livability.
- Accessible: Promote investments that improve neighborhood accessibility, by bringing services to underserved neighborhoods and supporting equitable expansions of public transit and active transportation infrastructure.
- **Prosperous:** Promote the creation of employment and small business opportunities with potential to lift up and empower households and communities, and maximize that potential

¹⁵ *CP 2010-1.12 Community Sustainability Policy*, City of Corvallis, rev April 14, 2014.

¹⁶ Memo Re: Equity Scan for the 2013 Portland/Multnomah County Climate Action Plan, August 8, 3013: http://www.portlandoregon.gov/bps/article/463573

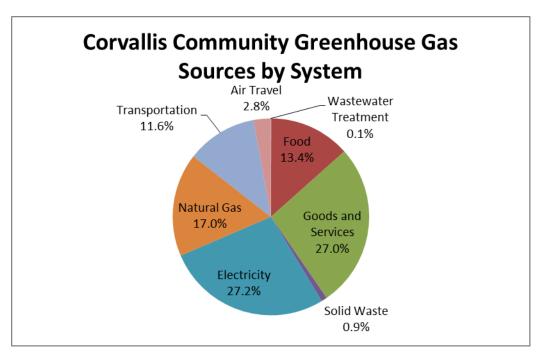
- through equitable hiring and contracting policies that target those opportunities toward historically underrepresented populations.
- **Inclusive:** Include communities of color and other historically underrepresented populations in every step of the climate action planning process, from the definition of goals to implementation. Undertake proactive, culturally appropriate strategies to reach out to these populations and involve and empower them through the CAP's actions and programs.

Plan Scope and Organization

Sources of Emissions

In Corvallis, most greenhouse gas emissions result from energy consumed in buildings and vehicles and from energy associated with making, transporting, storing, distributing and disposing of the goods and services we consume. The community emissions cited in this plan are from the *City of Corvallis 2012 Community Greenhouse Gas Inventory Report*, which was completed under the U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, a methodology developed by ICLEI–Local Governments for Sustainability and released in October, 2012.

Total emissions for the community in 2012 are estimated at 1,257,115 Metric Tons Carbon Dioxide Equivalent (MT CO_2e). Emissions sources included in the inventory cover the broad categories of stationary emissions, electricity, transportation, solid waste, and the emissions associated with household and government consumption of food, goods and services. The chart below summarizes the findings based on the five Basic Emissions Generating Activities plus Household and Government Consumption.



Geographic Scope

The boundary for which emissions were calculated in the community greenhouse gas inventory was Corvallis city limits. Therefore, this climate action plan also uses city limits as the boundary for most of the recommended objectives and actions.

However, the plan is intended to reach well beyond city limits; citizens, topic experts and partners from Corvallis, the surrounding community, and even beyond came together to develop this plan because climate change poses challenges and opportunities that will require partnerships and joint efforts far beyond the Corvallis city limits.

ICLEI's Five-Milestone Process

ICLEI—Local Governments for Sustainability's five-step methodology provides a simple, effective, standardized means for communities to reduce emissions from both government operations and the community as a whole. The steps can be worked on concurrently, but each should be considered separately when developing a local action plan.

- Milestone One: Conduct a baseline emissions inventory and forecast.
- *Milestone Two:* Establish an emissions reduction target for the forecast year.
- Milestone Three: Develop a local climate action plan to implement actions that reduce GHG emissions.
- *Milestone Four: Implement the climate action plan.*
- *Milestone Five:* Measure, verify and report



Reduction Goals

With completion of the community greenhouse gas inventory, Corvallis achieved Milestone 1 in the widely endorsed climate action planning process outlined by ICLEI—Local Governments for Sustainability. The City can now use the inventory for what it is intended—establishing a reduction target (Milestone 2) that reflects the baseline year (2012). Because the CAP Task Force worked concurrently on researching a reduction target and developing this climate action plan (Milestone 3), members used as working assumptions two goals from the City of Eugene's *Climate and Energy Action Plan 2013 Progress Report:*

- 1. Reduce community-wide greenhouse gas emissions by 10 percent below 1990 levels by 2020 and at least 75 percent below 1990 levels by 2050.
- 2. Identify strategies that will help the community adapt to a changing climate.

Eugene's 2013 GHG emissions reduction goal matches Oregon's stated GHG reduction targets from House Bill 3543, which reflected scientific research available in 2007. However, the scientific community now recommends that industrialized countries reduce their absolute GHG emissions 85 percent by 2050 relative to a 2010 baseline.

Since the base year for the Corvallis community inventory is 2012, the target year for Corvallis is 2053 for an 85 percent reduction compared to a base year. With community GHG emissions of 1,257,115 MT $\rm CO2_e$ in 2012, Corvallis needs a year-over-year average reduction of 4.52 percent to meet the 2053 target. Assuming the interim goals of 2020, 2030, and 2050, Corvallis might set the following targets: 17

- **2020:** MT $CO2_e \sim 868,185$, cumulative reduction of $\sim 31\%$ of base
- **2030:** MT CO2_e \sim 546,587, cumulative reduction of \sim 56.5% of base
- **2050:** MT CO2_e \sim 216,647, cumulative reduction of \sim 82.8% of base
- **2053:** MT CO2_e \sim 188,567, cumulative reduction of \sim 85% of base

The CAP Task Force is continuing to test reduction target models and underlying assumptions, but the above targets show the magnitude of the reductions required. Once targets are established, the actions outlined in this plan can be assessed for the impact they may have in helping to meet the targets. This will put Corvallis on the road to implementing carbon emissions reduction activities (Milestone 4) and determining how to evaluate our progress (Milestone 5).

Objectives and Actions

The strategies are divided into six topic areas. The first four are the primary targets for greenhouse gas emissions and fossil fuel reductions, and the last two focus on actions necessary to adapt to climate change. Please note that the actions in each area are not organized by priority. The first action in each section is not necessarily the most important, nor is the last the least important. Terms in *italics* are defined in the glossary located in Appendix H.

- Buildings and Energy looks at energy used in residential, commercial, and industrial
 buildings in Corvallis. This section includes recommendations to reduce energy use in
 existing buildings and new construction, expand use of renewable energy, and prepare
 buildings for climate change.
- **Food and Agriculture** includes everything related to our food production, delivery, distribution, and waste disposal. This section includes recommendations to reduce consumption of meat and dairy foods, reduce greenhouse gas emissions associated with agriculture and food waste, protect regional farmland, increase home- and locally-grown foods, and prepare our food systems for an uncertain future.

¹⁷ These targets were derived using the Autodesk City Finance Approach to Climate-stabilizing Targets ("C-FACT") methodology. Autodesk's open-source methodology is science-driven, considers economic factors, and compatible with standard protocols for carbon accounting. For more information, see: http://static-dc.autodesk.net/content/dam/autodesk/www/sustainability/docs/pdf/An Openly Available Method for Setting Science Based GHG Targets for Cities-ADSK White Paper-approved with links.pdf

- **Land Use and Transportation** considers the use of land and the transportation of people and goods. This section includes recommendations to increase urban density and mixes of *land use* and a focus on improving systems for bike, pedestrian, and transit.
- Consumption and Solid Waste looks at the lifecycle of consumer goods from extraction of
 raw materials to manufacturing, packaging, distribution, product use and finally, disposal.
 This section includes recommendations to reduce greenhouse gas emissions associated
 with consumption of goods, improve recycling and composting, improve municipal
 purchasing practices, and adapt consumption strategies based on new findings.
- Health and Social Services addresses mental and physical health care and assistance
 programs for disadvantaged populations. This section contains recommendations to
 prepare health and social systems for a different future and reduce the impacts of climaterelated disasters.
- **Urban Natural Resources** considers the soil, air, water, plants, and animals of our city. This section contains recommendations to manage land, trees, and water for multiple benefits, update resource management plans, improve access to natural resource data, and expand drinking water and stormwater management programs.

What Happens Next?

This climate action plan is a dynamic, living document. The Climate Action Plan Task Force understands—and desires—that it be scrutinized and revised because developing a first climate action plan is just a step in what will be a decades-long series of climate action planning exercises. As spelled out in the CAP Scope of Work for the Urban Services Committee, "The endgame is not the plan—it's the implementation of the plan."

The Corvallis CAP establishes general directions and offers specific actions over the next three to five years, but the scientific and general community's understanding of climate and energy challenges are evolving rapidly. Changes in community priorities, energy-saving technologies and opportunities, and state or federal rules for emissions will require the goals and objectives of this plan to be reviewed and updated on a regular basis.

However, this raises some very important questions, namely: Who or what organization is going to be the steward of the plan? Stewardship would include, but is not limited to:

- Conducting future GHG inventories—municipal and community—on a regular basis.
- Overseeing implementation of action items in the CAP.
- Monitoring and measuring progress.
- Keeping records on the metrics of the unfolding plan to track projects.
- Reporting on how well actions are meeting their intended emissions reduction goals.
- Identifying and seeking funding for actions, where necessary.

The CAP Task Force has undertaken this effort to develop a community climate action plan because it understands that City staff resources are limited. That said, local governments necessarily have the leading role in many areas, such as guiding local land use policies; shaping new development; strengthening building codes; investing in transportation systems and infrastructure; working with

utilities; and managing parks, urban forests, natural areas, and watersheds. In addition to eventual adoption of a CAP, we would expect the City of Corvallis to commit to:

- Integrating CAP strategies and actions into City operations and existing plans (e.g., Transportation Master Plan, Comprehensive Plan, Economic Development Plan) and the update of the 2020 Vision Statement.
- Evaluating and reporting on community carbon emissions, re-examining goals, and identifying new actions on a regular basis.
- Devoting staff resources as required to accomplish the above tasks. The costs need to be built into the budget, and the responsibility needs to be in employee job descriptions.

Funding

Many of the action items recommended in this plan align with work already underway across the City organization in solid waste management, stormwater management, urban forestry, and other existing City programs. Moreover, many are intended to be part of the work that the City will be doing when it updates the Comprehensive Plan and Transportation Master Plan and therefore are likely to require a redirection of City staff rather than additional budget.

The CAP Task Force plans to conduct further research to clarify some of the relative costs and benefits of actions in this plan. It will compile a table of the actions and associated targets that includes estimated financial impacts and estimated greenhouse gas reductions and include it in the final draft of the CAP that it presents to the City Council in January.

The CAP Task Force also is willing to research funding opportunities and has already identified some in the course of its work. Understanding that seeking and applying for grants can be very time-consuming, Task Force members are willing to work with City staff to take advantage of these opportunities. Some possibilities include:

- STAR Communities. Sustainability Tools for Assessing and Rating Communities is a Washington, DC-based 501(c)(3) nonprofit organization that works to evaluate, improve and certify sustainable communities. The STAR Communities Leadership Program provides extensive staff support and services to a cohort of communities as they work through the STAR Community Rating System measuring local sustainability. In the past two years, 58 cities and counties have participated in the Leadership Program. To date, 20 have achieved STAR certification and 15-18 more are expected to certify this winter. Applications for the Spring 2015 cohort are open now and are due January 16, 2015. The one-year program costs \$7,500 and begins March 1, 2015. STAR Communities will make available a limited number of need-based program fee scholarships.
- Climate Action Champions. In October, the Obama Administration announced this competition to identify, showcase, and invest in up to 15 local and tribal governments across the country that demonstrate an ongoing commitment to cutting carbon pollution and preparing for the impacts of a changing climate. The competition is administered by the U.S. Department of Energy (DOE) and implemented in collaboration with a broad range of Federal agencies. "Champions" are eligible for technical assistance, mentorship, peer-to-peer learning, and climate tools and will be promoted as best practices to other

communities seeking to do similar work. 18 The competition has closed for this year, but it is likely to be renewed in 2015.

- Partnership for Sustainable Communities. Since 2009, this joint program of the U.S. Department of Housing and Urban Development, U.S. Department of Transportation, and the U.S. Environmental Protection Agency has been helping communities strengthen environmental protection, economic competitiveness, and climate *resilience*. By bringing together communities that have experience with long-range planning and providing grants and other assistance, the Partnership works to coordinate federal housing, transportation, water, and other infrastructure investments to make neighborhoods more prosperous, allow people to live closer to jobs, save households time and money, and reduce pollution.
- 100 Resilient Cities. Pioneered by the Rockefeller Foundation, 100RC is dedicated to helping cities around the world become more resilient to physical, social and economic challenges. 100RC supports the adoption and incorporation of a view of resilience that includes not just shocks earthquakes, fires, floods, etc. but also stresses, such as high unemployment; an overtaxed or inefficient public transportation system; endemic violence; or chronic food and water shortages. Cities in the 100RC network are provided with the resources necessary to develop a roadmap to resilience along four main pathways: 1) financial and logistical guidance for establishing a Chief Resilience Officer in city government; 2) expert support for development of a resilience strategy; 3) access to solutions, service providers, and partners from the private, public and NGO sectors who can help develop and implement the resilience strategy; and 4) membership in a global network of member cities who can learn from and help each other.



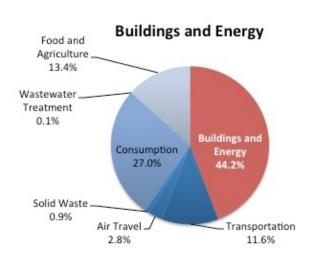
¹⁸ "Obama Administration Announces Climate Action Champions Competition to Recognize Climate Leaders Across the United States," White House Office of the Press Secretary, October 01, 2014: http://www.whitehouse.gov/the-press-office/2014/10/01/obama-administration-announces-climate-action-champions-competition-reco

Buildings and Energy

"At about 44 percent, emissions associated with building energy account for the largest part of the Corvallis community's carbon footprint."

What is the Buildings and Energy Action Area?

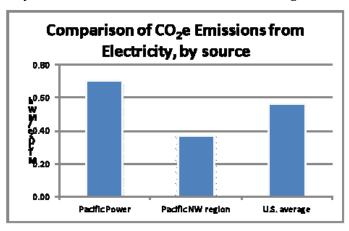
This section focuses on all the energy used to provide heating, cooling, light, and power in residential, commercial and industrial buildings in Corvallis and on the resulting greenhouse gas (GHG) emissions. The emissions from this sector come from a wide variety of uses, such as operating commercial businesses (e.g., supermarkets), producing industrial products (e.g., operating equipment), to powering events (e.g., lighting at Reser Stadium), as well as the traditional heating/cooling/power needs of homes, apartments, office buildings, etc.



How Do Buildings and Energy Contribute to GHG Emissions?

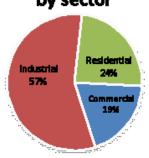
Corvallis purchases electricity from Pacific Power, an investor-owned utility, and Consumers Power, Inc. a privately owned cooperative operated on a non-profit basis. Pacific Power, which provided over 91% of the electricity used in the community in 2012, generates 67% of its electricity from coal and 13% from natural gas.¹⁹. This heavy reliance on fossil fuels contributes to a higher

percentage of emissions. Consumers Power purchases electricity from the Bonneville Power Administration, which markets electrical power generated from hydroelectric, nuclear, and renewable resources. The chart at right compares emissions from electricity by source. Both utilities provided usage data for the inventory year for the community, but did not break it down by residential, commercial, and industrial users.



¹⁹ Oregon Department of Energy's "Where does Oregon's Electricity come from?" website http://www.oregon.gov/energy/pages/oregons_electric_power_mix.aspx

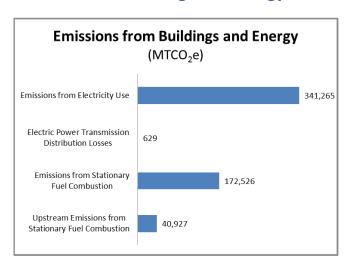
Percentage of Total Natural Gas Emissions, by sector



Multiple types of fuels combust to produce heat for space heating, process heating, and cooking, but natural gas is by far the most widely used in Corvallis. Natural gas is cleaner than coal or oil combustion, but it still produces significant greenhouse gas emissions. Northwest Natural Gas, an investorowned utility, is the sole supplier to the Corvallis community and provided usage data for the greenhouse gas inventory. Usage data for other fuel types, from *biomass* fuels such as wood to petroleum products such as distillate fuel oils, are difficult to determine and were not included in the inventory.

What Part of Corvallis's GHG Footprint Comes from Buildings and Energy?

At about 44 percent, emissions associated with building energy account for the largest part of the Corvallis community's carbon footprint, according to the greenhouse gas inventory. Emissions from electricity use and electric power transmission and distribution losses account for 27.2 percent. Emissions from the community's use of natural gas and the energy used to extract, process and deliver natural gas account for 17 percent.²⁰



How Will Climate Change Affect Buildings and Energy?

More intense storms, reduced snowpack, lower summertime stream flow, and more extreme summertime heat events will have tangible impacts on buildings and energy resources. The community should prepare for unexpected emergencies that include interruptions in utilities, supplies, and food. A checklist for this topic would include:

- Ensuring that building codes allow and encourage practices such as: rainwater collection and storage, safe *greywater* reuse, composting toilets, and solar access for photovoltaics.
- Working with utility companies to develop local grid and storage capacity for electricity (especially that which is locally generated renewably produced) and natural gas.

²⁰ The use of energy associated with the operation of the City's water delivery facilities, the use of potable water, and the generation of wastewater by the community are all included in the community greenhouse gas inventory under electricity use. Process emissions associated with generation of wastewater by the community and from operation of wastewater treatment facilities are considered separately. Wastewater treatment processes create emissions when microorganisms degrade the soluble organic material in wastewater under anaerobic conditions, creating methane, nitrous oxide, and carbon dioxide.

- Promoting structural safety codes for wildland fires.
- Developing and publicizing emergency shelter centers.

Objectives and Actions for Buildings and Energy

OBJECTIVE 1: Reduce energy consumption by 50% by 2030 through conservation and efficiency.

Actions to be completed by the end of 2016

• 1.1. Support the Corvallis Environmental Center and Georgetown University Energy Prize group and others in their continuing work to change behaviors in residents to minimize carbon footprints.

Actions to be completed by the end of 2020

- 1.2. Require all buildings to maximize conservation and efficiency of energy.
 - 1.2a) Rewrite building codes for new construction to require lowest carbon footprint construction and operation, for example using guidelines and standards from *Architecture 2030*, the *Energy Trust of Oregon*, or *LEED*.
 - 1.2b) Require all existing buildings, especially rental properties, be retrofitted to meet stringent energy conservation standards such as those mentioned in the Oregon Global Warming Commission's Roadmap to 2020.
 - 1.2c) Direct the building of smaller homes that use less energy to operate and fewer building materials to construct, both for new construction as well as density and infill of existing buildings.
- 1.3. Require energy performance ratings for all homes so that owners, tenants and prospective buyers are informed before making purchasing or rental decisions.
- 1.4 Require energy performance benchmarking and promote improved operation and maintenance practices for all commercial buildings and also (separately) for multi-family buildings.
- 1.5. Establish practices that reduce the use of potable water for non-potable purposes, such as landscaping, washing, and toilets; reduce volumes of *wastewater* and stormwater entering the treatment center; recharge ground water through rainwater collection, *rain gardens*, permeable payers, etc.
- 1.6. Work with utility companies via franchise agreements to structure rates to incentivize reduced use, require equipment with maximize efficiency, and require conservation voltage reduction from Pacific Power.

OBJECTIVE 2: Transition to 100% renewably produced energy by 2030.

Actions to be completed by the end of 2016

- 2.1. Monitor and track the growth of alternative renewable energy in Corvallis make it a community project with regular updates on progress.
- 2.2. Make the pursuit of renewable energy installations by residents, businesses, and municipal buildings a primary focus of the Economic Development office under the

- principal of import substitution. Develop business linkages so that all imported energy can be renewably sourced. Begin immediately.
- 2.3. Assist and promote the development and installation of *community scale* renewable energy projects such as solar coops and community investment solar projects such as Seeds for the Sol.
- 2.4. Support efforts of regional, statewide and national groups like *350.org* and *Citizen's Climate Lobby* to pass legislation in support of reduced greenhouse gas emissions.



OBJECTIVE 3: Adapt to climate change disturbances (ongoing).

Actions to be completed by the end of 2016

- 3.1. Lobby for changes at the state level to amend existing building codes to allow and
 encourage practices such as: passive solar design, rainwater collection and storage, safe
 gray water reuse, solar clothes drying, composting toilets, and solar access for
 photovoltaics.
- 3.2. Through franchise agreements, work with utility companies to develop local *smart grid* technology and storage capacity for electricity (especially that which is locally generated renewably produced) and natural gas.
- 3.3. Develop and publicize emergency shelter centers.
- 3.4. Revise community development plans to more strongly favor walkable neighborhoods and infill density both in existing built environment and also in new development.

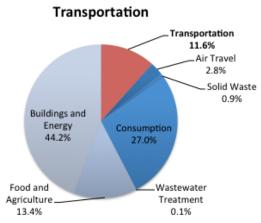
Land Use and Transportation

"Readjusting the Corvallis GHG inventory to take into account the embodied emissions of personal motor vehicles and commuter trips indicates that personal motor vehicles account for at least 28% of our City's GHG emissions."

What is the Land Use and Transportation Action Area?

This section considers how the community is spatially organized and how that organization affects transportation needs. The transportation systems in this section are those that move people and local freight: passenger vehicles, bicycles, mass transit systems, air transport and local freight distribution systems, and the roads and other infrastructure required for these systems.

Although a particular land use may directly impact consumption of fossil fuels and emission of GHGs, in most cases, the more important impacts of land uses



are on the demand for transportation systems. Land use directly impacts transportation system needs, and transportation systems contribute significantly to fossil fuel consumption and GHG emissions. As the two are so connected, this plan will consider them together and outline action items for each that will affect the other.

How Does Land Use and Transportation Contribute to GHG Emissions?

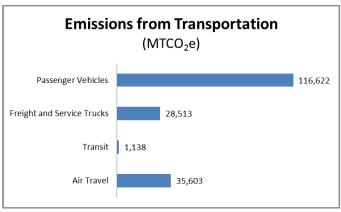
GHG emissions related to transportation fall into two main categories: transportation of people and transportation of goods. Here we focus on transportation of people because the transportation of goods falls more appropriately under Food and Agriculture and Consumption and Solid Waste. Hereon in, we will refer to the transportation of people simply as transportation. Further, we focus on those GHG emissions that are within the control of the City of Corvallis, namely those GHGs caused by transportation for residents of Corvallis, commuters to Corvallis, students in Corvallis and visitors to Corvallis.

Transportation produces GHGs through direct emissions (during the transportation itself) and indirect emissions (in the production of the vehicles used for transportation). Transportation decisions are also affected by land-use decisions. Lack of nearby services causes people to travel further to meet their needs. Resistance to medium- and high-density housing causes urban sprawl, increasing the distances that people need to travel for work, school and errands. The green belt around our city physically prevents this sprawl, but simply means that our growth is diverted to nearby "sleeper" communities (e.g., Albany and Lebanon).

What Part of Corvallis's GHG Footprint Comes from Transportation?

In short, at least one third of our GHG emissions are due to transportation. In the recent GHG inventory for Corvallis, we see that transportation is responsible for 11.6% of emissions and 64% of those emissions are from our personal motor vehicles (PMVs). However these numbers include neither *vehicle-miles traveled* outside the city limits nor the GHG emissions released during the manufacture of vehicles. Back of the envelope calculations show us that 11.6% is a significant underestimate of the transportation GHGs for which Corvallis residents, employers and policies are responsible.

More than 17,000 people commute from surrounding communities to work in Corvallis, while nearly 10,000 people live in Corvallis but work in other cities.²¹ Almost all of these people commute by car. The reasons for these car commuters are largely under the control of Corvallis: housing is expensive and lacking in Corvallis as compared with nearby communities, and transportation between



Corvallis and neighboring towns is infrequent. Adding these commuter miles to the Corvallis community's GHG tally nearly doubles the emissions estimated in the inventory (using very conservative estimates for distance traveled).

More than 20,000 students attend Oregon State University and most bring their cars. Another 8,000 cars come into Corvallis for OSU athletic events, often driving from Portland because there are few options for intercity public transportation and those that exist are expensive. While Albany has



more than a dozen buses or trains to Portland, Salem and Eugene every day, Corvallis has only three—one can take up to 3 hours (Valley Retriever) and the other two (Greyhound) travel the length of the coast, frequently do not have seats available, and are rarely on time. Transit between Corvallis and Albany does not link up with the transit hub that Albany has become. Rough estimates of GHG emissions due to student and OSU game day travel could easily be as much as the commuting miles of the Corvallis workforce.

²¹ "Planning how we'll get around," *Corvallis Gazette-Times*, January 7, 2014: http://www.gazettetimes.com/news/local/planning-how-we-ll-get-around/article_e6d72e56-771f-11e3-9dfd-001a4bcf887a.html.

The *embodied emissions* from the manufacturing of a car can be as much as the GHG emitted by the car's travel²², which is why this plan does not advocate for mass expansion of electric vehicles as a solution to the transportation question. Moreover, the GHGs from the manufacture of an electric vehicle and its batteries are nearly double those of a conventional vehicle²³. These GHGs are counted in the "food and goods" category of the Corvallis community inventory. Transferring this to transportation and adding the emissions from the manufacture of cars that commute to Corvallis would add about the same amount of GHG emissions as those from miles traveled within city limits.

Current State of Corvallis

Readjusting the Corvallis GHG Inventory to take into account the embodied emissions of personal motor vehicles and commuter trips indicates that personal motor vehicles account for at least 28% of our City's GHG emissions, nearly 2.5 times that of the inventory's estimate. This does not include the GHGs emitted by non-work trips between Corvallis and locations beyond.

Corvallis has a relatively high proportion of bicycle commuters (9%). However, in the League of American Bicyclists' recent re-certification of our Gold-level status (one level below the top, Platinum, which Portland, Boulder and Davis have earned), our city was warned that we have stagnated and risk losing our *Bicycle Friendly Community* status. Our ridership growth over the past 12 years has been 29%, as compared with 61% growth nationally and 85% among other Bicycle Friendly Communities. Corvallis has made little investment in bicycle infrastructure and still does not have protected bike lanes or bicycle boulevards, which are key to increasing ridership.

Corvallis also boasts high in-town transit ridership, with more than one million rides per year (compared to Albany's 400,000 per year), largely thanks to its fare-less system. Because of this high transit ridership, Corvallis is eligible for federal grants that will allow Corvallis to expand service. However, as already noted, intra-city transit to and from Corvallis is inadequate. Despite the high number of commuters to Corvallis from Albany, there are few direct trips per day; there are no direct buses to Lebanon, another common commuter origin.

How Will Climate Change Affect Land Use and Transportation?

Studies of potential climate change scenarios for the Willamette Valley indicate that the Corvallis community may experience more severe storm events and resultant flooding, as well as an increase in forest fires. This analysis suggests that transportation systems will be impacted, especially roads and railroads, and those along rivers and streams, or on unstable slopes, will be especially vulnerable. Increased storms and wildfire smoke may also affect air travel and transport of goods. To minimize the impacts to the transportation system, planning and design efforts must consider these scenarios.

²² CoolClimate Carbon Footprint Calculator: http://coolclimate.berkeley.edu/carboncalculator.

²³ "CMU/Ford study assesses optimal mix of conventional, hybrid, plug-in hybrid and electric vehicles for minimizing GHG and cost," Green Car Congress, 31 October 2012:

http://www.greencarcongress.com/2012/10/traut-20121031.html.

In addition, the Willamette Valley could experience an influx of *climate refugees*—people moving away from areas that have become less livable due to sea level rise, severe storms, or prolonged drought. Land use and transportation planning processes must consider possible impacts on the community.

Objectives and Actions for Land Use and Transportation

As climate change progresses, tariffs will be placed on the causes, including fuel. This will increase the cost of travel in conventional and hybrid vehicles as well as the cost of purchasing those vehicles. However, our actions must not wait until this is the case, as low-income families and individuals will continue to bear a disproportionate cost of transportation and housing. Our actions center around three main objectives: increasing the use of active and public transportation, reducing the reliance and ownership of personal motor vehicles, and reducing the distances to destinations that residents need to reach.

The three objectives below are each quantifiable. We recommend a target date of 2030, but these metrics should be evaluated at least every three years to ensure progress is being made.

OBJECTIVE 4 Increase biking, walking, and transit use. By 2030, 80% of trips under 2 miles to be made without a car and 75% of commuters to Corvallis will do so by mass transit.

Actions to be completed by the end of 2016

- 4.1. Modify the transportation plan to prioritize the needs of bicyclists and pedestrians.
- 4.2. Add barriers between bike and vehicle lanes (e.g., painted buffers, parking lanes, or concrete).



Actions to be completed by the end of 2020

- 4.3. Establish motor vehicle-free streets downtown, with exceptions for transit, deliveries (possibly with time-of-day limitations), emergency vehicles, disability access.
- 4.4. Create a network of bicycle boulevards that allow for nearly stop-free bicycle trips between all destinations in town, have low motor-vehicle volumes and speeds. For example, by forcing turns for motor vehicles and upgrading crossings of arterial streets to 4-way stops or cyclist-activated hawk-crossings. Roll these out *immediately* using low-cost infrastructure including simple through-way barriers,²⁴ painting bicycle/pedestrian crosswalks and signage. Consider community-sponsored installments for exhibition purposes.

²⁴ "Going Street bike boulevard gets crossing help with new median," BikePortland.org, November 17, 2011: http://bikeportland.org/2011/11/17/portlands-best-bike-boulevard-just-got-better-62240

• 4.5. Expand the Corvallis Transit System; increase the frequency of trips, expand routes, extend schedule into evenings and Sundays. Consider expanding on-demand "dial-a-ride," perhaps by first extending service to car-free households.

Actions to be completed by 2030

• 4.6. Develop separated multi-use paths between Corvallis and neighboring communities and areas such as Albany, Lebanon, Adair and the airport.

OBJECTIVE 5: Decrease ownership of personal motor vehicles. By 2030, 40% of households will be car-free and 40% of households will have only one car.

Actions to be completed by the end of 2016

- 5.1. Establish a city-wide car sharing infrastructure. Either use an existing car-sharing company (such as GetAround) or develop a city-owned infrastructure. Proceeds from the car share could fund other parts of this action plan.
- 5.2. Create true transit-connections to bus and train departures at the Albany transit center.

Actions to be completed by the end of 2020

• 5.3. Create direct connections to popular destinations with seasonal timetables to support transportation of students and visitors to Corvallis.

OBJECTIVE 6: Create walkable and bikeable neighborhoods. By 2030, 90% of households will be within 15 minutes' reach of basic, daily non-work needs by bike or foot.

Actions to be completed by the end of 2016

- 6.1. Change zoning standards to allow neighborhood cafes, food stands, and small-business retail
- 6.2. Change zoning standards to allow for increased housing density in urban core and transit corridors.
- 6.3. Reduce the width of neighborhood streets to calm traffic, increase water absorption and increase green space. Change city street standards to encourage this.

Actions to be completed by the end of 2020

• 6.4. Develop high-quality medium and high-density owner-occupied and rental housing for all income brackets.

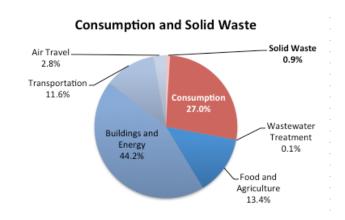
Consumption and Solid Waste

"Taken together, non-food consumption and solid waste are the largest source of emissions from the Corvallis community, just ahead of electricity use."

What is the Consumption and Solid Waste Action Area?

This section includes the entire *lifecycle* of the products we purchase and consume, whether local or imported. The lifecycle begins with the mining and extraction of the raw materials and includes other steps, such as manufacturing, packaging, transport and use. The lifecycle ends with disposal of each element of the product that remains.

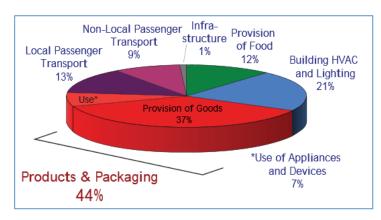
How Do Consumption and Solid Waste Contribute to GHG Emissions?



Consumption

Until recently, many greenhouse gas inventories focused on the direct emissions that come from the use of fossil fuels. Using this methodology, the inventories have shown most emissions to come from transportation and electricity, overlooking what the fossil fuels are ultimately used for, which is quite often materials extraction, manufacturing, packaging, and distribution of consumer goods.

However, according to an EPA report from 2009, Opportunities to Reduce Greenhouse Gas Emissions through Materials and Land Management Practices, non-food products account for some 37% of our greenhouse emissions²⁵. The Products Policy Institute took this a step further and figured in imports in a 2009 report titled, Products, Packaging and US Greenhouse Gas Emissions. They found



Products Policy Institute, 2009

nent Practices, U.S. ıber 2009,

²⁵ Opportunities to Reduce Greenhouse Gas Emis Environmental Protection Agency Office of Soli http://www.epa.gov/oswer/docs/GHG_land_a

that 44% of the US carbon footprint could be attributed to non-food products²⁶. That is roughly equal to the categories of building HVAC (Heating, Ventilation, Air Conditioning) and personal transportation combined. If you also add in provision of food, and landfill emissions of discarded products and associated packaging, Consumption and Solid Waste become the largest source of our emissions.

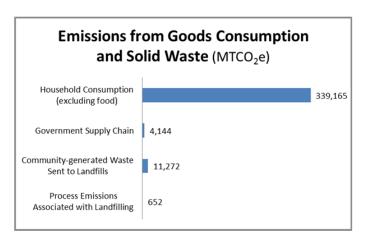
Solid Waste

GHG inventories include the emissions from waste management activities. This includes emissions from the process of collection, transportation and processing of solid waste. The majority of emissions in waste management are from landfill emissions, which result from the release of methane during the decomposition process. Solid waste generated in Corvallis is deposited at the Coffin Butte Landfill.

In addition to calculating emissions from the waste itself, the method used to determine the Corvallis community's emissions includes the transport and process emissions that come from powering the equipment to manage the landfill. The emissions related to solid waste collection and transportation are accounted for in the Freight and Service Trucks emissions and are not itemized separately. Because of the lack of widely accepted and standardized data and guidance, the Protocol does not include methodologies to estimate emissions from composting.

What Part of Corvallis's GHG Footprint Comes from Consumption and Waste?

According to the community greenhouse gas inventory, about 1 percent of emissions are associated with solid waste, and 27 percent can be attributed to non-food goods and services. This aligns closely with the Metro Regional Government's estimate in 2010 that provision of goods (excluding food) accounts for 25 percent of GHG emissions in the region and solid waste accounts for 1.3 percent. ²⁷ Taken together, non-food consumption and solid waste are the largest *source* of emissions from the



Corvallis community, just ahead of electricity use.

²⁶ Products, Packaging and US Greenhouse Gas Emissions, Product Policy Institute, http://www.productpolicy.org/ppi/general/PPI Climate Change and Products White Paper September 20 09.pdf

²⁷ "Regional Greenhouse Gas Inventory: The Carbon Footprint of Residents and Businesses Inside the Portland Metropolitan Region," Metro Regional Government, April 2010.

Consumption

The Corvallis community greenhouse gas inventory uses the Government Supply Chain emissions estimate from the 2008 City of Corvallis Greenhouse Gas Inventory for Municipal Government Operations. To estimate household consumption for the community, City staff used the CoolClimate Carbon Footprint Calculator²⁸, but omitted some categories in the calculator to avoid double counting of emissions. For example, natural gas emissions are already included in the ICLEI Protocol in the category for Stationary Fuel Combustion.

The Corvallis GHG inventory includes food in its estimate of household consumption, whereas this Climate Action Plan breaks out Food and Agriculture as a separate topic area. Therefore, this Consumption and Solid Waste topic area does include food in its Household Consumption category. The table below shows the categories that were and were not included as Household Consumption emissions sources.

| Included in Household Consumption | Not included in Household Consumption | |
|---|---------------------------------------|--|
| Car manufacturing | Car fuel | |
| Construction | Water | |
| Goods | Natural gas | |
| Services | Electricity | |
| | Other fuels | |
| | Food | |
| Note: Air travel is included as a separate category rather than as a part | | |

Note: Air travel is included as a separate category rather than as a part of Household Consumption.

Solid Waste

Emissions from community-generated solid waste sent to the landfill and process emissions associated with landfilling were estimated from the waste tonnage reported in Republic Services 2012 Annual Report.

How Will Climate Change Affect Consumption and Solid Waste?

To the extent that climate change impacts energy production and distribution and food and agriculture, it may increase economic hardships and food insecurity. We can prepare by establishing strong community connections that encourage sharing of resources, especially those that ensure that people receive adequate amounts of food.

²⁸ CoolClimate Network: http://coolclimate.berkeley.edu

Objectives and Actions for Consumption and Solid Waste

OBJECTIVE 7: By the end of 2020, the recycling rate for Corvallis will be 75 percent.

Recycling rate is defined as total pounds of waste recovered (recycled, composted or reused) divided by the total waste generated (recovered and landfilled). The baseline for this action is the 2007 rate of 45.2%. This objective reflects the goals of the Corvallis Sustainability Coalition Action Plan of 2013.

The goal will be achieved by increasing collection yard waste and compost through existing curbside collection programs and diverting landfill bound construction waste. Because the Corvallis Sustainability Coalition's Waste Prevention Team will be offering the community and business owners education on composting and recycling, this plan additionally proposes that policies be put in place to make composting and recycling mandatory.

Actions to be completed by the end of 2016

- 7.1. Research and implement ways to make recycling easier for people. Examples include providing pictures on bins so people know which bins to use and more recycling and compost bins available in public spaces.
- 7.2. Provide education and resources to construction companies about recycling and reuse opportunities for construction waste.
- 7.3. Provide education and waste audits for business owners to increase compost and recycling rates and provide financial incentives.
- 7.4. Research policies requiring composting and/or recycling as currently practiced in cities such as San Francisco and Seattle and implement a similar policy in Corvallis.

Actions to be completed by the end of 2020

- 7.5. Research mandatory composting and/or recycling programs of other cities; enact a policy with increased requirements and penalties.
- 7.6. Research construction and demolition debris ordinances in other cities; enact a similar policy requiring recycling and/or reuse of these materials to divert them from the landfill.

OBJECTIVE 8: Reduce total solid waste generated by 25 percent by the end of 2020.

Total solid waste generated refers to both the amount of materials sent to landfills and the amount of materials recovered (i.e., recycled, composted, converted to energy or otherwise put to a use other than the original intended purpose). It can be valuable to look at total waste, which serves as a reflection of consumption rates. As stated above, consumption is a very large part of our carbon footprints. This is a bit different, but not contradictory to the Corvallis Sustainability Coalition's action plan, which calls for a 50% per capita reduction in landfill-bound disposals only.



Actions to be completed by the end of 2016

- 8.1. Use outreach programs to emphasize reducing consumption first, followed by reuse, *upcycling*, repair and finally choosing sustainable goods built to last.
- 8.2. Restructure the City franchise agreement to provide incentives to encourage waste

- reduction (e.g., increase rates for high-volume customers).
- 8.3. Establish an education program to demonstrate how our consumption habits contribute to our carbon footprints. Encourage people to rethink the ideas of growth and economy.
- 8.4. Establish better ways of measuring consumption in Corvallis and incorporate into future greenhouse gas inventories.
- 8.5. Provide information to local manufacturers on reducing carbon footprint of items produced.
- 8.6. Identify high—carbon product categories and develop and disseminate information that will aid consumers and retailers in making purchasing decisions.

Actions to be completed by the end of 2020

- 8.7. Support State efforts to develop a consumption-based GHG inventory methodology and to adopt standards, incentives, and/or mandates for *carbon footprinting* and labeling of products.
- 8.8. Support State efforts to advocate for a carbon *price signal* across the life cycle of products and materials (either by an emissions cap and/or a carbon tax), including imports (border adjustment mechanism/carbon tariff if necessary).

Carbon footprints can be shared with customers either indirectly (on request, akin to a material safety data sheet) or via a carbon label (akin to a nutrition label) printed on the product or its packaging. Carbon footprinting and/or labeling is believed to reduce GHG emissions in several ways. First, as the producer examines the greenhouse gas emissions associated with a product, it gains better understanding of the causes of these emissions and opportunities to reduce them. Second, knowing that customers (consumers, other businesses) may use the carbon footprint (or label) in product selection, producers are incented to reduce their emissions. Finally, customers may use the footprint or label to reduce the GHG emissions associated with their own purchases.²⁹

²⁹ "Materials Management Roadmap to 2020 Report to the Oregon Global Warming Commission," Materials Management Technical Committee of the Oregon Global Warming Commission, October 2010: http://www.keeporegoncool.org/sites/default/files/Materials%20Management%20Roadmap_092710.pdf.

Food and Agriculture

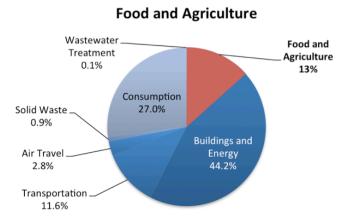
"Food production and processing is responsible for 83% of the average US household's footprint for food consumption."

What is the Food and Agriculture Action Area?

This section addresses the production, delivery, distribution, preparation, and disposal of food and beverages for residential, commercial and institutional use. Food and agriculture contributes to climate change and is also affected by climate change.

How Do Food and Agriculture Contribute to GHG Emissions?

Food and agriculture accounts for close to one-quarter of all GHG emissions globally,



according to the IPCC's latest assessment report. The emissions in this sector come from such diverse sources as enteric rumination (*methane* emissions from livestock), farm management techniques (e.g., fertilizer application), processing and cooking, as well as transport of food products. A common misconception is that transportation of food (also called Food Miles) is responsible for the majority of food-related GHG emissions. Instead, food production and processing is responsible for 83% of the average US household's footprint for food consumption. GHG emissions from food production include those generated by energy use for farming equipment, manufacture of fertilizers, pesticides and other agricultural chemicals, production of animal feed, and methane generated by livestock animals and manure management. In fact, methane produced by livestock "enteric rumination" and farmers' management of manure account for about one-fifth of total food-related GHG emissions³⁰.

What Part of Corvallis's GHG Footprint Comes from Food and Agriculture?

The Corvallis community greenhouse gas inventory estimated emissions associated with the manufacturing and production of food consumed by Corvallis households. Using national average emissions per household data from the CoolClimate Carbon Footprint Calculator, the inventory found that household food consumption, production and disposal accounts for 13% of the community's GHG emissions. Emissions for food consumed by local government and businesses were not included in the estimate, nor were the emissions associated with landfilling or composting of food waste, so total food and agriculture emissions are likely higher.

³⁰ "Food-Miles and the Relative Climate Impacts of Food Choices in the United States," *Environmental Science & Technology*, April 16, 2008: http://pubs.acs.org/doi/full/10.12021/es702969f.

How Will Climate Change Impact Food and Agriculture?

Climate change is expected to result in floods, drought, decreased snowpack, extreme heat, and wildfires, which will all impact food and agriculture. Some predicted effects in the Northwest include: a reduction in snowpack which will diminish water supplies for irrigation; damage to crops sensitive to higher day and nighttime temperatures; a longer growing season for some crops; and different pest and disease pressures for crops and animals³¹.

To the extent that climate change impacts energy production and distribution, food and agriculture might also be negatively impacted. Increasing costs for fuel, including diesel, gas and natural gas, would have a significant impact on the price of food. Transportation of freight via air and truck is expected to become more costly and to cause food prices to rise. Increased costs for fertilizer, animal feed, and processing will put upward pressure on food costs.



Objectives and Actions for Food and Agriculture

Various actions can be taken to reduce the GHG emissions related to food and agriculture, as well as adapt food systems for projected impacts of climate change. Priority mitigation and adaptation objectives for food and agriculture in the context of climate change include:

- Reduce consumption of carbon-intensive foods;
- Increase the percentage of food consumed in Corvallis that is grown, processed, or
- produced locally;
- Encourage the use of more sustainable production practices; and
- Minimize, reuse and recycle food waste

These strategies are further detailed in the Objectives and Actions that follow. These Objectives and Actions are not mutually exclusive and should be seen instead as very much working together. For example, a reduction in overall meat consumption is important (see Objective 1), but for meat that will continue to be consumed, it should be produced locally (see Objective 2) and as sustainably as possible (see Objective 3).

OBJECTIVE 9: Reduce consumption of carbon-intensive foods by 25 percent by 2020 and by 50 percent by 2030.

Growing evidence shows that the kind of food we eat makes a significant difference in the associated GHG emissions. The city and its residents must therefore reduce consumption of carbon-intensive foods, such as dairy products, red meat and highly processed foods. Shifting 13-15% of red meat and

³¹ Preparing for Climate Change in the Upper Willamette River Basin of Western Oregon, Co-Beneficial Planning for Communities and Ecosystems, The Resource Innovation Group, et al., March 2009: http://www.theresourceinnovationgroup.org/storage/willamette_report3.11final.pdf

dairy consumption to other foods would achieve the same GHG reduction as totally eliminating the transport of food (source).

Actions to be completed by the end of 2016

- 9.1. Establish quantitative metrics and a baseline for consumption of carbon-intensive foods.
- 9.2. Begin a community-wide campaign to encourage the public to choose less carbon-intensive foods as part of a climate-friendly lifestyle. Specifically encourage consumption of alternatives to red meat and dairy products, which are especially carbon-intensive.
- 9.3. Implement a "Buy climate-friendly" food purchasing policy for public institutions including city and county governments, schools, and hospitals.

Other Benefits

 Healthy people - Lower meat consumption has also been associated with better health outcomes for people.

OBJECTIVE 10: Increase the percentage of food consumed in Corvallis that is grown, processed, or produced locally (i.e., Benton, Lane, Lincoln, Linn, Marion, and Polk counties) to 40 percent by 2020, and to 75 percent by 2030.

Consuming food produced by local businesses or residents can reduce food-related emissions as well as improve resilience and community health. It is estimated that less than 10% of food consumed in Corvallis is grown, processed, or produced locally.

Actions to be completed by the end of 2016

- 10.1. Establish quantitative metrics and a baseline for consumption of locally sourced food.
- 10.2. Expand and promote community gardens on public and private lands including school campuses, City lands, and church properties.
- 10.3. Provide educational opportunities for residents, particularly school children, to learn local food growing, preparation and preservation skills.
- 10.4. Support the development of the South Corvallis Neighborhood Food Center.

Actions to be completed by the end of 2020

- 10.5. Model and promote edible landscaping. Plant non-*invasive* food-bearing trees and shrubs on public and private lands
- 10.6. Assess and amend City policies to ensure that they allow for, where appropriate, production of food within the city limits. Provide funding to Corvallis farmers' markets to increase shopping by low-income customers and to provide education on how to prepare local foods.
- 10.7. Support efforts to rebuild local food infrastructure such as flour mills and canneries.

Building Resilience

- Enhanced food security
- Stronger community connections
- Preserves agricultural land

Other Benefits

- Healthier people physical activity from gardening; greater access to fresh fruits and vegetables
- Economic development

CURRENT HIGHLIGHT

Southern Willamette Valley Bean & Grain Project is rebuilding the local food system by stimulating the cultivation and local marketing of organically grown staple crops like beans and grains to provide a foundation for year-round food resources in the Willamette Valley.

OBJECTIVE 11: By 2030, all landowners in Corvallis and all farmers in the Willamette Valley will manage their lands using sustainable agricultural practices.

While most agriculture occurs outside Corvallis' urban areas, local governments and Corvallis residents can encourage the use of more sustainable agriculture practices through purchasing decisions, education, and advocacy.

Actions to be completed by the end of 2016

- 11.1. Encourage producers to transition to agricultural production methods that reduce GHGs by working with partners such as the Oregon Department of Agriculture, Oregon Tilth, Oregon State University Extension Service, and the Southern Willamette Valley Bean and Grain Project.
- 11.2. Incentivize projects that improve the diversity, drought resistance and emissions intensity of food crops grown in the upper Willamette Valley.
- 11.3. Encourage consumer purchases of products produced using more sustainable agricultural practices.
- 11.4. Require sustainable landscaping practices be used in City operations. Some of these practices include incorporating native and/or drought tolerant plants into landscaped areas and leaving grass clippings on lawns to return nutrients.
- 11.5. Partner with neighborhood associations to incorporate food production and maintenance into neighborhood parks and the Parks and Recreation Master Plan.

Actions to be completed by the end of 2020

- 11.6. Advocate for agricultural policies that promote or require more sustainable agricultural practices.
- 11.7. Provide new homeowners and property managers with resources about sustainable landscaping and permaculture practices.

Building Resilience

 Less reliance on fossil fuels for production

Other Benefits

- Improved water quality
- Improved wildlife habitat
- Reduced toxics exposure for consumers/farm workers/wildlife

OBJECTIVE 12: Reduce food waste by 50 percent by 2020, and to as close to zero as possible by 2030. Re-use/Recycle 50 percent of any food waste by 2020 and all food waste by 2030.

Roughly one third of the food produced in the world for human consumption is wasted (source). To reduce GHG emissions, it is necessary to work with all participants in the food system to minimize food waste. Any food waste that must occur should be re-used/recycled.

Actions to be completed by the end of 2016

- 12.1. Require or encourage all food businesses to compost.
- 12.2. Support efforts to recycle food waste for fuel/energy including cooking oil and locally produced biodiesel/biofuels.
- 12.3. Facilitate the sharing of best practices among restaurants, caterers and other commercial food preparation operations for minimizing and re-using/recycling food waste.
- 12.4. Support gleaning opportunities.

Actions to be completed by the end of 2020

• 12.5. Renegotiate the franchise agreement with Republic Services to make sure it maximizes residential reduction of food waste and maximizes composting participation.

Building Resilience

 More efficient agricultural system – increasing food availability and conserving inputs, such as water.

Other Benefits

 Economic savings from maximizing use of food and food waste.

CURRENT HIGHLIGHT



A waste-digesting system or biogas plant for the community, such as the one that Stahlbush Island Farms operates, could provide methane from decomposing food waste for use as a locally generated fuel source.

Health and Social Services

"The various impacts of climate change have the potential to exacerbate social inequities and to intensify social service needs."

What is the Health and Social Services Action Area?

The Health and Social Services Action Area addresses the physical and mental health of people in our community, as well as assistance programs for disadvantaged populations. This section contains recommendations to prepare health and social systems for a different future and reduce the impacts of climate-related disasters.

How Are Health and Social Services Related to Climate Change?

Considering the enormity and the urgency of the problem, taking a "whole systems" approach to climate change is essential; the earth's ecosystem (air, water, soil, plants, animals, etc.) is best understood in the context of the interrelationships among these various components, rather than in isolation. Since human society is an integral part of the earth's ecosystem, addressing human health requires us to consider the health of the other parts of the system and the many ways in which humans affect and are impacted by the various parts of the system.

The environmental impacts of a changing climate will be matched by social challenges. The most recent IPCC report outlines the threats to Earth's life-support system, including "declines in regional food yields, freshwater shortage, damage to settlements from extreme weather events and loss of habitable, especially coastal, land. The list goes on: changes in infectious disease patterns and the mental health consequences of trauma, loss, displacement and resource conflict. In short, human-driven climate change poses a great threat, unprecedented in type and scale, to well-being, health and perhaps even to human survival."

With predictions of prolonged drought and increased temperatures in California and the Southwest, Oregon and the Willamette Valley in particular can expect a significant influx of "climate refugees." Increases in population and changing demographics will place added demand on food and water supplies precisely at a time when the Willamette Valley is expected to experience decreased rainfall, decreased snowmelt, and prolonged drought.

Low-income and vulnerable community members will face disproportionate impacts of climate change—rising energy and food prices and exposure to heat stroke in their homes, for example—while having fewer resources to respond to these changes. The various impacts of climate change have the potential to exacerbate social inequities and to intensify social service needs.

The IPCC points to three human impact categories in particular:

- nutrition deficits and impaired child development due to reduced food yields;
- injuries, hospitalizations and deaths due to intense heat waves, fires and other weather disasters; and
- shifts in the seasonal duration and spatial range of infectious diseases.

"There is also mounting evidence," the authors note, "of the adverse health consequences of workplace exposure to heat extremes, including reduced work capacity and productivity." At a minimum, the health and social service needs of the Corvallis community must be addressed at the county level. Ideally, a broader, more regional approach should be considered. One possible model is the City of Portland/Multnomah County "Climate Change and Public Health Preparation Plan."

How Will Climate Change Affect Health and Social Services?

The Benton County Health Department has developed a *Climate Change Health Adaptation Plan*,³² which focuses on adaptation to the impacts of climate change that Benton County residents will experience. While the County plan acknowledges that reducing the drivers of climate change will require substantial reductions in GHG emissions on a global level, the plan also touches on mitigation opportunities at the local level.

The Benton County Climate Change Adaptation Plan describes how the different climate change impacts were chosen and how Benton County Health Department will gather data to help inform policy decisions that will lessen the future health impacts of climate change. The climate change impacts that were selected for the focus of the County's plan are:

- Drought and reduced summer water supply
- Extreme heat events
- Wildfire
- Extreme precipitation and flooding
- Ozone pollution
- · Longer growing season

According to the County plan, the three areas that are expected to have the most negative health impacts on the community are extreme heat events, extreme precipitation and flooding, and wildfire.

The County plan outlines general actions that the following agencies and departments can take to help mitigate and address the impacts of climate change: Board of Commissioners, Community Development, Health Services, Public Works, and the Sheriff's Office.

Objectives and Actions for Health and Social Services

OBJECTIVE 13: By 2016, develop a City/County response to the human health and social service needs that result from climate change.

Since Benton County has taken the lead on addressing climate change, it is important for the Corvallis community to build on their efforts rather than to duplicate them. Collaboration among both elected officials and city/county staffs will be essential to creating an effective response to health and social service needs.

³² Climate Change Health Adaptation Plan, Benton County Health Department, July 26, 2013.

Actions to be completed by the end of 2016

- 13.1. Require all City departments to educate their employees about the County's *Climate Change Adaptation Plan* and to identify what role each department plays in addressing health and social service needs.
- 13.2. Create a process for City and County departments to work together on adaptation and mitigation strategies.
- 13.3. Develop a funding strategy to complement the funding needs outlined in the County plan.

OBJECTIVE 14: By 2020, engage all sectors of the community to work together to address human health and social service needs that result from climate change.

Adaptation to the impacts of climate change will require a shift in the way individuals and organizations operate, from working independently and in "silos" to adopting a more integrated, collaborative response. Just as individuals and organizations in short-term emergencies respond to assist those in crisis, community members and organizations will need to be prepared to cooperate across perceived boundaries to respond to climate-related events.

Actions to be completed by the end of 2016

- 14.1. Identify key organizations in the community (businesses, non-profits, educational institutions, faith communities, civic groups, and neighborhood associations) that can provide the broadest possible outreach to community members within its sector.
- 14.2. Create and distribute on an ongoing basis effective multi-media outreach tools related to preparedness for climate change.

Actions to be completed by the end of 2020

• 14.3. Use existing resources (e.g., Oregon Public Health Association) to develop at least one pilot project in each sector to demonstrate what will be needed to respond to climate-related emergences such as flooding, extreme heat, and wildfires. For example, a neighborhood association pilot project might demonstrate its readiness in case of food and water shortages, including a list of its most vulnerable members.

OBJECTIVE 15: By 2030, develop alternative systems that can be relied upon to meet basic needs such as water, food, energy, and transportation.

During climate-related emergencies, systems that meet people's most basic needs (water, food, shelter, etc.) may be disrupted or unavailable. Having alternative systems in place will be vital to the resilience of the community. The more people who are able to rely on alternative systems, the more able the community's health and social service networks will be to meet the needs of our most vulnerable populations.

Actions to be completed by the end of 2020

- 15.1. Support efforts to establish alternative water systems.
 - o 15.1a) Encourage rainwater collection at residences, businesses, and institutions.
 - o 15.1b) Begin to develop water purification systems on individual properties. For example, gravity-based micro-filter systems that can be installed on individual properties are designed to produce potable water without the need for external energy systems.
 - o 15.1c) Begin to develop greywater systems for irrigation and other non-potable water needs.
 - o 15.1d) Legalize and promote the installation of composting toilets.
- 15.2. Strengthen food sharing systems and facilities to handle increased demand.
 - 15.2a) Distribute the 2014 Community Food Assessment of Benton County, compiled by Ten Rivers Food Web, to educate community members about the current status of food security in the Corvallis area.
 - o 15.2b) Increase support to existing food assistance programs.
 - 15.2c) Promote existing community programs that encourage the production, processing, storage, and distribution of homegrown food.
- 15.3. Support efforts that promote energy efficiency retrofits and installation of solar energy.
- 15.4. Increase access to transportation options.
 - 15.2a) Support land use planning policies that result in walkable, bikeable neighborhoods.
 - o 15.2b) Expand the network of multimodal paths and public transit.

Urban Natural Resources

"Because natural resources are interdependent, many of the adaptation actions can achieve multiple goals.

What is the Urban Natural Resources Action Area?

In this plan, the term Urban Natural Resources covers the soil, air, water, plants, and animals in the suburban and urbanized areas of the community. These resources include stormwater, drinking water, and all the trees, shrubs, grasses and other plants that are scattered across the community on public and private lands.



How Are Urban Natural Resources Related to Climate Change?

Maintenance activities, which are necessary to protect and manage urban natural resources, produce some greenhouse gases; for example, when fossil fuels are used to power machinery and maintenance vehicles. However, the amount of GHG produced is a minute percentage of the total produced in the community. In fact, most inventories do not include natural resources as a source of greenhouse gas emissions, and many describe plants and soils as *carbon sinks*, a place where greenhouse gases, such as carbon dioxide, are taken out of the atmosphere by trees and other plants and stored in their leaves, stems and roots.

How Will Climate Change Affect Urban Natural Resources?

Probable outcomes of climate change on the community's urban natural resources:

- Lower summer stream flows.
- Increased stream temperatures.
- Warmer terrestrial temperatures.
- Increased summer drought and risk of wildfire.
- Increased number and scale of problems caused by invasive species.

The projected changes in temperatures, rainfall patterns, stream flow and wildfire incidence will likely result in shifts in hydrology and in habitat types. As the region gets hotter and drier in summer, native plants and animals that are well adapted to current conditions may become less competitive than other species. Some plants and animals will likely disappear altogether and others will relocate.

To increase the adaptability of Corvallis's natural resource systems, management approaches must consider the variety of natural resources—soil, trees, wildlife, and water—and manage them together across the urban landscape. Similarly, natural resource planning must be flexible, holistic, and considerate of the dynamic biological systems and potential impacts of climate change.

Objectives and Actions for Urban Natural Areas

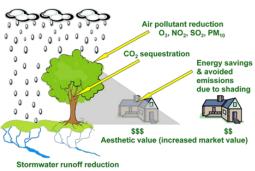
Because natural resources are interdependent, many of the adaptation actions in this section—increased shading, decreased flooding, and improved wildlife habitat—can achieve multiple goals. For example, in areas where soils are protected from compaction, trees that provide shade grow healthier and are more resilient, and stormwater can better infiltrate the soil, which reduces flooding. When streamside flood zones are protected from development, buildings are less likely to flood, and stream banks can support shade trees that cool the stream and provide maximum wildlife habitat value.

Public lands within the Urban Growth Boundary (UGB) of Corvallis contain a diverse population of about 440,000 trees that include over 300 varieties and have an estimated tree cover of 31%. Urban trees provide a variety of "ecosystem services" or direct environmental benefits for people that can be quantified in both physical and economic terms. The annual benefits include:

- energy savings and avoided air pollutant emissions due to shading of buildings
- carbon sequestration (storage)
- absorption of air pollutants
- reduction in stormwater runoff and required infrastructure
- increases in private real estate market values

In 2009, the US Environmental Protection Agency estimated the annual benefit of Corvallis's urban forest to be \$4,000,000, corresponding to an average of \$9 per tree and \$75 per capita. In terms of fixed asset values, the total carbon dioxide stored was valued at \$1.45 million and the total replacement value of the trees was estimated at \$450 million. Enumerating these benefits can raise citizen awareness of the value of public tree

Ecosystem services provided by urban trees



resources, as well as provide a basis for management to maximize benefits while controlling costs.³³

OBJECTIVE 16: To cool buildings, pavement, and waterways, by 2030 expand Corvallis's urban forest canopy to cover at least 40 percent of publicly owned land and 100 percent of the total length of streams in the city that are tributaries to the Willamette and Marys Rivers.

Plant diverse species, including those native to the Willamette Valley, to increase the percentage of survivors under changing conditions. Locate plantings to maximize opportunities for co-benefits (e.g., cooling/shading homes, businesses, streams and riparian areas).

Mature trees can help reduce flooding, improve air quality, and cool streams and the urban heat island. Tree shade reduces energy needed to heat and cool buildings and, in full summer sun, may

³³ Assessment of Ecosystem Services Provided by Urban Trees: Public Lands Within the Urban Growth Boundary of Corvallis, Oregon, US Environmental Protection Agency, 2009.

reduce the temperature of hard surfaces as much as 35° F. The greatest benefits will come from shading roadways, buildings, and streams. Trees can take 10 to 20 years before they provide a significant amount of shade, but tree planting is an inexpensive investment in the future livability of our community that can be done by almost anyone.

This Objective does not include a percentage for shading of the Willamette and Marys Rivers at this time because, as part of the Total Maximum Daily Load (TMDL) project, the City has contracted with the Marys River Watershed Council (MRWC) to evaluate opportunities for tree planting within the Marys River watershed. The MRWC will conduct a shade-potential assessment on areas that have the highest potential for shade gain in the watershed and that will meet the Oregon Department of Environmental Quality's requirements in order for the City to receive temperature offset credits.

Actions to be completed by the end of 2016

- 16.1. Require use of native species in all public projects.
- 16.2. Seek additional financial and volunteer resources to support implementation of the City's *Urban Forestry Management Plan*.
 - o 16.2a) Re-examine the Urban Forestry plan to ensure that it places appropriate emphasis on reducing susceptibility to the likely increase in wildfires.

Actions to be completed by the end of 2020

- 16.3. Update the City's inventory of urban tree species and urban forest canopy cover.
- 16.4. Expand public and private programs to encourage planting, preserving and maintaining of trees and shrubs and to control invasive species.

American Forests' web site offers information about urban tree planting programs, including educational activities for youth. Visit the site's information about CITYgreen is a software tool that helps people understand the value of trees to the local environment. Planners and natural resources professionals use the program to test landscape ordinances, evaluate site plans, and model development scenarios that capture the benefits of trees. http://www.americanforests.org/

OBJECTIVE 17: By 2030, recognize trees, shrubs, vegetation and natural landscapes as capital assets of the City's infrastructure. Assign the physical and economic value of services provided by natural ecosystems to guide and inform land use planning, development decisions, and management of the City's watershed.

Actions to be completed by the end of 2016

• 17.1. Ensure that the City's watershed forest is managed to increase carbon stores over time, consistent with ecosystem values.

Actions to be completed by the end of 2020

- 17.2. Support State of Oregon efforts to develop standardized tools and processes for accounting and approving ecosystem credits and payments.
- 17.3. Assess whether and how ecosystem market approaches can enable the City of Corvallis to more efficiently and effectively protect and restore ecosystems.

- 17.4. Seek appropriate code amendments and make policy-level land use and development decisions that fully consider the services that ecosystems provide at an ecologically appropriate scale.
- 17.5. Create incentives to encourage residents and businesses to protect and enhance ecologically significant lands.

In July 2009, Oregon Governor Ted Kulongoski signed Senate Bill 513, which directs state agencies to consider how ecosystem services markets can complement the existing natural resource management tools used by the state. The bill defines an ecosystem services market as "a system in which providers of ecosystem services can access financing to protect, restore and maintain ecological values, including the full spectrum of regulatory, quasi-regulatory and voluntary markets." The law maintains that ecosystem services markets can save money, lead to more efficient, innovative and effective restoration actions than purely regulatory approaches, and facilitate pooling of public and private resources for conservation and restoration.

OBJECTIVE 18: Increase the acreage of protected natural habitat within the Corvallis Urban Growth Boundary (UGB) by 25 percent by 2030.

Acquiring, restoring and protecting significant natural areas will promote functional watersheds and forest ecosystems, sequester carbon, reduce the urban heat island effect, improve air and water quality (e.g., stormwater management, flood abatement, stream shading), connect habitats and wildlife corridors, and contribute to regional health, biodiversity, and resiliency.



Actions to be completed by the end of 2016

- 18.1. Recruit community volunteers to increase the capacity of City staff and local land use organizations to seek and draft grants for natural resource acquisition and restoration projects.
- 18.2. Identify and establish a range of diverse, stable, long-term funding sources for the acquisition, restoration and preservation of prime natural areas. For example:
 - o 18.2a) Traditional funding sources, such as federal, state, and private foundation grants, corporate sponsorships and donations, may be available in limited fashion.
 - o 18.2b) Creative funding methods such as land swaps, purchase of conservation easements, or other green investment funding methods.
 - 18.2c) Local grants and business sponsorships could fund unique or specific projects.

Actions to be completed by the end of 2020

• 18.3. Update and maintain natural features inventories so that the most climate-sensitive or significant natural resources can be tracked: e.g., stormwater resources, riparian buffers, opportunities for food production, solar resources, soil classifications, publicly-owned land.

OBJECTIVE 19: By 2030, reduce water flow (quantity) through the Corvallis municipal water systems (i.e., water and wastewater treatment plants, stormwater piping system) by 20 percent as compared to 2008³⁴ annual levels.

Actions to be completed by the end of 2016

• 19.1. Evaluate residential and institutional usage patterns of the three municipal water systems and current water use reduction programs. Recommend new programs that include recognition and economic incentives for reduced usage.

Actions to be completed by the end of 2020

- 19.2. Install water-efficient technologies that reduce annual flow through municipal tapwater, wastewater, and stormwater pipes.
 - o 19.2a) Promote and incentivize water-efficiency technologies to property owners and, during permitting, require such technologies on all water-related systems.
 - 19.2b) Promote state-sanctioned water-efficiency wastewater technologies that reduce municipal wastewater flow for all existing buildings and, for all relevant building permits, require technologies that result in reductions (e.g., composting toilets, greywater re-use, on-site biological wastewater treatment systems).
- 19.3. Develop alternative water sources, such as rainwater and greywater, to reduce current flow levels in the municipal piping systems.

OBJECTIVE 20: Manage stormwater to reduce flooding, recharge groundwater, and improve water quality (ongoing).

Climate change is expected to increase downpours, and cause more intense winter storm events. To reduce flooding, stormwater must be slowed and allowed to infiltrate the soil. This type of stormwater management includes the use of tools such as bioswales, pervious pavement, and rain gardens.

Actions to be completed by the end of 2016

- 20.1. Promote *Low Impact Development (LID)* techniques for all properties.
 - 20.1a) When issuing building permits, require use of LID techniques (e.g., minimizing pavement/building footprint, rain gardens, infiltration trenches, permeable pavers, rainwater harvesting systems, green roofs, vertical gardens, drought-tolerant/layered vegetation, and "permaculture" design techniques).
 - o 20.1b) Identify incentives to encourage property owners to retrofit/redesign existing structures and landscapes.

Actions to be completed by the end of 2020

- 20.2. Reduce or eliminate piped stormwater from draining directly into streams.
 - o 20.2a) Evaluate the number and impact of direct storm drain outfalls on local waterways.
 - o 20.2b) Open and set back piped stormwater outfalls that drain directly into streams.
 - o 20.2c) Construct velocity-reducing wetlands and/or buffers between selected piped stormwater outfalls and stream channels.

³⁴ Baseline from the *Community Sustainability Action Plan* developed in 2008 by the Corvallis Sustainability Coalition.

Appendix A: Climate Change in the Northwest

Ongoing research on the regional implications of global climate change largely confirms observations, projections and analyses made over the last decade while providing more information about how climate impacts are likely to vary from place to place within the region.

Climate

Updated research, including improved *climate models*, has refined descriptions of climate change. During 1895-2011, the Northwest warmed 1.3°F while precipitation fluctuated with no consistent trend. Over the period from 1970-99 to 2041-70, new models project NW warming of 2.0°F to 8.5°F, with the lower end possible only if greenhouse gas emissions are significantly reduced (RCP4.5 scenario; Fig 1). Annual average precipitation is projected to change by –5% to +14% for 2041-70. For every season, some models project decreases and some project increases; most models project lower summer rainfall by as much as 34%.

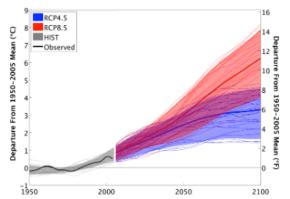


Fig. 1 Observed (1950-2011, black) and simulated (1950-2100) regional mean temperature for selected global models for the low-growth RCP4.5 and high-growth RCP8.5 scenarios.

Water

Changes in precipitation and air temperature have already affected hydrology and water resources in the Northwest. In most watersheds (except those with little snow), as snow accumulation diminishes, spring peak flows shift earlier, winter flow increases, and late-summer flow decreases. Dry years are becoming drier everywhere (Fig. 2). Some basins are likely to be buffered by groundwater.

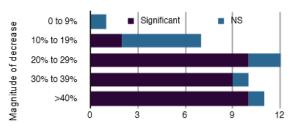


Fig. 2 Number of NW stream gauges with decreasing trends in 25th percentile annual flow that do (purple) and do not (blue) pass a significance test (α <0.10) over the 1948-2006 period. None have increased.

Irrigated agriculture is the largest consumptive water user in the Columbia River Basin and poses the greatest extractive demands on reservoir systems. Warmer, drier summers and longer growing seasons may increase those demands. Competing reservoir water demands could create summer water shortages and reduce the proportion of irrigable cropland and/or reduce the production and value of agricultural goods.

Hydropower production, which provides two thirds of the region's electricity, will also be affected by snowmelt-driven shifts in streamflow. By the 2040s, summer production is projected to decrease by about 15% and winter production to increase by about 4% compared with the period from 1917-2006. Further reductions in hydropower may also result from climate change adaptation; for example, flood control and instream flow augmentation for fish.

Changes in flood risk depend on the type of basin, with mixed rain-snow basins in Washington and Oregon already seeing increases in flood risk. Floodplain development has increased *vulnerability* in many areas. Continued warming of rivers, lakes, and wetlands will affect the health of aquatic species and the extent of suitable habitat for many species, especially salmonids and other species already near their upper thermal tolerance.

Water-dependent recreational activities may be affected by dry conditions, reduced snowpack, lower summer flows, impaired water quality, and reduced reservoir storage. Difficulties for native fish including Pacific salmon could hamper sport fishing, while ski resorts near the freezing elevation will encounter less snow and more rain.

Coasts

Climate driven changes will likely be profound for Northwest coasts and associated ecosystems. Sea levels are projected to rise 4-56" by 2100 relative to 2000, with some local variations. Coastal marshes that cannot move upslope will shrink, affecting shorebirds and other species. Increased wave heights in recent decades have been a significant factor in the observed increased frequency of coastal flooding. About 2800 miles of roads in WA and OR are in the 100-year floodplain; some highways may face increased inundation with 2 feet of sea level rise.

In Northwest marine waters, elevated levels of absorbed CO2 combine with seasonal coastal upwelling and nutrient runoff to produce some of the world's most acidified conditions, hindering some marine organisms' ability to build shells; some sea grasses may benefit. Warm years already bring non-native southern species. Higher sea surface temperature may boost harmful algal blooms. Economic effects, both positive and negative, will stem from changes in

productivity and distribution of commercially valuable marine species, such as shellfish.

Forests and other vegetation

About half the land area in the Northwest is forested. Climate directly affects tree growth in forests through temperature and moisture controls, and indirectly through its influence on disturbances—wildfires, insects, and diseases. The spatial distribution of suitable climate for many important NW tree species and vegetation types may change considerably by the end of the 21st century, and some vegetation types, such as subalpine forests, will become extremely limited. Affected habitats will in turn affect the species that depend on them, notably wolverines and pika at higher elevations, while some species like the northern flicker and hairy woodpecker may thrive with more frequent fires.

Large areas have been affected by disturbances in recent years (Fig. 3), and climate change is probably one

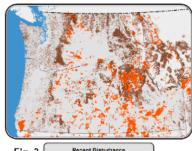


Fig. 3. Recent Disturbance

major factor. One study estimated area burned will rise by roughly 900 sq mi by the 2040s, or a factor of 2.5 from the 1980-2006 average. Climate is a major driver of insect outbreaks that affect millions of forest acres. Insect life stage development and mortality rates are influenced by temperature, and drought can cause host trees to be more vulnerable to insects. Recent mountain pine beetle and other insect outbreaks were facilitated by higher temper-atures and drought stress, and the frequency of such

outbreaks is projected to increase, particularly in high-elevation forests.

Federal and state policies governing management and harvest may impact the economy as much as any effect attributable to climate change. Increased productivity in a milder climate with higher CO2 may be offset by insect and disease outbreaks (e.g. Swiss needle cast affecting the commercially important Douglas-fir), and wildfires.

Agriculture

The Northwest's diverse crops depend on adequate water supplies and specific temperature ranges, which are projected to change during the 21st century. Warmer winters and longer growing seasons could increase growth for some crops while adversely affecting other crops dependent on chilling periods. Warmer, drier summers could result in yield reductions due to heat and drought stress. More rainfall in the winter could mean wetter soils in the spring. which could benefit some crops while hampering planting of others. These climate changes could also result in changes in pressures from pests, weeds, diseases, and invasive species.

| commodity | value (\$b) | pathways |
|-----------------------|-------------|--|
| milk, dairy, cattle | 6.0 | heat stress, forage quality/availability |
| vegetables, hay | 3.8 | CO ₂ fertilization, Irr. |
| fruits, nuts, berries | 2.6 | CO ₂ , Irr., heat, precip, chilling, pests |
| grains, oilseed | 2.1 | CO ₂ , Irr., heat, precip |

Northwest agricultural commodites with 2007 market values and potential pathways for impacts of climate change on each sector. Irr=irrigation water availability.

Projected yield losses due to warming and drought are expected to be offset to varying degrees by CO2 fertilization for many crops. In a study with one climate scenario, winter wheat yields were projected to increase 13%-

25% while spring wheat yields were projected to change by -7% to +2% by the 2040s across several locations in Washington, relative to 1975-2005. Yields of irrigated apples are projected to increase by 9%. Availability of water for irrigation is crucial and will depend on hydrological, structural, and policy (seniority of water rights) factors.

Warming may reduce productivity and nutritional value of forage on grazing lands. Alfalfa production may increase as long as water is available. Higher temperatures can affect animal health, and can reduce milk production and beef cattle growth.

Human Health

Effects of climate change on human health will depend on specific attributes of climate change and on exposure to climate-related risks. While vulnerability remains relatively low in the Northwest, adverse impacts of climate change outweigh any positive ones. Concerns include increased morbidity and mortality from heat-related illness, air pollution and allergenic disease, and emergence of infectious diseases. A changing climate is also expected to impact mental health.

Heat-related deaths in the US have increased over the past few decades. In Oregon, analysis of hospitalization and climate data showed that each 10°F increase in daily maximum temperature was associated with a nearly 3-fold increase in the incidence of heat-related illness. Wildfires, especially east of the Cascades, lead to days or weeks of poor air quality and respiratory disease. In Puget Sound, rising water temperatures promote longer harmful algal blooms which can cause paralytic shellfish and domoic acid poisoning in humans who consume infected shellfish.

Tribal communities

Tribes have always been intimately connected to the land and natural resources. In ceding their lands and resources to the US, tribes were guaranteed the rights to continue to hunt, fish, and gather in all their usual and accustomed places both on and off reservation lands. By altering the distribution and timing of traditional resources, climate change could affect these treaty-protected rights. Treaty-protected fish and shellfish populations may become less accessible to tribes. Changes in salmon abundance and tree species distribution, and risks to infrastructure, can affect the cultural, medicinal, economic, and community health of tribes.

Tribes are tied to their homelands by law and culture, yet the impacts of climate change will not recognize geographic or political boundaries. Tribal vulnerability and adaptation strategies require explicit attention because of the unique social, legal, and regulatory context for tribes. Tribal climate change efforts in the region are strengthened by strong government-to-government relationships, informed by traditional knowledge, and are resulting in strategies to address climate impacts on tribal resources and traditional ways of life.

This is a summary of *Climate Change in the Northwest: Implications for our Landscapes, Waters, and Communities.* Dalton, M.M., P.W. Mote, and A.K. Snover, eds., Island Press, 270pp. and available from www.occri.net/reports. Citations for statements made herein, and complete author list, are available in the full report. Suggested citation for this document: Mote, P.W., J. Bethel, S.M. Capalbo, M.M. Dalton, S.E. Eigenbrode, P. Glick, L. Houston, J.S. Littell, K. Lynn, R.R. Raymondi, W.S. Reeder, and A.K. Snover, 2013: Climate Change in the Northwest, Brief Summary

Corvallis Climate Action Plan - www.CorvallisCAP.org

Appendix B: Climate Planning and the Corvallis Vision

The seven focus areas from the current Corvallis Vision Statement (*in bold italics*) offer many emissions reduction opportunities. Many actions are already underway, and others can be undertaken to help achieve the 2020 Vision and to lay a foundation for the update of the Vision and the Corvallis Comprehensive Plan in 2015.

Central City: "Corvallis in 2020 boasts a Central City that is the vibrant commercial, civic, cultural and historic heart of the county."

Corvallis's "Central City" or "Downtown" is home to beautiful historic buildings, modern urban structures, aesthetically pleasing landscapes, and the beautiful Willamette Riverwalk. Using low-impact development standards and green building techniques when developing or redeveloping property, constructing and renovating buildings; preserving historic resources; decreasing the use of fossil fuels for building energy; and managing buildings at the end of life (e.g., deconstruction vs. demolition) will help to meet greenhouse emissions reduction goals by reducing energy and water consumption.

Cultural Enrichment and Recreation: "Corvallis in 2020 enjoys a cultural life which is rich in the arts and recreational opportunities, and celebrates the diverse talents and cultures of our community."

The natural beauty, quality of life, and supportive community of Corvallis and Benton County encourage and nourish the arts and recreation. Corvallis provides cultural and recreational opportunities and outdoor education through parks and natural areas. Some of the city's most popular festivals and events—da Vinci Days, Fall Festival, concerts in Central Park and Starker Arts Park, winery tours, sporting events—take place outdoors. By attracting tourists and enabling residents to spend their recreation and entertainment dollars locally, these cultural experiences are economic drivers in the community. The Parks and Recreation Department 10-year Master Plan outlines the future needs of facilities, parks, trails and recreation programs in response to community growth, but the current draft plan ignores the risks posed to parks and natural areas from climate change. Adapting to and managing the risks of a changing climate will indirectly ensure that Corvallis retains its thriving cultural and recreational opportunities with all their social, educational, and participative value.

Economic Vitality: "Corvallis in 2020 is home to a vibrant economy that is anchored by key strategic industries and complemented by a wealth of diverse, environmentally friendly businesses."

Corvallis recognizes that its livability is a primary source of its economic vitality. Corvallis boasts a vibrant, healthy economy that draws its strength from four directions:

- 1) Broad base of employment in a diverse number of fields, with a predominance of small, locally owned businesses.
 - Climate protection policies and programs that manage risks and invest in long-term greenhouse gas reduction strategies will strengthen the local economy by driving demand for locally provided products and services. Because most routine daily activities generate carbon emissions, nearly every activity must be examined to identify cleaner and more sustainable alternatives. This fundamental reassessment presents major economic

- opportunities that innovative businesses and individuals in Corvallis have already begun to take advantage of. The community is home to developers, builders, architects, engineers and product manufacturers in the green building industry. Clean energy firms, such as *photovoltaic* installers, biodiesel producers, and energy efficiency consultants are proliferating. The City also is a leader in bicycling products and local, organic foods.
- 2) Family wage jobs linked in large part to education, technology, health care, professional services and research.
 Many of the technologies, products and services required for the shift to a low-carbon future can be provided by Corvallis companies, thereby maintaining and creating local jobs. Dollars currently spent on fossil fuels will no longer leave our economy and will stay here to pay for home insulation, lighting retrofits, solar panels, bicycles, engineering, design and construction.
- 3) Active and convenient regional transportation system which makes it easy to walk, cycle or ride mass transit.
 Land use policies that limit sprawl reduce driving distances and make it easier for residents to get around by bicycles and on foot instead of relying on cars. This reduces both fuel use and greenhouse gas emissions.
- 4) Business and community collaboration to maintain and improve the city's air and water quality."

 Climate action is an effort the entire community needs to support and act on, not just something that the local government adopts and implements. Creating an innovative framework for the region's transition to a more prosperous, sustainable and climate-stable future not only will improve the city's air and water quality, but will create jobs, improve health, and maintain the high quality of life for which Corvallis is known.

Education/Human Services: "Corvallis in 2020 offers high quality educational opportunities and a comprehensive network of health and human services available to all residents throughout their lifetime."

Many of the risks of climate change affect public health (spread of disease, exposure to extreme temperatures, etc.). For example, diseases are emerging that have not been prevalent in Oregon's temperate climate. Actions such as improving air quality, creating more walkable neighborhoods, and encouraging the purchase of local, organic foods will provide a "health dividend" to Corvallis residents that is potentially vast in both financial terms and contribution to quality of life.

Governing and Civic Involvement: "Corvallis in 2020 fosters citizen participation in all aspects of community decisions. Neighborhood organizations are vigorous and their meetings and ward meetings provide opportunities for formal and informal discussions of community issues."

The development of this Climate Action Plan has already brought together a broad coalition of community organizations and individuals. The broad-scale coordination and planning required to achieve Corvallis's carbon reduction goal will demand that governments, businesses, civic organizations and residents collaborate extensively and take the lead in their own activities. As the community works toward that goal, it can also improve social equity by ensuring that populations most vulnerable to climate change are included in the implementation of Climate Action Plan items in a meaningful way and are given priority for green jobs, healthy local food, energy efficient homes and affordable, efficient transportation.

Protecting Our Environment: "Corvallis in 2020 has successfully integrated its economic and population growth with the preservation of its scenic natural environment, open spaces, clean air and water, wildlife habitat areas, and recreational opportunities."

The Corvallis Vision Statement anticipates a 2020 population of 57,000 to 63,000. However, more recent studies suggest that the Pacific Northwest may well experience population growth significantly above current expectations as the impacts of climate change become more profound. Scientists expect "climate refugees" to have a major effect on population shifts in the 21st century as large numbers of people move from hotter, drier regions to cooler, wetter ones. Corvallis and other cities in the Pacific Northwest will be destinations for these "refugees."

Corvallis currently has more than 1,730 acres of City parks and natural areas, but environmental degradation has rendered these natural systems less resilient than they once were. More than 150 years of urban development has diminished the capacity of our wetlands, floodplains and forests to absorb and accommodate precipitation, preparing us poorly for the expected increase in the frequency and intensity of severe weather events that climate change will bring to Oregon. Air and water quality, habitat, and biodiversity have been severely strained as trees, vegetation, and streams have been replaced by pavement and culverts. Weakened natural systems absorb less carbon directly and indirectly result in still more carbon emissions through the urban heat island effect, which raises temperatures in the city.

As Corvallis grows, it will push beyond its current boundaries and absorb other natural areas. Whether within or outside City boundaries, natural areas may suffer from overuse, become more difficult to maintain in their natural state, or disappear entirely. Since open space is often developed for shops, offices, industries, and homes, it is important for the City to protect natural areas in their undeveloped state to help quality of life keep pace with population growth.

Managing community greenhouse gas emissions from all sectors will help our watersheds, forests and ecosystems to remain healthy over time.

- Sustaining the values and functions of our tree canopy, rivers, streams, and wetlands can reduce emissions and sequester carbon while strengthening our ability to adapt to a changing climate.
- A healthy urban forest can reduce energy consumption in buildings as well as make walking and biking more attractive and safe.
- Shifts in consumption that lower personal and household carbon footprints can benefit regional and global ecosystems by reducing biodiversity loss and habitat degradation.

Where People Live: "Corvallis in 2020 offers balanced and diverse neighborhoods, incorporating mixed-use, that is accessible to residents without driving, which forms the building blocks that support a healthy social, economic, and civic life.

Beyond their economic benefits, actions that protect climate can also fundamentally improve community wellbeing. Carefully managing the connections between land use and transportation with the aim of reducing GHG emissions supports a "healthy social, economic, and civic life" by:

- Preserving local water and forests by reducing both pollution and the pressure to develop green spaces that provide valuable ecosystem services.
- Protecting and restoring the city and county's green infrastructure, adding to trails, parks and natural areas so that citizens have easy access to nature and recreational opportunities that are distributed equitably throughout the community.
- Increasing urban forest canopy, which improves the aesthetic appeal of neighborhoods, brings nature into urban areas, and improves air and water quality.
- Lowering energy and transportation bills for residents, business and government.
- Enabling residents to shop locally and produce their own food, which keeps dollars in our community.
- Reducing health-care costs of a healthy, active, productive community.

These are just a few examples of how a making Corvallis markedly less reliant on fossil fuels can simultaneously protect the climate and build a more prosperous, productive, and healthy community.

Appendix C: Efforts Already Underway in Corvallis

The City of Corvallis has taken many actions to reduce greenhouse emissions and staff investigate climate action opportunities on an ongoing basis. Detailed information about these projects can be found in the sustainability section of the City website and the annual sustainability reports, available at http://www.corvallisoregon.gov/index.aspx?page=211.

Buildings and Energy

Numerous organizations are working to increase energy efficiency and reduce GHG emissions in Corvallis. Corvallis residents and businesses can also take advantage of efficiency incentives from the City of Corvallis (low flow toilet rebates), the federal government and State of Oregon (tax credits), local utilities, and the Energy Trust of Oregon. Other efforts underway include:

- Corvallis Environmental Center programs: Communities Take Charge, Classrooms Take Charge, Clean Energy Works
- Direct Installation of energy saving or renewable energy producing products by local businesses
- Community Services Consortium Home Weatherization Program
- Oregon State University is implementing its Climate Action Plan to reduce GHG emissions from university buildings and operations
- Solar Installations: municipal (Blue Sky grants), household (tax credits, ETO incentives, third party financial plans), community (Seed for the Sol local investment opportunity)
- Green Street Loans from Umpqua Bank
- Trade Ally contractors working with the Energy Trust of Oregon
- Georgetown University Energy Prize competition 2015-2016

Food and Agriculture

Many organizations and community groups are working to increase local food production and consumption, support organic gardening and farming, and develop regionally adapted seeds. For example, the Corvallis Sustainability Coalition's Food Action Team organizes an annual Local Eats Week and several edible front-yard garden tours. The Edible Corvallis Initiative also helps local schools source more locally grown fruit and vegetables for students. The City of Corvallis recently lowered the regulatory barriers to urban food production by reforming some of its zoning code. The list of existing efforts is too long to comprehensively describe, but here is a partial list:

- OSU Extension Service provides Master Gardener education, organizes educational gardening events, provides resources for land management of small acreages, and supports local, regional and farm-direct marketing among other efforts.
- Benton County Health Department is partnering with emergency food providers and other community groups to strategically plan for a South Corvallis Food Center.
- Corvallis Sustainability Coalition Food Action Team organizes an annual Local Eats Week and several edible front-yard garden tours, and annually publishes the Corvallis Garden Resource Guide.

- Farm-to-School/Edible Corvallis Initiative introduced tasting tables to Corvallis elementary schools where students get a taste of locally grown fruits and vegetables.
- Farmers' Markets
- Local Food Initiatives at Grocery Stores
- Food Pantries, Meal Sites, and SNAP (Food Stamps)
- Gleaners Groups
- Granges
- Slow Food Corvallis
- Small Farms Program
- Southern Willamette Valley Bean & Grain Project is rebuilding the local food system by stimulating the cultivation and local marketing of organically grown staple crops like beans and grains to provide a foundation for year-round food resources in the Willamette Valley.
- Women, Infants and Children (WIC) Office and Clinic

Land Use and Transportation

A number of government agencies, business, and non-profit organizations are working to reduce the community's dependency on fossil fuels for transportation. For years Corvallis has developed and implemented land use regulations, such as the state required Urban Growth Boundary, which facilitate compact growth and reduce transportation demand. The community has nationally recognized mass transit, and bicycle infrastructure systems that decrease dependence on single-occupant vehicles. City staff works with national and local alternate modes advocates to develop more non-vehicle transportation infrastructure:

- League of American Bicyclists
- Oregon Department of Transportation's Bicycle and Pedestrian Program
- Cascades West RideShare
- Bicycle Transportation Alliance
- Corvallis Bicycle Collective
- Mid-Valley Bike Club

With broad community input, the Corvallis Sustainability Coalition's Land Use Action Team established four goals to support a sustainable, compact city: walkable, mixed-use, diverse neighborhoods; easy access to diverse natural areas; green building practices; and increased access to locally owned and produced foods and goods while protecting resource lands, quality of life, and the environment. The Land Use team worked with local community volunteers to complete a citywide inventory of neighborhood amenities, walkability, and bikability and created a series of maps to help identify current conditions and opportunities to improve non-auto access to common amenties. The team is currently working with partner organizations to conduct a review of local land use codes to identify changes necessary to achieve more walkable, mixed-use neighborhoods, functioning neighborhood centers, and a vibrant downtown.

Consumption and Solid Waste

The City of Corvallis participates in Benton County's Solid Waste Advisory Council (SWAC), a Statemandated board comprised of local officials and citizens who represent various areas throughout

Benton County. The SWAC is an advisory committee for the Benton County Board of Commissioners on all solid waste issues for Benton County.

The Corvallis Sustainability Coalition's Waste Prevention Action Team also has set goals and accomplished much in the area of waste reduction. The Team works in partnership with Republic Services, Corvallis's provider of garbage collection and recycling services. The Waste Prevention Action Team has helped to implement the following programs:

- Curbside collection of compost in yard debris bins
- Recycling block captain program
- Reuse directory
- Repair Fairs
- Faith Community Education

Oregon State University Campus Recycling manages a comprehensive waste management system that focuses on reducing, reusing and recycling with disposal as a last resort. Campus Recycling is also actively engaged in outreach activities. Campus Recycling works with Republic Services to offer Master Recycler classes and has a variety of other programs and challenges, such as Waste Watchers volunteers, Repair Fairs, the RecycleMania Civil War, the Residence Hall Move-Out Donation Drive, and the Coffee Cup Coup Campaign.

Health and Social Services

Numerous organizations in Corvallis and Benton County are working to address health and social service needs. Following are some of those that have taken the lead in addressing social inequities that may be exacerbated by the effects of climate change:

- Benton County Health Department
- Benton Habitat for Humanity
- Cascades West Rideshare
- City of Corvallis Transportation Options Program
- Community Services Consortium
- Corvallis Environmental Center (Edible Corvallis Initiative and Energize Corvallis)
- Corvallis Sustainability Coalition
- Healthy Aging Coalition
- Housing First (formerly Corvallis Homeless Shelter Coalition)
- Linn-Benton Food Share
- Linn-Benton Health Equity Alliance
- Mid-Valley Health Care Advocates
- South Corvallis Food Bank
- Willamette Neighborhood Housing

Urban Natural Resources

The City of Corvallis collaborates with other public agencies to conserve and responsibly manage the natural resources within its purview, including the Benton Soil and Water Conservation District, OSU-Benton County Extension Service, US Forest Service, US Fish and Wildlife Service, Oregon

Department of Fish and Wildlife. The City has completed a number of resource inventories and natural resource plans to preserve the quality of its natural resources:

- Natural Features Inventories throughout the Corvallis Urban Growth Boundary (2003)
- Corvallis Forest Stewardship Plan (2006)
- Urban Forestry Management Plan (2009)
- Understory Vegetation Baseline Monitoring in the City of Corvallis Rock Creek Watershed (2010)
- Corvallis Forest Natural Resources Inventory (2010)
- Parks and Recreation Master Plan (2013)

Non-profit organizations also work to conserve native species and habitats in the Corvallis area through restoration, research and education. These include:

- Greenbelt Land Trust
- Native Plant Society of Oregon
- Institute for Applied Ecology
- Marys River Watershed Council
- Marys Peak Group Sierra Club
- Audubon Society of Corvallis
- Neighborhood Naturalist
- Chintimini Wildlife Center

Appendix D: Corvallis Community Greenhouse Gas Inventory Methodology

In 2014, the City of Corvallis completed the 2012 Community Greenhouse Gas Inventory Report, which provides a summary of key findings and details about each category of emissions sources and activities. The following description of the inventory methodology is on page 6 of the report, which is available at http://www.corvallisoregon.gov/modules/showdocument.aspx?documentid=8183.

In order to quantify GHG emissions in a way that is useful to local government and the community, it is important to use a standardized approach. This inventory uses the approach and methods provided by the U.S. Community Protocol for Accounting and Reporting Greenhouse Gas Emissions (Protocol), released by ICLEI – Local Governments for Sustainability in October, 2012. The Protocol establishes reporting requirements for all community GHG emissions inventories, provides detailed accounting guidance for quantifying GHG emissions associated with a range of emission sources and community activities, and provides a number of optional reporting frameworks. This Protocol is the national standard for U.S. local governments to account for and report on greenhouse gas emissions associated with their communities. Use of the Protocol provides an accepted methodology to estimate and report on GHG emissions associated with the community. This allows for more informed decisions about how and where to pursue GHG emissions reduction opportunities.

This Protocol requires inclusion of five Basic Emissions Generating Activities in their GHG emissions inventories:

- 1. Use of electricity by the community
- 2. Use of fuel in residential and commercial stationary combustion equipment
- 3. On-road passenger and freight vehicle travel
- 4. Use of energy in potable water treatment and distribution and wastewater collection and treatment
- 5. Generation of solid waste by the community

In addition to these five Basic Emissions Generating Activities, this inventory also estimates the emissions associated with the manufacturing and production of food, goods, and services consumed by Corvallis households and local government. Consumption generates emissions all over the world from activities such as mining, manufacturing, and transportation.

Appendix E: State of Oregon Climate and Energy Policy

Oregon's Statewide Energy and Climate Change Policy framework provides solid support for many of the actions outlined in this climate Action plan. Oregon's policies cover the efficient use of energy for heating, cooling, and operation of appliances in buildings, the generation of electricity from renewable, non-fossil energy sources, improvement in the carbon-intensity of transportation fuels, and non-binding coordination of action towards these goals. The agencies and organizations that drive and implement these policies are mentioned below.

Greenhouse Gas Reduction Goals

Oregon's Energy Policy and Climate Change mitigation effort began in the 1970's in response to the oil import crisis. The resulting policies, designed to buffer Oregon against the volatile costs of imported oil and rising energy costs, have also kept Oregon's carbon emissions and per capita energy use low by national standards. These policies are the foundation of Oregon's carbon reduction successes and are augmented by greenhouse gas reduction goals, now codified in law as ORS 468A.205 and hosted by the Oregon Global Warming Commission (see the Commission's website at http://www.keeporegoncool.org/). Oregon's goals are to reduce greenhouse gases by ~10% below 1990 levels by 2020 and at least 75% below 1990 levels by 2050. The Commission hosts an integrated plan to reduce Oregon's carbon emissions and is required to provide regular "bully pulpit" updates to the legislature on the plan and progress towards Oregon's goals. In short, the Commission has determined that "Cars and Coal" must be the focus of carbon reductions over the next decade.

Energy for Heating and Cooling of Buildings. Oregon's energy policies currently comprise a set of laws and rules that combine to ensure that: a) carbon emissions do not grow with electricity load growth, b) carbon emissions from heating with natural gas are minimized, and c) nation-leading mandatory energy efficiency standards are in place for most appliances and some building construction.

Funding models are robust for policies impacting Investor Owned Utility (IOU) and Consumer Owned electric utility (COU) carbon emissions. Because energy efficiency is defined as the least cost resource for both investor³⁶ and consumer owned utilities³⁷ this drives investment in energy efficiency. In IOU-electric service territories, SB 838 (2007) and a 2.25% bill charge under SB 1149 (1999) combine to ensure funding sufficient to replace the 85-100% of electricity load growth with

³⁵ Oregon Global Warming Commission Report to the Legislature, 2013:

http://www.keeporegoncool.org/sites/default/files/ogwc-standard-documents/0GWC_2013_Rpt_Leg.pdf.

³⁶ Investments in energy efficiency are very cost effective for ratepayers; the costs are largely borne by the homeowner, with only incentives being paid by all the ratepayers (to avoid paying the full cost of a new power plant.)

³⁷ The Pacific Northwest Electric Power Planning and Conservation Act of 1980 calls out a requirement that the first investments in the Bonneville Power Administration-led utility system be energy efficiency and wildlife conservation. BPA also provides significant transmission integration for the Pacific Northwest.

investments in cost effective energy efficiency³⁸. Decoupling agreements with the IOU-natural gas companies promise funding of 100% of cost effective natural gas energy efficiency (but not of load growth). These mainstream electricity and natural gas programs are augmented by low-income programs and by Oregon Department of Energy (ODOE) electric efficiency programs for K-12 Public Schools (.5% of bill) and Industrial customers. Low carbon electricity is also enabled by SB 1149 funded programs (.5% of bill) that incent the installation of renewable energy on residences and businesses, by *net metering* programs (1999) that enable customers to "trade" renewable energy for fossil fuel energy at retail rates, and utility scale installations mandated by the Renewable Portfolio Standard (RPS) –also from SB 838 (2007). The RPS requires electric utilities to supply 25% of their total load from *new* renewable energy sources (above and beyond old hydro). The net effect of energy efficiency investments and the RPS is that all electricity load growth since the year 2000 should be met by non-carbon resources. Tax credits for both energy efficiency and renewable energy investments are also available on Oregon tax returns.

Capable organizations administer these laws, including the ODOE, the Oregon Public Utility Commission, the Energy Trust of Oregon, the Northwest Energy Efficiency Alliance, the Northwest Power Planning Council and the Bonneville Power Administration. Capable advocacy organizations engage to ensure these laws/policy intentions are consistently administered. These bodies include the Citizens' Utility Board of Oregon (enshrined since 1984 in the Oregon Constitution), the Northwest Energy Coalition (including the electric and natural gas utility partners), the Community Action Partnership of Oregon, and many others. Efforts to dismantle this framework are few, but are led by the libertarian Cascade Institute and American Legislative Exchange Council (ALEC).

Standards for Appliances and Buildings. Oregon's standards for energy efficiency of appliances have consistently risen along with those of California (to date). Currently, voluntary building codes are offered that match the nation leading codes of other states. Voluntary *Energy Performance Scores* that communicate the efficiency performance of residential buildings are under development and are also intended for use by appraisers in home/building financing. Building energy code creation has recently moved from the Oregon Department of Energy to the Department of Consumer and Business Services.

Energy for Transportation. The Oregon Clean Fuels Program, approved in HB 2186 by the 2009 Legislature, aims to reduce the *carbon intensity* of transportation fuel used in the state. The Clean Fuels Program also seeks to create economic development opportunities in Oregon, increase the state's energy security and reduce air pollution for healthy communities. DEQ is implementing the program in phases. In December 2012, the Environmental Quality Commission adopted the first phase of rules allowing *DEQ* to collect information about fuels currently being imported into the

³⁸ SB 1149 directs 2.25% of utility bills to energy efficiency projects and SB 838 requires utilities to project the maximum achievable energy efficiency that can be "built out" and to fully fund incentives for those projects. The effectiveness of the decoupling mechanism to invest in energy efficiency is reduced as the cost of natural gas is reduced. Because of this, natural gas energy efficiency programs are under stress at this time.

state to create a baseline for measuring future reductions. In February 2014, Governor Kitzhaber directed DEQ to draft rules for the next phase of the program, which will require a 10-percent reduction in the carbon content of Oregon's transportation fuels over a 10-year period. This reduction represents about 280 million metric tons of greenhouse gases reductions through 2025.

Eliminating Coal. SB 488-2014 (a clarification of an earlier bill) has affirmed that Oregon investor owned utilities may not import more electricity derived from coal. This means that no investor owned utility supplying Oregon customers may install coal fired generation to meet Oregon load and may not enter into new contracts to buy coal-fired electricity to serve Oregon customers. In addition, Oregon's least cost-least risk requirements for utility investments and rigorous analysis of the costs of implementing technology to scrub mercury and fines pollution from coal stacks has led to promises by Portland General Electric to shut down the last coal fired power plant operating in Oregon by 2020. The example set by this Oregon action is being replicated in the investment profiles of generation in other states.

Rewarding Utilities for Reducing Carbon. SB 844-2014 allows natural gas utilities to propose programs to the Oregon Public Utility Commission that reduce carbon emission and, simultaneously, provide benefits to ratepayers. Until programs are proposed and approved by the Commission, the assumption is that these benefits would comprised reduced costs for ratepayers. Legislators did not include electric utilities as eligible for SB 844, citing opposition by Industrial Customers of NW Utilities as their rationale for this decision.

Putting a Price on Carbon. Also known as a clean air tax, a carbon tax, a revenue neutral carbon tax, or a carbon cap and trade program, these options for putting a price on carbon to "allow the market to drive greenhouse gases out of our national economy" are under consideration in Oregon. SB 306 commissioned a study of various carbon pricing options and these are expected to be reviewed and considered during the 2015 legislative session. Portland General Electric's counsel asserts that a carbon tax polls poorly in Oregon at this time, which suggests that legislation to impose such a tax would be difficult to pass or that such a tax would be referred to the voters upon passage....and would fail.

Appendix F: Advisory Panel

Dorothy Fisher Atwood has over 25 years of environmental consulting experience. For the last 10 years she has focused on management systems implementation for private and public organizations, including for the City of Corvallis. Dorothy is the Management Systems program manager for Zero Waste Alliance (ZWA), a Portland-based non-profit organization. She develops implementation tools and procedures, training, and processes for sustainability and environmental management system (including ISO 14001) integration into core business systems. Dorothy is an instructor for the University of Oregon's Sustainability Leadership Workshop Series and has coauthored two booklets on management systems for the Axis Performance Sustainability Series.

Bill Bradbury is an Ex Officio Member of the Oregon Global Warming Commission and one of Oregon's two representatives on the Northwest Power and Conservation Council. He has long been involved in Oregon politics and environmental issues affecting the state. He has served as Oregon's Secretary of State and as a member of the Oregon Senate, where he was Majority Leader and Senate President. He directed the non-profit organization, For the Sake of the Salmon, during which he worked with Northwest Native American tribes; federal, state and local governments; and timber, agriculture and fishing interests. Bill served as chair of the Oregon Sustainability Board from 2005 to 2009 and was one of the early participants in Vice President Al Gore's Climate Change training sessions. He travels around the state to present locally adapted information on global warming.

Kyle Diesner is a policy analyst at the City of Portland Bureau of Planning and Sustainability (BPS). He works primarily on climate change planning, energy efficiency and renewable energy programs, but he also provides analytical support to other BPS programs, including recycling, composting and the Bureau's long range planning efforts. Kyle works with the Clean Energy team on efficiency and renewable energy programs and is also in charge of completing the annual inventory of carbon emissions for the City and Multnomah County. He is the Co-chair of the BPS Diversity Committee and dedicates a portion of his time to the Bureau's social equity initiatives. From 2006 to 2009 Kyle worked on the Sustainable City Government program, where he coordinated the Portland Clean Diesel Partnership. Kyle has a BS in environmental science from Humboldt State University.

Kelly Hoell is an associate at Good Company, a Eugene consulting firm that helps clients measure, manage and market their sustainability performance. Kelly works primarily with government and business clients to provide technical and market research and business supply chain development. She has led the sustainability and greenhouse gas assessments and reporting for municipalities, multi-national food processors and regional food retail companies. Kelly manages BASEline: Carbon Footprints (formerly Operation Climate Collaborative), a streamlined program designed to guide municipal governments through the process of measuring and reporting their greenhouse gas emissions. She is an Adjunct Instructor in Planning, Public Policy, and Management for the Oregon Leadership in Sustainability (OLIS) program at the University of Oregon. In 2012 Kelly developed and taught a workshop on sustainable purchasing for City of Corvallis employees.

L. Hunter Lovins is President of Natural Capitalism Solutions (NCS,) a Colorado non-profit that helps companies, communities and countries implement more sustainable practices profitably. Trained as a sociologist and lawyer (JD), Hunter has helped create several MBA schools and is currently professor of sustainable business at Bard MBA and Denver University. She lectures to audiences around the globe and has written 15 books and hundreds of articles. *The Way Out: Kickstarting Capitalism to Save Our Economic Ass* (2012) succeeds her international best-selling book, *Natural Capitalism*, now used in hundreds of colleges. Her latest, *Creating a Lean and Green Business System* won the 2014 Shingo Prize for Excellence in Manufacturing Research. She has won dozens of awards, including induction into the Hall of Fame of the International Society of Sustainability Professionals in 2013. Time Magazine recognized her as a Millennium Hero for the Planet, and Newsweek called her a Green Business Icon.

Chris Maser is a scientist, consultant, writer and speaker who covers a wide range of sustainability issues, including sustainable forestry, sustainable community development, environmental economics, citizen involvement in land use decisions, resolving environmental conflicts, protecting endangered species and wildlife habitat, environmental education, and the consequences of violence. He has authored or coauthored more than 30 books and 250 articles and given more than 100 talks throughout the United States, Canada, Europe, and Asia. Chris lives in Corvallis.

Matt McRae is the Climate and Energy Analyst for the City of Eugene. In 2009-10, Matt managed the effort to create Eugene's first community Climate and Energy Action Plan. His work includes implementing Eugene's Internal Zero Waste plan, managing an Internal Operations Greenhouse Gas Inventory, managing Eugene's 20-minute neighborhoods assessment, and overseeing progress on the Natural Hazards Mitigation Plan. Matt has a B.S. in Environmental Studies from Utah State University and worked for the National Park Service for nine years before joining the City of Eugene in 2002. He is an Adjunct Instructor in Planning, Public Policy, and Management for the Oregon Leadership in Sustainability (OLIS) program at the University of Oregon.

Babe O'Sullivan is the Sustainability Liaison for the City of Eugene, supporting sustainability initiatives for the City organization and the broader community. Her work covers a wide range of topics including climate action planning, land use and transportation, energy efficiency, Triple Bottom Line decision-making, and solid waste and recycling. She also provides staff support for the Eugene Sustainability Commission. She co-leads the Research Workgroup of the West Coast Climate and Materials Management Forum and is the recipient of a "National Notable Achievement Award" from EPA Administrator Lisa Jackson for her work to reduce the climate impacts of materials and waste. Previously, Babe coordinated the Solid Waste and Recycling program for the City of Portland's Bureau of Planning and Sustainability. She holds an MBA from the University of California, Berkeley and an undergraduate degree in environmental policy from the University of California, Davis. Babe is an Adjunct Instructor in Planning, Public Policy, and Management for the Oregon Leadership in Sustainability (OLIS) program at the University of Oregon.

Ann Scheerer is Consultant-Academic Advisor for Oregon State University's Sustainability Double Degree Program and an Adjunct Instructor for OLIS. With over 20 years of work experience in business (Siemens Energy and Automation), local government public works (City of Kirkland, Washington) and non-profit organizations (Sustainable Seattle, Sustainable Communities ALL Over

Puget Sound - SCALLOPS), Ann possesses a broad perspective of multiple sectors. She is currently finishing her interdisciplinary dissertation on the effectiveness of behavioral interventions in local climate action planning for her PhD in Urban Planning at the University of Colorado. She has a MPA from the University of Washington, a Master of Strategic Leadership towards Sustainability from the Blekinge Institute in Sweden, a BS in Mechanical Engineering from the University of Michigan, and a BA from Kalamazoo College.

Megan Shuler is the Sustainability at Work program manager with the City of Portland, Bureau of Planning and Sustainability. Sustainability at Work is a free service for businesses looking to green their workplace. Megan has over nine years of experience working on sustainability-related programs. In the past three years alone, those programs have served over 3,000 Portland businesses in the areas of transportation, water, energy and waste.

Jane M. Silberstein is Associate Dean at Bainbridge Graduate Institute, which pioneered the Sustainable MBA. She began her career as a transportation planner in Santa Barbara, CA, where she joined a team developing what became an award-winning citywide bikeway system. She subsequently became an urban planner in Santa Barbara and then Santa Cruz CA, both of which were pioneers in sustainable community development. Following the Loma Prieta earthquake in Santa Cruz in 1989, Jane was assigned to a major redevelopment effort. At that time, she came across Paul Hawken's *Ecology of Commerce*, which served as a major inspiration and portal to the field of sustainable community development. She subsequently moved into the arena of higher education (Northland College, University of Wisconsin) as faculty and administrator with a focus on sustainable community development. Jane has written numerous books and articles on land use planning and sustainable community development.

Kevin Wilhelm is the CEO of Sustainable Business Consulting, a Seattle-based consulting firm focused on practical solutions that deliver profit improvement and brand value through the use of sustainable business practices. Kevin has more than 15 years of experience working with businesses ranging from Fortune 500 multinationals to renewable energy start-ups. His firm's clients include Nordstrom, REI, The North Face, Coinstar/Redbox, Drugstore.com and Brooks Sports. In addition to his consulting work, Kevin is the author of *Return on Sustainability: How Business Can Increase Profitability & Address Climate Change in an Uncertain Economy* and a professor for the Bainbridge Graduate Institute's Sustainable Business MBA Program.

Appendix G: Glossary

Adaptation: An adjustment in natural or human systems to a new or changing environment. Adaptation to climate change refers to adjustments in response to actual or expected climatic stimuli or their effects, which lessens harm or exploits beneficial opportunities. Various types of adaptation include anticipatory and reactive, private and public, and autonomous and planned.

Architecture 2030: A non-profit, non-partisan and independent organization established in response to the global-warming crisis by architect Edward Mazria in 2002. The mission is to rapidly transform the US and global Building Sector from the major contributor of greenhouse gas emissions to a central part of the solution to the global-warming crisis.

Bicycle Friendly Community. A community recognized by the League of American Bicyclists as one that is welcoming to cyclists because of its trails, bike lanes, share the road campaigns, organized rides, Bike to Work Day events, etc. The BFC designation recognizes communities that encourage people to bike for transportation and recreation through the five Es: engineering, education, encouragement, enforcement, and evaluation.

Biofuel: A fuel produced from dry organic matter or from combustible oils produced by plants. Examples include alcohol from fermented sugar, black liquor from the paper manufacturing process, wood, and soybean oil.

Biomass: When referring to fuel, biomass is a plant-derived fuel from clean and untreated wood such as brush, stumps, lumber ends and trimmings, wood pallets, bark, wood chips or pellets, shavings, sawdust and slash, agricultural crops, biogas, or liquid biofuels, but excludes materials derived in whole or part from construction and demolition debris.

Bioswale: A vegetated depression that can temporarily store stormwater, reduce flooding, cleaning water, and encourage infiltration.

Carbon dioxide (CO2): The major heat-trapping gas whose atmospheric concentration is being increased by human activities. It also serves as the yardstick for all other greenhouse gases. The major source of CO2 emissions is fuel combustion, but they also result from clearing forests and burning biomass. Atmospheric concentrations of CO2 have been increasing at a rate of about 0.5 percent a year, and are now more than 30 percent above pre-industrial levels.

Carbon footprinting. The act of evaluating the greenhouse gas emissions associated with the life cycle of a product. Products can be consumer goods as well as products or materials sold business-to-business.

Carbon intensity: The amount of carbon emitted for each unit of energy consumed.

Carbon pricing. A method for reducing global-warming emissions by charging emitters of carbon dioxide for the right to emit one tonne of CO₂ into the atmosphere. Carbon pricing usually takes the

form of a carbon tax or a requirement to purchase permits (also called "allowances") to emit. Because such permits are privately tradable and emissions are limited to the total number of available permits (the cap), this system is known as cap-and-trade.

Carbon sequestration: The uptake and storage of carbon. Trees and other plants, for example, absorb CO2, and then release the oxygen while storing the carbon.

Carbon sinks: The processes or ecological systems that take in and store more carbon than they release. This process is called carbon sequestration. Forests and oceans are large carbon sinks.

Citizen's Climate Lobby (CCL). An international grassroots environmental group that trains and supports volunteers to build relationships with members of Congress in order to influence climate policy. Operating since 2007, the goal of CCL is to build bipartisan support to put a price on carbon, specifically a revenue neutral carbon fee and dividend at the national level.

Climate: The average state of the atmosphere including typical weather patterns for a particular region and time period (usually 30 years). Climate is the average, long-term weather pattern for a particular region, while weather describes the short-term state of the atmosphere. Climate measures average precipitation, temperature, wind, and seasonal phenomena such as length of the growing season.

Climate change: A significant change from one climatic condition to another, often used in reference to climate changes caused by the increase in heat-trapping gases since the end of the 19th century.

Climate model: A quantitative way of representing the interactions of the atmosphere, oceans, land surface, and ice.

Climate refugees: People displaced from their homes or lands by significant changes in climate such as increased drought, sea level rise, or increased storm intensity.

Community Scale Renewable Energy: A renewable energy system, photovoltaic for example, installed at a large scale: for example, over the roof of a large commercial building. Often this will include multiple investors paying for a single, large installation that will benefit many homes or businesses.

Ecosystem: Any natural unit of living and non-living parts that interact to produce a stable system through cyclic exchange of materials.

Embodied (greenhouse gas) Emissions: Greenhouse gas emissions associated with the expenditure of energy involved in the creation of a product. This includes the energy to extract raw materials (lumber, iron, etc.), process, package, transport, install, and recycle or dispose of products.

Emissions: The release of a substance (usually a gas when referring to the subject of climate change) into the atmosphere.

Energy efficiency: Ratio of energy output of a conversion process or of a system to its energy input.

Energy Performance Score: A home energy rating system similar to the miles-per-gallon (MPG) rating for the auto industry that enables homebuyers to directly compare energy consumption between homes while offering a natural market incentive to upgrade their homes as much as possible.

Energy Trust of Oregon (ETO): A nonprofit organization that helps certain utility customers in the Pacific Northwest improve energy efficiency and tap renewable sources. ETO administers public purpose funds that are collected from customers for new cost-effective conservation, new market transformation, and the above market costs of new renewable energy resources.

EPA: The United States Environmental Protection Agency.

Fossil fuel: A general term for combustible geologic deposits of carbon in reduced (organic) form. Fossil fuels are of biological origin and include coal, oil, natural gas, oil shales and tar sands. A major concern is that they emit CO2 when burned, significantly enhancing the greenhouse effect.

GHG: Abbreviation for greenhouse gas. See definition for Greenhouse Gas below.

Global Warming: An average increase in the temperature of the Earth's atmosphere, which can contribute to changes in global climate patterns. Global warming can occur from a variety of causes, both natural and human induced. In common usage, "global warming" often refers to the warming that can occur as a result of increased emissions of greenhouse gases from human activities. See climate change, greenhouse effect.

Greenhouse Effect: The thermal effect that results from heat-trapping gases allowing incoming solar radiation to pass through the Earth's atmosphere, but preventing most of the outgoing infrared radiation from the surface and lower atmosphere from escaping into outer space.

Greenhouse Gas (GHG): A term used for gases that trap heat in the atmosphere. The principal greenhouse gases that enter the atmosphere as a result of human activity are carbon dioxide, methane, and nitrous oxide. Others include, but are not limited to, water vapor, chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), ozone (O3), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6).

Greywater: Under Oregon law, greywater means wastewater from showers, baths, bathroom and kitchen sinks, and laundry. If handled properly, greywater can safely be reused for flushing toilets and urinals as well as for irrigation. Reuse of greywater reduces the demand on other sources of water, such as potable water, surface water, and groundwater.

Intergovernmental Panel on Climate Change (IPCC). Established in 1988, the IPCC assesses information in the scientific and technical literature related to all significant components of the issue of climate change. Hundreds of the world's key experts on climate change and the environmental, social and economic sciences from some 60 nations have helped the IPCC prepare periodic assessments of the scientific underpinnings of global climate change and its consequences.

The IPCC is looked to as the official advisory body to the world's governments on the state of the science of the climate change issue.

Impervious surface: Surfaces such as concrete, asphalt, and building roofs that don't allow water to penetrate. These surfaces collect and concentrate rainwater increasing the potential for water pollution and flooding.

Invasive species: An introduced species that invades natural habitats.

Kyoto Protocol. An international agreement linked to the United Nations Framework Convention on Climate Change. Parties commit to setting internationally binding emission reduction targets.

Land use: Human-determined arrangements, activities, and inputs undertaken in a certain land type, the social and economic purposes for which land is managed (e.g., grazing, timber extraction, and conservation).

Lifecycle (of goods): The complete life (of goods)—the mining or extraction of raw materials, the manufacturing processes, transportation, packaging, retail, the use of goods, and finally their disposal.

LEED: Leadership in Energy and Environmental Design, a program of the United States Green Building Council and a commonly used green building standard.

Low Impact Development (LID). A design approach that protects soil and increases the resiliency of stormwater systems by maintaining and enhancing natural water movement, both within a developing site and throughout urban areas. Some LID strategies include preventing unnecessary soil compaction, retaining rainwater on-site, and designing stormwater systems to put water back into the soil instead of into the storm drain.

Methane (CH4): A hydrocarbon that is a heat-trapping gas carrying a global warming potential recently estimated at 24.5. Methane is produced through anaerobic (without oxygen) decomposition of waste in landfills, animal digestion, decomposition of animal wastes, production and distribution of natural gas and oil, coal production and incomplete combustion of fossil fuels.

Metric ton (Mt): Common measurement for the quantity of greenhouse gas emissions. A metric ton is equal to 2205 lbs or 1.1 short tons.

Mitigation: An intervention to reduce the sources or enhance the sinks of greenhouse gases.

Megawatt (MW): A measure of electricity use. One MW is equal to 1000 Kilowatts.

Natural gas: A fossil fuel that occurs as underground deposits of gases consisting of 50 to 90 percent methane (CH4) and small amounts of heavier gaseous hydrocarbon compounds like propane (C3H8) and butane (C4H10).

Net metering: A special metering and billing agreement between utilities and their customers, which facilitates the connection of small, renewable energy-generating systems to the power grid. When a net metering customer's renewable energy system is producing more power than is being

consumed, the electric meter runs backward generating credits. When a customer uses more power than is being produced, the meter runs forward. Customers are charged only for the "net" power that they consume over a designated period or, if their renewable energy-generating systems make more electricity than is consumed, they may be credited or paid for the excess electricity contributed to the grid over that same period.

ODOT: Oregon Department of Transportation

Oregon DEQ: Oregon Department of Environmental Quality

Oregon DOE: Oregon Department of Energy

Pervious pavement: Pavement (asphalt or concrete) that is designed so that water can move through the pavement and infiltrate into the ground.

Photovoltaic (PV): A solar power technology that converts sunlight into electricity.

Price signal. Information conveyed to consumers and producers, via the price charged for a product or service, thus providing a signal to increase supply and/or decrease demand for the priced item. See definition for Carbon Pricing.

Rain Gardens: Stormwater management structures designed to slow runoff, clean water, and increase soil infiltration.

Renewable Energy: Energy sources that are, within a short time frame relative to the Earth's natural cycles and sustainable. They include non-carbon technologies such as solar energy, hydropower, and carbon-neutral technologies such as biomass.

Resilience: Amount of change a system can undergo without altering state.

Seeds for the Sol: A Corvallis-based non-profit organization devoted to removing the financial barrier to residential solar. In partnership with community members, Seeds for the Sol uses a funding model that mimics the natural cycles of planting, harvesting, and renewal to help more people put solar on their roofs.

Smart Grid: A modernized electrical grid that uses analogue or digital information and communications technology to gather and act on information, such as information about the behaviors of suppliers and consumers, in an automated fashion to improve the efficiency, reliability, economics, and sustainability of the production and distribution of electricity.

Source (greenhouse gas): Any process or activity that releases into the atmosphere a greenhouse gas, an aerosol or a precursor to a greenhouse gas.

Stormwater: Rain, snow, and other precipitation that falls onto buildings, streets, and the ground. Stormwater is managed within the stormwater system of downspouts, gutters, underground pipes, and streams.

350.org: An international environmental organization founded by author Bill McKibben with the goal of building a global grassroots movement to raise awareness about climate change, to confront climate change denial, and to cut emissions of carbon dioxide. 350.org takes its name from the research of Goddard Institute for Space Studies scientist James E. Hansen, who posited in a 2007 paper that 350 parts-per-million (ppm) of CO_2 in the atmosphere is a safe upper limit to avoid a climate tipping point.

Total Maximum Daily Load (TMDL). A calculation of the maximum amount of a pollutant that a body of water can receive and still safely meet the water quality standards of the U.S. Clean Water Act.

Upcycling. The process of converting waste materials or useless products into new materials or products of better quality or for better environmental value.

Urban heat island: A condition that occurs when the urban area is warmed by dark pavement, roof shingles, and buildings.

Vehicle-miles traveled (VMT): A measurement to determine the amount of automobile traffic—can also be used to estimate greenhouse gas emissions.

Vulnerability: The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate variability and extremes.

Wastewater: Used water that contains dissolved or suspended waste materials.

Weather: Atmospheric condition at any given time or place measured in terms of wind, temperature, humidity, atmospheric pressure, cloudiness, and precipitation. In most places, weather can change from hour to hour, day to day, and season to season. Climate is usually defined as the "average weather."

Appendix H: Appreciations

The Corvallis Climate Action Plan Task Force expresses our deep appreciation to all the individuals who contributed to this plan through their ideas and insights, research, technical expertise, writing, editorial assistance, community outreach, encouragement, food, and other vital elements. We are still receiving feedback, so are acknowledging contributions here in lieu of the Topic Specialists Appendix that we held space for in the previous draft.

Inspiration

Linda Geiser John Gentile Debra Higbee-Sudyka Leonard Higgins Charlie Miller

Technical Experts

Energy: Brandon Trelstad (Corvallis Sustainability Coalition Energy Action Team); Carly Lettero (Corvallis Environmental Center)

Land Use: Susan Morre (Corvallis Sustainability Coalition Land Use Action Team)

Solid Waste: Jeannette Hardison (Corvallis Sustainability Coalition Waste Action Team), Andrea Norris (OSU Recycling), Julie Jackson (Republic Services)

Food and Agriculture: Owen Dell (Owen Dell and Associates, LLC); Jason Bradford (Vitality Farms, Farmland LC)

Health and Social Services: Tatiana Dierwechter, Charlie Fautin, Sara Hartstein, Mac Gillespie (Benton County Health Department)

Urban Natural Areas: David Eckert (Corvallis Sustainability Coalition Water Action Team)

Climate Science: Phil Mote (Oregon Climate Change Research Institute)

Greenhouse Gas Emissions Reduction Targets: Robin Fadebo (Merit Systems Services)

State of Oregon Policy: Theresa Gibney

Advisory Panel

Dorothy Fisher Atwood Matt McRae
Bill Bradbury Babe O'Sullivan
Kyle Diesner Ann Scheerer
Kelly Hoell Megan Shuler
L. Hunter Lovins Jane M. Silberstein
Chris Maser Kevin Wilhelm

City of Corvallis

Urban Services Committee: Councilors Richard Hervey, Dan Brown, Roen Hogg

Public Works: Mary Steckel, Scott Dybvad