

**CITY OF CORVALLIS  
CLIMATE ACTION TASK FORCE  
AGENDA**

Tuesday, October 25, 2016  
5:00-7:00 p.m.  
Madison Avenue Meeting Room  
500 SW Madison Avenue

- |       |   |                          |
|-------|---|--------------------------|
| I.    | Call Meeting to Order / Chair Comments                        | Chair Baker              |
| II.   | Review of September 27, 2016 Minutes                          | Task Force               |
| III.  | Climate Action Plan Next Steps                                | Chair Baker              |
| IV.   | Review of Proposed Draft Climate Action Plan                  | Project Manager<br>Smith |
| V.    | Final Status of Georgetown Energy Prize/Take Charge Corvallis | Dybvad                   |
| VI.   | Community Comments  |                          |
| VII.  | Next Steps/ Meetings  | Chair Baker              |
| VIII. | Adjourn   |                          |

**Task Force Members**

Zachariah Baker, Chair  
Kirk Bailey  
Cindy Dahl  
Frank Hann

Ramon Martinez  
Marjorie Stevens  
Brandon Trelstad  
Gordon Zimmerman

**Climate Action Goal**

Over the next two years, take bold action to address climate change by (1) supporting the energy conservation efforts of the Corvallis Georgetown University Energy Prize team, and (2) adopting and beginning to implement a comprehensive long-term climate action plan that will significantly reduce Corvallis' greenhouse gas emissions and foster Corvallis' resilience to the effects of climate change.

**DRAFT**  
**CITY OF CORVALLIS**  
**CLIMATE ACTION TASK FORCE ACTION MINUTES**  
**September 27, 2016**

The City of Corvallis Climate Action Task Force meeting was called to order at 5:02 PM, September 27, 2016, in the Madison Avenue Meeting Room Corvallis, Oregon, with Chair Zachariah Baker presiding.

**ROLL CALL:**

Members Present: Kirk Bailey, Zachariah Baker, Cindy Dahl, Marjorie Stevens, Brandon Trelstad

Excused: Frank Hann, Ramon Martinez, Gordon Zimmerman

Staff Present: Susie Smith, Kris Kelly, Scott Dybvad

**SUMMARY OF DISCUSSION:**

Agenda Item	Actions/Recommendations
Call Meeting to Order	Chair Baker called the meeting to order and provided an overview of the meeting agenda.

Agenda Item	Actions/Recommendations
Review of August 2, 2016 Minutes	Approved by consensus.

Agenda Item	Actions/Recommendations
Project Status, Remaining Steps and Schedule for Plan Completion	Project Manager Smith reviewed the progress made on the Work Plan and Time Line and outlined upcoming steps in the process. Mr. Dybvad provided a short explanation of the materials provided to Task Force members at the beginning of the meeting.

Agenda Item	Actions/Recommendations
Review of Comments from Public Outreach Process and Guidance for Additional Action Evaluations and on the Goals, Targets and Evaluation Criteria	Chair Baker discussed feedback received through the Vision & Action public outreach process. Chair Baker reviewed the proposed Climate Action Plan Goals, Targets and Evaluation Criteria and sought input from Task Force members. Project Manager Smith reviewed the list of action items recommended by staff as options for possible scaling by Good Company. Task Force members offered some modifications and additional suggestions.

Agenda Item	Actions/Recommendations
Update on Georgetown Energy Prize / Take Charge Corvallis	Scott Dybvad provided an update on Take Charge Corvallis activities highlighting the current efforts related to the LED light bulb giveaway.

Agenda Item	Actions/Recommendations
Community Comments	<p>Larry Weymouth asked a question relating to whether or not an action could be included in the proposed Climate Action Plan if it was not deemed scalable by Good Company; staff responded yes.</p> <p>Nettie Schwager asked that the Task Force to replace the word “beef” with “plant proteins such as veggie burgers, beans and tofu” in applicable proposed action items to aide in the reduction of cruelty to chickens.</p> <p>Annette Mills thanked the Task Force and staff for their work to-date and asked that context related to climate change be included as part of the presentation to the City Council on the proposed climate action plan.</p> <p>Cobie deLespinasse also asked the Task Force to consider removing “chicken” as a “beef” substitute in various proposed action items to encourage a shift to plant proteins and aide in the reduction of cruelty to chickens.</p>

Agenda Item	Actions/Recommendations
Next Steps / Meetings	Chair Baker discussed the next and final meeting for Task Force members on October 25.

The Task Force adjourned at 6:52 PM.

An audio recording of the entire meeting can be listened to at:  
<http://archive.corvallisoregon.gov/Browse.aspx?startid=597115>

Reference resources available at:  
<http://www.corvallisoregon.gov/index.aspx?page=1842>



Protecting Earth's Climate for Future Generations

September 27, 2016

Corvallis Climate Action Task Force  
Re: Corvallis Draft Climate Action Plan

Dear Corvallis Climate Action Task Force,

First, we would like to thank you for your collective effort to develop Corvallis' first Climate Action Plan. We understand and respect the immense amount of work involved and congratulate you on achieving this important milestone in the planning process.

Based on our review of the planning work to date, we respectfully submit the following suggestion regarding the establishment of Corvallis's community-wide greenhouse gas emissions reduction target.

CATF's *Climate Change Background and Framework for Development of Long-Term and Interim Greenhouse Gas Emissions Reduction Targets for Corvallis* outlines three options for establishing a community greenhouse gas reduction target: 1) a target consistent with the national reduction commitments expressed in the U.S. INDC; 2) a target consistent with State of Oregon greenhouse gas reduction goals, and 3) a target based on a per-capita community carbon budget allocation of CO<sub>2</sub> emissions, following the original methodology put forth by the City of Eugene to achieve 350ppm by 2100. As you know, the curve resulting from this type of per-capita carbon budget is steep, to say the least.

As a fourth option, we suggest establishing a target based on the global 350 ppm carbon prescription, but using a different methodology to downscale the prescription to the community scale. This summer, the Eugene City Council formally adopted this more feasible, science-based target.

The target, which is based on the annual *global average* emissions reductions necessary to achieve 350 ppm by 2100, calls for reduction of community-wide CO<sub>2</sub> emissions at a rate of 7.6% a year, starting in 2016. That is, if everyone on the globe reduced their CO<sub>2</sub> emissions by 7.6% each year, it is scientifically possible to return earth's atmosphere to 350 ppm by 2100. The target is derived from the global CO<sub>2</sub> prescription detailed in *Scientific Case for Avoiding Dangerous Climate Change to Protect Young People and Nature*. (Hansen et.al., 2013.)

On June 27, 2016, the City of Eugene became the first U.S. jurisdiction to codify a community-wide CO<sub>2</sub> reduction goal based on the best available science and consistent with the global prescription to achieve 350 ppm in the atmosphere by 2100. Other Oregon communities are in the process of doing the same. We hope Corvallis will join these pioneering communities by setting science-based targets and taking commensurate climate action.

Sincerely,

Matt McRae  
Climate Policy Strategist  
541-514-6066  
matt@ourchildrenstrust.org

Coreal Riday-White  
Staff Attorney, YouCAN Program Manager  
541-953-7153  
coreal@ourchildrenstrust.org

**CORVALLIS OPERATIONAL AND COMMUNITY CAP: WORK PLAN AND TIME LINE**

TASK	ESTIMATED DURATION	CATF (TF) MEETING	STATUS	OCT '15	NOV '15	DEC '15	JAN '16	FEB '16	MAR '16	APR '16	MAY '16	JUN '16	JUL '16	AUG '16	SEP '16	OCT '16	NOV '16	DEC '16
<b>1. Organizational Support/Work Plan (Note: this addresses part of CC Scope IV)</b>																		
		10/13	ALL OF TASK 1 COMPLETE	----	TF	---	X											
a. Establish Staff Team, allocate FTE	10/2--10/23																	
b. Draft Work Plan-Internal & Peer Review	10/2--10/16																	
c. Review Processes: CATF, Partners, Public	10/2--10/16																	
d. Identify Consultant Work, Resources	10/2--10/30																	
e. Establish CATF Meeting Support: Monthly	10/2--10/9																	
*CATF Packet	10/9																	
<b>2. Identify External Advisors and Expert/Interested Reviewers, and compile master interested parties list (Note: This supports CC Scope III &amp; IV)</b>																		
		10/13	COMPLETE	----	TF	---	X											
a. Determine Roles, Level of Participation	10/9--11/30																	
b. Outreach and Education of External Task Team/Reviewers	11/19--4/15																	
*CATF Packet	10/9																	
<b>3. Establish Goals/Key Outcomes for CAP (Note: This is part of CC Scope IIA)</b>																		
		11/24	COMPLETE	-----	TF	X												
a. Staff Draft (start with existing plans/goals)	10/19--11/25																	
b. CATF Review (recommend to Council?)	11/24																	
*CATF Packet	11/20																	
<b>4. Establish CAP Framework (Scope, Extents, Assumptions, &amp; Content Outline) (Note: This is part of CC Scope IIC.)</b>																		
	10/9--12/19	12/15	COMPLETE	-----	TF	X												
a. Scope and Extents (i.e. Operational--City Org., Community--UGB)	10/2--10/9																	
b. Update GHG Inventories (City and Community)	10/2--1/15																	
c. Establish Structural Elements	10/2--10/9																	
i. Buildings and Energy																		
ii. Land Use and Transportation																		
iii. Consumption and Solid Waste																		
iv. Food and Agriculture																		
v. Health and Social Services																		
vi. Urban Natural Resources																		
d. Draft CAP Outline (TOC)	10/19--'12/11																	
*CATF Packet	12/11																	
<b>5. Establish Preliminary GHG Reduction Target and Interims (Note: CC Scope IIB)</b>																		
	11/1--1/20	2/2/2016	COMPLETE	-----	TF	---	X											
a. Staff Compile Information for CATF Review:																		
i. Current Science; State, Federal Targets, etc.																		
ii. Corvallis, Community GHG Inventories																		
iii. Other Communities Existing Conditions, Targets																		
b. CATF Establish Preliminary Target(s)																		
*CATF Packet																		

**CORVALLIS OPERATIONAL AND COMMUNITY CAP: WORK PLAN AND TIME LINE**

TASK	ESTIMATED DURATION	CATF (TF) MEETING	STATUS	OCT '15	NOV '15	DEC '15	JAN '16	FEB '16	MAR '16	APR '16	MAY '16	JUN '16	JUL '16	AUG '16	SEP '16	OCT '16	NOV '16	DEC '16
6. Develop Background, Issue Summaries, Evaluation Criteria: written as draft elements of the plan; Staff product with consultant review (Note: Includes Remainder of CC Scope IIA and Part of IIC)																		
	11/1--3/31	3/29/2016	DRAFT ISSUE PAPERS COMPLETE															
a. Development of Issue Papers 1, 2, and 3																		
b. CATF Review, Modify Evaluation Criteria																		
*CATF Packets	3/23																	
7. Compile Existing Strategies/Actions (City and Community); To be Completed by Staff, Consultants, and External Advisors (Note: Part of CC Scope IIC)																		
	11/1--5/31	5/24	COMPLETE															
a. Review/Update Relevant Existing City Strategies/Actions																		
b. Outreach to Community Partners (External Advisors) for Relevant Existing Objectives/Actions																		
c. Research and Compile "Best Practices"																		
d. Staff Develop Additional Potential Operational Objectives/Actions																		
e. Staff and External Advisors Develop Potential Community Strategies/Actions																		
f. Solicit Review and Ideas from Group of External Reviewers																		
g. CATF Review, Add/Eliminate Potential Objectives/Actions																		
*CATF packet	5/20																	
8. Evaluate/Characterize Potential Actions; Consultants and Staff (Note: Part of CC Scope IIC)																		
	2/1--7/31	7/21, 8/2	COMPLETE															
a. Develop Rough (order of magnitude) Cost-Benefit, Estimated GHG Reduction, and Relative Scaling of Options																		
b. Develop Assessment/Characterization of Actions																		
c. Apply CATF Criteria to Actions--Evaluate																		
d. Develop Materials for Task Team/Public Review																		
e. CATF Review																		
*CATF Packet	7/15																	
9. Public Outreach (3 Public Forums to Gain Input on CATF goals, target, evaluation criteria and 6 Topic Areas) (Note: Part of CC Scope III); Includes inviting Task Team Members to Participate and Provide Additional Comments.																		
	8/1--9/30	8/18, 8/23, 9/13	COMPLETE															
a. Public Outreach Session #1: Intro, CAP Development, Opportunity to comment on Goals, Target and Evaluation Criteria																		
b. Public Outreach Session #2: Review and Comment on 6 Topic Areas																		
c. Public Outreach Session #3: Review and Comment on 6 Topic Areas																		
10. Added Phase and CATF Meeting: Review Public Comments, Select Additional Actions for Scaling, Provide Guidance on CAP Goals, Targets and Evaluation Criteria.																		
	9/1--9/27	9/27																

CORVALLIS OPERATIONAL AND COMMUNITY CAP: WORK PLAN AND TIME LINE

TASK	ESTIMATED DURATION	CATF (TF) MEETING	STATUS	OCT '15	NOV '15	DEC '15	JAN '16	FEB '16	MAR '16	APR '16	MAY '16	JUN '16	JUL '16	AUG '16	SEP '16	OCT '16	NOV '16	DEC '16	
11. Develop Draft CAP (Note: Part of CC Scope IIC)	7/1--10/31	10/25	DRAFT OVERVIEW COMPLETE; SECTIONS FOR 6 CATEGORIES TO BE COMPLETE FOLLOWING PUBLIC OUTREACH.																
a. Compile Draft Prioritized "High Priority" Actions for inclusion in CAP. Generate Appendix with Medium and Lower Priority Actions.																			
b. Additional Consultant Research and Analysis (i.e. scaling additional actions)																			
c. Develop implementation recommendations																			
d. Develop Staff-Recommended Plan Based on All Inputs																			
e. CATF Review																			
*CATF Packet	10/19																		
12. Revisit Preliminary GHG Reduction Targets	10/1--10/31	10/25																	
*CATF Packet	10/19																		
13. Public Comment (Seek broader input)	11/7--11/18																		
a. Draft plan revisions based on CATF 10/25 guidance	10/26--11/4																		
14. Evaluate/Incorporate Feedback and Process for Approval	11/21-12/12																		

Vision & Action Goal					
Comments related to climate change from a variety of V&A feedback forums (Chamber workshop, email, small group discussion, staff workshop, stakeholder interviews etc.)					
Date	Name	Comment	Source	Topic: 1-Strengths 2-Challenge 3-Visions 4-Actions 5-Measure	Focus Area
March 12, 2016		Transportation (Public) for evening events so all agencies and economic resources can participate	Workshop 2	3-Visions	Learn and Thrive
March 12, 2016	Richard Hervey	Adequate locally grown food to support our population	Workshop 2	3-Visions	Learn and Thrive
March 12, 2016	Richard Hervey	Energy independence	Workshop 2	3-Visions	Learn and Thrive
March 12, 2016		More dialogue between community and planning for transportation to connect people with services and events	Workshop 2	4-Actions	Learn and Thrive
March 12, 2016		public access to nature, prioritize walk/bike over cars, mixed-use housing, increase wages, broaden labor base	Workshop 2	4-Actions	Learn and Thrive
March 12, 2016	Richard Hervey	Engage with OSU to emphasize local food	Workshop 2	4-Actions	Learn and Thrive
March 12, 2016		Determine where all parks are and how many people they serve. City will increase number of parks so that every household can walk to a park	Workshop 2	4-Actions	Learn and Thrive
March 12, 2016	David Pengelley	Create more public access to nature	Workshop 2	4-Actions	Learn and Thrive
March 12, 2016	David Pengelley	Prioritize bike/walk over cars in streets, parking, transit	Workshop 2	4-Actions	Learn and Thrive
March 12, 2016		Making improvements in moving within the city - public transportation, walkability, etc.	Workshop 2	4-Actions	Learn and Thrive
March 12, 2016		every person can walk or bike to a park. Every child can bike or walk to school	Workshop 2	5-Measure	Learn and Thrive
March 12, 2016		people live work/close together, less commuting, more walk/bike	Workshop 2	5-Measure	Learn and Thrive
March 12, 2016		more access points to nature	Workshop 2	5-Measure	Learn and Thrive
March 12, 2016		Every person can walk to a park or school	Workshop 2	5-Measure	Learn and Thrive
March 19, 2016	Jen Gervais	Climate change - adapting to change energy mix, physical changes, climate justice - housing, food, basic needs for all.	Workshop 3	2-Challenge	Plan and Change
March 19, 2016		Commuting - imbalance of employment and housing. Economic disparity. Climate change.	Workshop 3	2-Challenge	Plan and Change
March 19, 2016	Marge Stevens	Reducing greenhouse gas emissions. Housing climate refugees.	Workshop 3	2-Challenge	Plan and Change
March 19, 2016		Continuing sprawl - car dependency. Follow Eugene, Salem, etc. Climate change.	Workshop 3	2-Challenge	Plan and Change
March 19, 2016	Joel Palmer	Not letting the existing development codes and zoning (and those who administer them) get in the way of innovative and truly sustainable development.	Workshop 3	2-Challenge	Plan and Change
March 19, 2016		Having the flexibility to reach/adjust and be forward-thinking around land use planning and transportation infrastructure	Workshop 3	2-Challenge	Plan and Change

Date	Name	Comment	Source	Topic: 1-Strengths 2-Challenge 3-Visions 4-Actions 5-Measure	Focus Area
March 19, 2016		Climate change - water availability and storage, adaptation and mitigation, climate refugees	Workshop 3	2-Challenge	Plan and Change
March 19, 2016		Climate change - prevention, mitigation, deal with public health impacts	Workshop 3	2-Challenge	Plan and Change
March 19, 2016		Move away from a 1950s infrastructure, which is oriented around the automobile/fossil fuel.	Workshop 3	2-Challenge	Plan and Change
March 19, 2016		Incentivize alternative energy sources and sustainable housing. Increase access to alternative transportation.	Workshop 3	3-Visions	Plan and Change
March 19, 2016	Robert	Dense, walkable, ride share by transit.	Workshop 3	3-Visions	Plan and Change
March 19, 2016		Non-motorized neighborhoods, bike boulevards, expansion of transit system, fully funded safe routes to school program (509), inclusionary housing implemented in Corvallis. Flexibility in policy.	Workshop 3	3-Visions	Plan and Change
March 19, 2016		Bike/ped counts, CO2 emission reductions, number of housing units of various sizes available, motor vehicle counts.	Workshop 3	3-Visions	Plan and Change
March 19, 2016	Marge Stevens	People live simply and cooperatively with a very low carbon footprint. Eating locally-grown organic food.	Workshop 3	3-Visions	Plan and Change
March 19, 2016	Marge Stevens	Electricity is produced renewably and locally.	Workshop 3	3-Visions	Plan and Change
March 19, 2016	Court Smith	When the number of vehicles in Corvallis are one quarter the average household size.	Workshop 3	3-Visions	Plan and Change
March 19, 2016	M. Kaenitzer	A city off the grid as soon as possible - 1 year. Solar panels everywhere, solar collectives. Local food available year round, either through growing or storage. Support of local, small, sustainable businesses. Diverse housing with innovative design (commercial on main streets, not housing). Dark night sky. Earthquake development code standards. Saving natural features.	Workshop 3	3-Visions	Plan and Change
March 19, 2016		Less cars, car-free zones, increased walkability/bikability. Increased alternate transportation. Increased gathering places/green spaces. More compact development.	Workshop 3	3-Visions	Plan and Change
March 19, 2016	Kent Daniels	A. Significant declines in automobiles. B. A great, adequate park, natural area, and trail system.	Workshop 3	3-Visions	Plan and Change
March 19, 2016		Fewer vehicle miles traveled.	Workshop 3	3-Visions	Plan and Change
March 19, 2016		Has bike/pedestrian infrastructure that encourages the "interested but cautious" cyclist/green lanes, separated bike lanes and boulevards. Corvallis is a leader in active transportation and more people.	Workshop 3	3-Visions	Plan and Change
March 19, 2016		Sustainable transportation options	Workshop 3	3-Visions	Plan and Change
March 19, 2016		Local food production enhanced	Workshop 3	3-Visions	Plan and Change
March 19, 2016		Reduce car dependency	Workshop 3	3-Visions	Plan and Change

Date	Name	Comment	Source	Topic: 1-Strengths 2-Challenge 3-Visions 4-Actions 5-Measure	Focus Area
March 19, 2016		Regional transportation system - to Lebanon, Amtrak, etc.	Workshop 3	3-Visions	Plan and Change
March 19, 2016		Transportation options - no motorized neighborhoods, safe routes to school, expand transit system, walkable	Workshop 3	3-Visions	Plan and Change
March 19, 2016		Sustainable, green and energy efficient community	Workshop 3	3-Visions	Plan and Change
March 19, 2016		Bikable, walkable city with denser population, less exterior sprawl.	Workshop 3	3-Visions	Plan and Change
March 19, 2016		More bicycles than automobiles circulating. No bus schedules needed.	Workshop 3	3-Visions	Plan and Change
March 12, 2016		Expansion of access to healthy transportation option for all, car-free neighborhoods	Workshop 2	3-Visions	Plan and Change
March 19, 2016		Bike boulevards, expansion of transit system, inclusionary zoning, walkable neighborhoods.	Workshop 3	4-Actions	Plan and Change
March 19, 2016	Spencer	Test with alternative modes of transportation (available immediately) and increase awareness/education and development of urban farming. Integrating OSU and community projects. Increase resources to begin more urban and suburban farming.	Workshop 3	4-Actions	Plan and Change
March 19, 2016	Melanie Place	Not more of the same as what has been done the last few years. Allow and encourage. Tiny houses - build more small houses, 2 bedroom 1 bath houses (not apartments). Maintain and increase green space. More incentives for solar for individual home owners.	Workshop 3	4-Actions	Plan and Change
March 19, 2016	Kent Daniels	A. A transportation planning process that prioritizes walking, biking, and use of public transportation. B. Adequate, reliable funding for development and maintenance of an integrated natural area and trail system.	Workshop 3	4-Actions	Plan and Change
March 19, 2016	Joel Palmer	Zoning that allows for commercial urban agriculture (gardens managed by CSA, produce sold to neighborhood). Incentivize developers to build mixed-use/-income/-demographic neighborhood centers.	Workshop 3	4-Actions	Plan and Change
March 19, 2016		Bike boulevards, bike racks, bike neighborhoods, wider sidewalks, decrease speed limits	Workshop 3	4-Actions	Plan and Change
March 19, 2016		Integrated, comprehensive regional transportation system	Workshop 3	4-Actions	Plan and Change
March 19, 2016		Expanded bus routes, hours more multi use paths, adequate parking	Workshop 3	4-Actions	Plan and Change
March 19, 2016	Stephanie Mehlenbach en	Increase bus routes and schedules. Protect open space at all costs.	Workshop 3	4-Actions	Plan and Change
March 19, 2016		Change city codes/additional bus frequency, including frequent intercity buses to/from Albany, Lebanon, Philomoth. Allow private sector to activate transportation.	Workshop 3	4-Actions	Plan and Change
February 18, 2016		# of car free people days	Staff Workshop	5-Measure	Plan and Change

Date	Name	Comment	Source	Topic: 1-Strengths 2-Challenge 3-Visions 4-Actions 5-Measure	Focus Area
March 19, 2016		Increased mode share by bus/walk/bike by community members of all ages	Workshop 3	5-Measure	Plan and Change
March 19, 2016		Fewer vehicle miles traveled	Workshop 3	5-Measure	Plan and Change
March 19, 2016		Increased ride sharing, biking, walking, reductions in emissions	Workshop 3	5-Measure	Plan and Change
March 19, 2016		Community walkability and clustered housing	Workshop 3	5-Measure	Plan and Change
March 19, 2016		Vibrant downtown and neighborhood centers linked by multimodal paths and transit	Workshop 3	5-Measure	Plan and Change
March 19, 2016		Accessible abundant and diverse green spaces, interwoven in walkable/bikeable neighborhoods	Workshop 3	5-Measure	Plan and Change
December 11, 2015	Annette Mills	The city is vulnerable to any natural disaster and climate change. There are not systems in place to react to a disaster. Lacking emergency preparedness.	Stakeholder Interview	2-Challenge	Steward and Sustain
March 19, 2016	Brandon Trelstad	Climate change, future water and food scarcity. Livability versus development, ongoing funding for long term programs versus short term problems (long term thinking generally), being distracted as a community by issues that really don't matter in the big picture.	Workshop 3	2-Challenge	Steward and Sustain
March 19, 2016	Debra Higbee-Sudyka	Transportation other than car - inadequate connection to railroads or Albany so residents and OSU and business workers can commute outside state. Too many greenhouse gas emissions and not enough political will to address it.	Workshop 3	2-Challenge	Steward and Sustain
March 19, 2016	Kris Paul	Making transition to sustainable energy/low carbon living and climate change adaptation/increase in need of services related to that. Keeping services funded as community grows. Housing/maintain current level. Too much GHG, changing to sustainable energy.	Workshop 3	2-Challenge	Steward and Sustain
March 19, 2016	James Rodell	To effectively prepare for earthquake/disaster survival. Climate and refugees. Continuing to nurture community mindedness. A major earthquake could devastate for decades an unprepared community.	Workshop 3	2-Challenge	Steward and Sustain
March 19, 2016	Rachel Ozretich	The climate crisis. The water crisis (looming) and the likely food shortage (looming) - all three related.	Workshop 3	2-Challenge	Steward and Sustain
March 19, 2016		Climate change mitigation and adaptation	Workshop 3	2-Challenge	Steward and Sustain
March 19, 2016		Climate change/financial resources/infrastructure	Workshop 3	2-Challenge	Steward and Sustain
March 19, 2016		Climate change	Workshop 3	2-Challenge	Steward and Sustain
March 19, 2016		adaptation and mitigation relative to climate change	Workshop 3	2-Challenge	Steward and Sustain

Date	Name	Comment	Source	Topic: 1-Strengths 2-Challenge 3-Visions 4-Actions 5-Measure	Focus Area
March 5, 2016	Mike Beilstein	Climate change - meeting human needs with fewer resources. Lack of housing. Commute	Workshop 1	2-Challenge	Steward and Sustain
March 19, 2016	Richard Hervey	Climate/economic immigration, feeding, housing, and healing all of us.	Workshop 3	2-Challenge	Steward and Sustain
March 19, 2016		Climate change. Emergency preparedness.	Workshop 3	2-Challenge	Steward and Sustain
March 19, 2016		Homes built to include solar/heat pumps/gray water usage/rainwater collection - be prepared) for succession. Cascadia/confederacy.	Workshop 3	3-Visions	Steward and Sustain
March 19, 2016	Brandon Trelstad	Corvallis is net carbon neutral by 2040 and is a thriving, sustainable, affordable (long-term sense), community that preserves its historic resources.	Workshop 3	3-Visions	Steward and Sustain
March 19, 2016		A town designed to live without cars - walkable town. Able to grow without expanding. Net zero town. Live well without car. Housing options. Sustain. Find creative ways to grow. Balanced lifestyle not focused on money.	Workshop 3	3-Visions	Steward and Sustain
March 19, 2016		Reduce vehicle travel miles per capita. Reduce. Increased population per acre or?	Workshop 3	3-Visions	Steward and Sustain
March 19, 2016		Measure GHG. 50% of SF/MF homes have done one or more energy savings activities.	Workshop 3	3-Visions	Steward and Sustain
March 19, 2016	Kris Paul	Less cars on the road. Solar on high percentage of homes, businesses and public buildings. Building codes require higher level of efficiency.	Workshop 3	3-Visions	Steward and Sustain
March 19, 2016		1. Much greater bike/walk/public transit. 2. Less waste generation. 3. More young people involved.	Workshop 3	3-Visions	Steward and Sustain
March 19, 2016		1. Better bike commute numbers, bus ride numbers. 2. Break down waste numbers, look for reduction. 3. Voting demographics, counting at certain events.	Workshop 3	3-Visions	Steward and Sustain
March 19, 2016	Rachel Ozretich	Immediate focus on climate change preparation and mitigation.	Workshop 3	3-Visions	Steward and Sustain
March 19, 2016		Resilient community with local food source	Workshop 3	3-Visions	Steward and Sustain
March 19, 2016		Address climate change effects through land use and transportation planning	Workshop 3	3-Visions	Steward and Sustain
March 19, 2016		Car-free design	Workshop 3	3-Visions	Steward and Sustain
March 19, 2016		City code that prepares for pop growth and climate change	Workshop 3	3-Visions	Steward and Sustain
March 19, 2016		Immediate focus on climate change prep and mitigation	Workshop 3	3-Visions	Steward and Sustain
March 19, 2016	Brandon Trelstad	1. Carbon or gas tax 2. True cost accounting that includes externalities in economic analysis and long term (100+ year 3-Visioning. 3. Stronger, more independent local governments. 4. Economic development decoupled from growth.	Workshop 3	4-Actions	Steward and Sustain
March 19, 2016		Zoning and building codes which support car-free community with diverse housing.	Workshop 3	4-Actions	Steward and Sustain

Date	Name	Comment	Source	Topic: 1-Strengths 2-Challenge 3-Visions 4-Actions 5-Measure	Focus Area
March 19, 2016		Drop GHG emissions. Encourage more tax credits for energy conservation - solar, rain barriers, insulation - combined with continued community outreach.	Workshop 3	4-Actions	Steward and Sustain
March 19, 2016	Kris Paul	More quickly on climate Action plan.	Workshop 3	4-Actions	Steward and Sustain
March 19, 2016	Annette Mills	Change city codes to promote more sustainable living (green building, production and processing of food, incentives to install rainwater collection, kitchen compost buckets provided, etc.).	Workshop 3	4-Actions	Steward and Sustain
March 19, 2016		Carbon/gas tax	Workshop 3	4-Actions	Steward and Sustain
March 19, 2016		Promote local food production	Workshop 3	4-Actions	Steward and Sustain
March 19, 2016		promote local rain cathchment/water conservation	Workshop 3	4-Actions	Steward and Sustain
April 18, 2016	Denis White	promoting and supporting neighborhood-scale cooperative gardening and food sharing would offer another form of local self-sufficiency and buffering against unanticipated or unfavorable changes in the future. Local organic farmer Harry MacCormack has been a strong voice for these innovations over the years.	Email	4-Actions	Steward and Sustain
March 19, 2016		All households are well equipped for emergencies	Workshop 3	5-Measure	Steward and Sustain
March 19, 2016		Local food production and storage	Workshop 3	5-Measure	Steward and Sustain
March 19, 2016		Increase in locally grown food	Workshop 3	5-Measure	Steward and Sustain
March 19, 2016		Ozone, particulate matter, CO all decreasing	Workshop 3	5-Measure	Steward and Sustain
March 19, 2016		Carbon emission reduction	Workshop 3	5-Measure	Steward and Sustain
March 19, 2016		Reduction in waste-generation and energy consumption	Workshop 3	5-Measure	Steward and Sustain
March 19, 2016		Reduce vehicle miles per capita	Workshop 3	5-Measure	Steward and Sustain
May 3, 2016	Jeff Davis	Clean air and water	Chamber Workshop	5-Measure	Plan and Change
		Awareness of land use/transportation issues and the need to create complete neighborhoods to reduce driving.	Survey Monkey	1-Strengths	Plan and Change
		the bike and pedestrian network and fare free transit	Survey Monkey	1-Strengths	Plan and Change
		The bicycle friendly environment	Survey Monkey	1-Strengths	Plan and Change

**Vision & Action Goal**  
**Public comments related to climate change from**  
**Survey Monkey responses to Imagine Corvallis Draft Vision statements**

Q54: When imagining your vision for Corvallis in 2040, how do you feel about this statement?  
 Planning for Growth & Livability - Corvallis supports smart growth and development in its land use, water resources, transportation and infrastructure to promote a green, compact, higher-density, safe and sustainable city.

Answer Choices	Responses	
Strongly Disagree	6.67%	12
Disagree	8.89%	16
Agree	37.22%	67
Strongly Agree	42.22%	76
Not Sure	5.00%	9
<b>Total</b>		<b>180</b>

Comments or suggestions for this item (optional):

- I believe we need to re-think the concept of continuous, long term, linear growth. There are some excellent books addressing the concepts of steady state economy. "Supply Shock" by Brian Czech is one.
- I'm on the fence about higher density for family workforce housing.
- How is "smart growth" defined?
- Wider bike lanes and covered bike parking.
- What do you mean by "smart growth" maybe make it a bit clearer what that is referring to or not include it.
- I'm not very familiar with "smart growth" ideas, but what I read seems good, although it was clearly meant to and was rather vague.
- The term "smart growth" should be replaced with something contemporary. Let's not live in the 2000s anymore. The rest of the concepts in this statement are solid.
- student focused housing is taking over Corvallis and taking away the smaller homes that permanent residents might consider.
- Does anyone seriously support stupid growth?
- I read yet more city driven regulation on how a citizen can use the land they pay taxes on. As usual, planners want to cram people into little box apartments and regulate their lives
- Should say "to promote efficient and effectively run city." Nobody wants "compact" and "higher-density" living.
- Your utopian dream will destroy individuality and intrude into peoples lives
- What is "smart growth"?
- Many people who have the money to live here are not interested in compact high-density housing.
- Would prefer no growth to "smart growth."
- We should be more specific about sustainable vis-a-vis Carbon free.
- Highlight green
- No growth.
- Not sure of the meaning of "smart" growth and development

- Unlimited growth is never smart--we must set a limit that our resources can support. We also need to ensure that we are not overbuilding now for OSU--education is increasingly moving to online and OSU may look very different in the near future with fewer students living in Corvallis. We do not want a bunch of crappily built apartment buildings sitting empty because we didn't plan ahead.
- This has to include public safety. Police, Fire, Emergency Medical and 9-1-1 services are all stretched to the maximum now.
- We could always do more.
- Delete 'smart' and replace it with 'low environmental impact'. Delete 'green' and replace it with 'low carbon'. insert after the word 'safe' the words 'economically equitable,'
- As long as the high density is not in my neighborhood. Higher density can destroy a neighborhood.
- There is still too much construction of overly expensive houses. Rents are way too expensive we need rent price- control measures in Corvallis, Benton County, and better yet, for the whole state of Oregon. I own my own home but I can't imagine paying rent in Corvallis and trying to work, pay rent, pay off a student loan or save money to go to college or buy a car or anything for that matter. Corvallis should NOT pursue more population growth or Corvallis will morph into just another dumb over-trafficked town with too many big national chain businesses, too many McMansions, just "too much" and unfortunately it seems to be heading in that direction.
- too broad of a statement. There should be specific
- The overall concepts are fine, however without public safety, you have nothing. I recommend a statement that brings safety out more prominently.
- replace "compact,higher density" with "diverse density"
- It is not doing it now. Look at all the mega-mansions on 5 acres surrounding the city.
- We have failed to support housing for those who serve our community. Our environment and transportation suffer because we aren't anything close to sustainable.
- Why does "higher density" have to be in this statement? How about "appropriate housing?"
- I'm not sure how compact we want to be. Realistically, is that something people really want. Personally, my family has zero interest in living ontop of our neighbors. This should be tempered with expanding our urban growth boundaries.
- It's unreasonable for a population to continue to grow without some physical growth as well (for example, approving the expansion of Kings and building more family housing in the timber hill area). This "no-growth" push comes from the
- elite in town who already have their homes and have no problem keeping the rest of us from owning. It's amazing how much resistance they put up to ANY growth/building/change and is incredibly frustrating.
- have to question the higher-density part
- I agree the City should promote and educate about green and sustainability, but we don't have to be a maverick and leader in this area, despite what some LOUD small interest groups think and say at Council meetings. They are not the voice of the majority.
- Corvallis does not do enough to promote rainwater harvesting, particularly in light of "global warming" and probable drought conditions. Corvallis does not place enough emphasis on public transportation. Free bus isn't great if the bus only shows up once an hour and only goes in one direction.
- LDC application and NUMBYs make any growth difficult at best.

- This is one of the major assets of the community.
- Change "action addressing the" to "adapting to the ..."
- Right now all we are doing is addressing or obsessing about predicted/hypothesized effects of climate change (to the limited extent we can predict them). This would be a good thing to become much more rigorous and realistic about. For one thing, we aren't going to have any significant impact on India's, China's and Africa's choices and impacts.
- what does 'environmentally sustainable' mean and from what perspective--the fish? the farmers? the college student? what if 'climate-neutral' actions conflict with other vision statements--i.e., removing all car travel (very climate neutral) creates an unconnected city (plan and change vision statement). which takes priority? I think we don't know enough now about what it would take to be a climate neutral city to have it be a specific part of the vision stmt.
- Again, this is a misplaced priority. Why are we fired up about being 'climate neutral' when some of our parks aren't safe for our children to play in?
- Have a ways to go.... maybe by 2040?
- I like sustainable community. But "Climate Neutral" is a specific goal that is too specific in that much can change regarding global response to climate change. Preferred language is "Corvallis is an environmentally sustainable, climate sensitive city, with broad..." This keep climate change in the conversation but does not set a specific target in the Vision.
- What does climate-neutral mean?
- Given the rapidly increasing rate of climate change, we cannot afford to simply stay neutral. We must cut our carbon output as rapidly as possible, our most important goal. We also should be increasing our ability to cope with climate- related changes, both current and those we can predict. For example, maintaining open space for gardens and planting tall deciduous trees near buildings to absorb carbon and provide shade during summer and sunshine during winter.
- Trying, but not there yet.
- While it is important to pursue renewable energy sources and move away from finite resources such as oil and natural gas, the science behind anthropogenic climate change is still in question (i.e. that humans are responsible for changes in the climate). In spite of the party line that the "science is settled," the very nature of science is that it is always up for review.
- We need to be carbon-neutral instead of "climate-neutral". We need to address the causes of climate change, not just the "impacts".
- Does 'climate-neutral' mean 'net zero emissions'? Delete the word 'action' and replace it with 'involvement'. Insert the words 'causes and' before the word 'impacts'.
- You can only do so much and so fast, you can give people info, and the deniers will still deny the problems. But overall, the City of Corvallis is making a pretty good effort.
- 'climate-neutral' is not enough by 2040, given the current warming crisis, our expected trajectory and inherited damages to the planet we as conscientious citizens should begin immediately implementing a new economy and city infrastructure design that humanely meets our citizens and environments needs. we should be expected to strive for a regenerative (positive (not neutral(world impacting)) ecosystem/city .
- Bike riding and buying local.
- Local citizen action cannot address most of the impacts of climate change. Change to read: "...broad citizen awareness and willingness to support actions needed to reduce and mitigate the impacts of climate change.
- YES, and a what point do we say the population of Corvallis has grown enough?

- Corvallis only welcomes those that believe in lies and diversity to fit their politically correct agenda but does nothing for the individual
- I agree with all except the welcoming statement. I support being a community that welcomes diversity but disagree that we should be proactive on welcoming climate change refugees.
- What is resilience?
- Gee, if we pack enough people into a compact high-density Corvallis, we can make Corvallis a concentration camp.
- Yes!
- Tax incentives to businesses to create environmentally friendly operations is important.
- I'm hesitant on the "welcoming increased diversity" portion. Not because I don't want it, but because I am doubtful that our community can achieve it.
- Diversity is White Genocide
- "Resilience" seems like an incredibly vague, ambiguous word, which in turn makes the entire statement vague and ambiguous.
- "Climate refugees" will be important to plan for. I am very in favor of open doors, where we have planned to integrate more people into as our city as climate problems intensify.
- Pretty vague statement - not sure the "thrust" of this compared to other statements.
- We don't need to keep adding more people to our community. Diversity is amazing and I fully support that. We need to get past this idea of continual growth or death of an economy.
- Climate change is a global problem, and it is difficult to distinguish small scale variations from actual global trends. Population migrations? Not sure I want us to be a destination for migrants from distant parts of the globe.
- Not a clue, do any of our leaders really know what the climatic change will be? We protect water sheds, but are we adapting to what we see now or is there a plan? What if drought like California hits here? What about sever coastal weather? What about a potential eruption or volcanic activity?
- No idea what this means
- Not entirely sure what this means. In the short and medium term, migrations will have more to do with costs and quality of life more than climate effects.
- maybe reworded to indicate we will address climate change impacts regardless of the cause (i.e., not just growth related impacts)... "Corvallis addresses climate change and growth driven by population migrations..." Maybe then the previous vision statement can be removed or reworked to take out 'climate neutral' reference.
- Is 'population migrations' another way of saying 'catering to the homeless'? Other than students, it seems like the
- most population growth we have is the homeless population. Why? Because we ask them to come with our free-for-all shelters and a justice system that does not hold people responsible for their criminal behavior. The needs of the many are supposed to outweigh the needs of the few, but in Corvallis the needs of the few are placed on a pedestal as being more important than the livability of the people who actually live here and pay taxes.
- If we have any "climate change deniers" among us, I'm glad they're not the leaders in power.
- Please ensure the public safety needs of the community are kept in mind as the city's population grows. I envision the police department with a modern, updated headquarters to enable it to keep up with this growing community. A safe city is a place where parents

Q57: When imagining your vision for Corvallis in 2040, how do you feel about this statement? Resiliency & Emergency Preparedness - Corvallis plans for community resiliency in the face of climate-related and unpredictable events, focusing on individual and neighborhood preparedness, as well as emergency response and recovery programs. Emergency preparations and response planning give special attention to the community's most vulnerable populations.

Answer Choices	Responses	
Strongly Disagree	5.75%	10
Disagree	11.49%	20
Agree	36.21%	63
Strongly Agree	40.80%	71
Not Sure	5.75%	10
<b>Total</b>		<b>174</b>

Comments or suggestions for this item (optional):

- however, emergency services are done by the county and not the city
- There should be a risk-benefit analysis to prioritize.
- who are the most vulnerable populations??? Children?
- What's the earthquake plan?
- Delete this nonsense!!!! Emergency preparedness should include warning systems, emergency supplies and equipment.
- Emergency preparedness is important but not the catch all that you seem to think it is
- Some redundancy with 3 above.
- I have yet to see anything on earthquake preparedness in Corvallis, but perhaps I am not looking hard enough.
- If so, it should be better publicized
- Yes - how prepared does Corvallis feel in case of earthquakes -small or the big one? And even if it one doesn't happen, something else might and stored water, food and supplies could be useful in another emergency.
- The addition of a focus on vulnerable populations is crucial to success of this program. This means that actions may need to be taken to address problems that do not exist for the community as a whole, but are very problematic for specific populations. I support this kind of work. I also think that infrastructure updates and upgrades need to be a part of the resilience and emergency preparedness language. If we do not prioritize updates, upgrades, and general maintenance of our infrastructure, we will be much more vulnerable to shocks and stresses.
- What about state and regional coordination? How will we respond to the influx of people from the coast when the big one happens? What if the bridges to Linn County go out and we have no access to I-5? This is way to insular.
- Emergency preparations are critical for the well being of the community. EVERYONE needs to be prepared.
- There are emergency plans, but it is hard to say how realistic they are.
- Change "plans for community resiliency" to "builds adaptive capacity ..."
- This is a good practical idea.
- this feels like the third statement related to climate change. can they be combined into one?

- We should be well prepared for natural emergencies.
- There absolutely should be some specific mention of earthquakes when talking about disaster preparedness.
- Endless talk of earthquake doesn't mean the community populace is generally prepared for emergencies.
- An earthquake would result in a much bigger emergency than what the changing climate can do, and our preparedness should focus on that.
- City has a .25 position for this area; not a priority and is more of a popular item vs requirement. City does not have resources to adequately address a natural disaster (Timberhill fire).
- Does this include natural disasters such as the upcoming Cascadia earthquake? If so maybe we should spell it out in the statement.

Q58: When imagining your vision for Corvallis in 2040, how do you feel about this statement? Open Spaces, Natural Areas & Wetland Protection - Corvallis works to preserve and protect significant tracts of open space, including parks, natural areas and wetlands within and surrounding the city, maintaining the area's rural feel, natural vegetation and environmental character through compact urban development.

Answer Choices	Responses	
Strongly Disagree	2.25%	4
Disagree	5.06%	9
Agree	39.33%	70
Strongly Agree	52.25%	93
Not Sure	1.12%	2
<b>Total</b>		<b>178</b>

Comments or suggestions for this item (optional):

- Preserve neighborhood parks
- I like the statement. It will require a definition of "significant" as some areas that might not be significant now will be as climate change becomes more severe.
- While some land can be developed.
- I'd suggest that a concerted effort be started to ensure that the lakes on the east side of the river in the former Morse Bros. gravel operation become recreational amenities for the City of Corvallis in the future.
- I would like to see explicit acknowledgement of our streams and rivers flowing through town, not just wetlands. Our waterways need to have room to "bang around" in order to provide ecological values and be resilient as climate changes. Wherever possible, I would like to see maximum possible stream buffers, at least 50' as specified in current code.
- Who wants "compact urban development"? Are you trying to make housing entirely unaffordable? What elitists you are!!
- The people do this naturally and do not need the City to do it for them
- I believe this is important, however the rural feel may have to have some lenience as the city and university will most likely grow rapidly in the upcoming years.

many in our community) would put steward existing City properties over and above the priority to actively protect new lands.

- I believe there are advocates for that, however, do not feel the City has much impact on that.
- add - being careful that large preserved tracts do not block future orderly development. To see an example of this look at Owens farm.
- Delete "through compact urban development" The preservation and protection of natural areas requires the sustained funding of programs that procure those services. Compact urban development can actually pose a risk to natural areas because of increased stormwater runoff and other types of disturbance.
- If Corvallis does do this, and the other cities in the Valley do not, Corvallis will be a highly desirable place to live, with very high housing prices to match.
- We have significant natural public boundaries around Corvallis that are reasonably accessible. Those should be maintained and are good buffers for our community.
- "Compact urban development" is the second way you've tried to avoid saying "high density housing." If you build it they will come...and so will the issues.
- Only if we also allow for SOME expansion of the urban growth boundary...
- Very strongly agree!
- Maybe. Corvallis seems to approve building in wetlands and on unstable hillsides... but, the parks are great!
- City sets aside natural areas, but does not do any maintenance.
- take out the words natural vegetation. Blackberries, poison oak...
- Not sure if we should explicitly mention the urban growth boundary here. By design, development is \*supposed\* to be easier within the UGB.

Q59: When imagining your vision for Corvallis in 2040, how do you feel about this statement? Agricultural Lands & Food Security - Corvallis supports healthy and sustainable agricultural and food security by preserving and protecting farmlands surrounding the city and encouraging small-scale agriculture.

Answer Choices	Responses	
Strongly Disagree	3.31%	6
Disagree	5.52%	10
Agree	36.46%	66
Strongly Agree	45.30%	82
Not Sure	9.39%	17
<b>Total</b>		<b>181</b>

Comments or suggestions for this item (optional):

- Current state land use law does this
- We need to encourage agriculture generally, small, medium and large. We need jobs and economic growth, and agriculture supports an agrarian environment.
- This doesn't feel like it really addresses food security, maybe including language that plays to increasing food availability to those who cant economically afford it.
- Local, sustainable agriculture provides little food security for low-income residents.
- GMO non-GMO
- Are you gong to direct what crops Benton county farmers produce rather than let the market decide?

- Does the world really need this much grass seed? If half of the farmers would switch from seed to food, they could probably feed the whole country! :)
- not just any type of agriculture, there should be an emphasis on sustainable, organic, with less animal agriculture
- after the word 'by', change the sentence to read 'converting monocultured, conventionally farmed land to organic food production and developing local food processing, storage, and distribution facilities so that food that is grown locally is consumed locally, reducing export and import of food.'
- Also, the city will give tax incentives for a variety of food-processing facilities to operate in the community to help build resilience.
- I do not understand how government promotion of local small-scale agriculture increases healthy and sustainable agricultural and food security.
- There's too much growing useless things like lawn grass-seed grass and not enough foods like grains, nuts, berries and vegetables. However, there's still more of those things here than most places so that's good but a lot of walnut and hazel orchards have been lost over time.
- I don't know how the City of Corvallis goes about preserving and protecting farmlands surrounding the city. This is an "overreach" of the City needs to focus on.
- So, when is Corvallis going to stop expanding its Urban Growth boundary? And what about large scale agriculture? You are showing your biases.
- Much of this is outside the scope of the city - that's more of a county task
- Most good farmland has been reasonably protected. We should continue but provide for better access to processors and market for those goods.
- Not sure this is the job of the city....
- Need to reduce grass seed agriculture and focus on diversifying the
- Maybe. CORVALLIS was sure quick to try and build bike paths through private farms along highway 20. Bike paths serve what, 100 people per year? Food farms serve 1000's of people per year.
- Not a role of government to fill when so many other basic areas lack funding.

Q60: When imagining your vision for Corvallis in 2040, how do you feel about this statement? Renewable Energy - Corvallis derives most or all of its energy from renewable energy sources to power its buildings, infrastructure, transportation systems, public institutions and private homes.

Answer Choices	Responses	
Strongly Disagree	9.50%	17
Disagree	9.50%	17
Agree	27.37%	49
Strongly Agree	39.11%	70
Not Sure	14.53%	26
<b>Total</b>		<b>179</b>

Comments or suggestions for this item (optional):

- depends on cost to the taxpayer. Need to be able to afford to live here on a pension.
- There should be solar panels on EVERY government building. Think about building a parking structure with a living garden on top. more education about recycling and

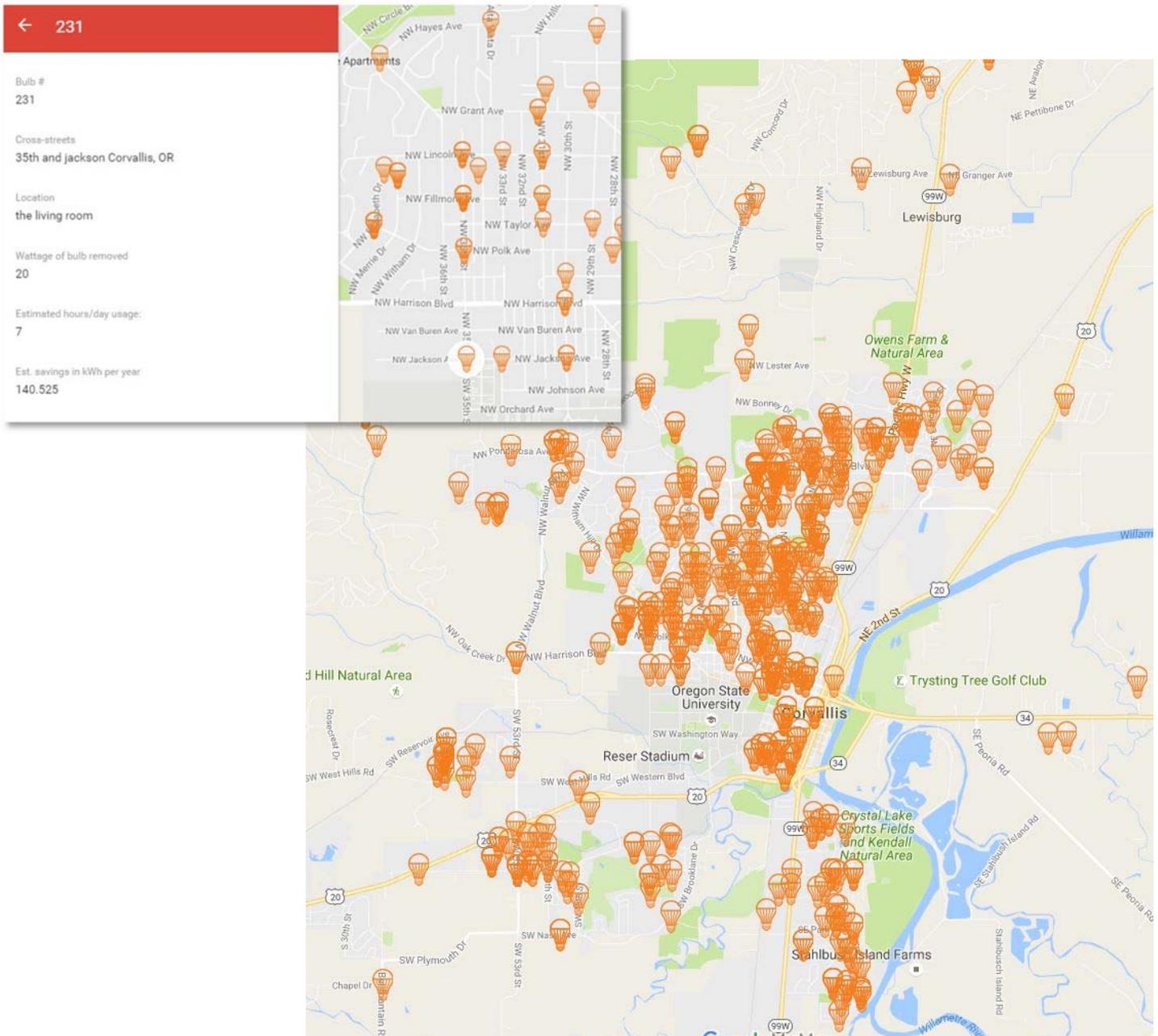
- not sure how you 'power infrastructure'.
- Sounds nice but would it be expensive for residents?
- Let's get there!
- So many options are available today for providing alternative energy - this is a great way to invest in the city's future and provide sustainable options for future energy needs.
- Agree as long as we're not talking nuclear. Solar is our best bet--all new-builds should be required to provide at least 1/2 their electricity from solar.
- Doing great but need to do more.
- Add the sentence. 'The generation, grid and storage systems required to accomplish this is established.'
- I have no idea, if I had to guess, most private homes are still primarily fossil fuel powered, i.e. coal burning electric supply, some natural gas, etc. We have Pacific Power "Blue Sky Plan"(I think?) primarily supplied by wind power, but I doubt that most residents of Corvallis and greater Benton county use it. That said, I can't say I feel great about wind- power due to the number of birds and bats that get killed by the wind mills. We also added insulation to our attic, sealed gaps, put in new better windows and doors and live in half of a duplex(840 sq feet) so we use far less energy than most people.
- This is an okay vision statement, but will likely be constrained by the broader scale nature of energy production (i.e., well beyond the control of Corvallis).
- The grid needs to be able to handle lots of people generating surplus power; perhaps support for energy storage?
- I consider hydro power to be very clean and short of nuclear about as good as it gets. We should conserve and be as energy efficient as we can but respect individual choices.
- Private homes? How is that too be achieved? If an affordable way is found, in all for it, but I am sceptical.
- This is a commendable goal and is something we should work towards as resources (people and money allow).
- Another 'climate change' vision. Why can't these all be consolidated into one vision statement. There is no way the City will have the people or monetary resources to achieve all these visions related to climate change, nor should they even try.
- Maybe. Seems like a smoke & mirrors sort of calculation. Did we reduce, reuse, recycle energy sources? No, not so much...
- This should be balanced with cost-effectiveness.

### Staff comments on potential actions for greenhouse gas scaling

Staff has evaluated the comments and examined the mitigation actions that have not yet been scaled. We offer the following actions as those with potential value in further investigation into their GHG mitigation potential:

	<b>Action Code</b>	<b>Strategy</b>	<b>Action</b>
1.	B&E MC-16	Shift to Renewable Energy	Develop and adopt an energy code chapter into the Corvallis Municipal Code consistent with the parameters specified in the 2011 Oregon Energy Reach Code.
2.	B&E MC-18	Conservation and Efficiency	Re-establish the "Green Shares" program, which provides education to builders/developers on energy efficient HVAC equipment, including life cycle cost analyses for their potential customers that demonstrate lower overall costs of energy saving equipment.
3.	B&E MC-28	Building Preservation	Impose a GHG fee as part of issuance of demolition permits for residential, commercial or industrial buildings that are still in occupiable condition.
4.	B&E MC-29	Conservation and Efficiency	Incentivize installation of heat pump water heaters, require consideration for replacements, require in new construction.
5.	LU&T MC-14	Transportation System Management	Make increasing efficiency of transportation infrastructure without sacrificing access and mobility needs, and prioritizing the needs of bicycles and pedestrians' priorities in the TSP update.
6.	LU&T MC-19	Single Occupancy Vehicle Ownership and VMT Reduction	Establish motor vehicle-free streets with exceptions for dedicated transit, deliveries (possibly with time-of-day limitations), emergency vehicles and disability access. (Pilot projects could include OSU bike-tram way concept and downtown.)
7.	LU&T MC-20	Promote Electric and Low-Carbon Fueled Vehicles	Promote local production and access to biofuels such as renewable diesel and biogas.
8.	C&W MC-18	Waste Reduction	Implement best practices to encourage or require recycling of demolition and construction materials or consider bans from transfer stations on the following: recyclable metal, cardboard, plastic film, carpet, clean gypsum, clean wood, and asphalt shingles.

## Georgetown University Energy Prize update for the 9/27/16 Climate Action Task Force meeting



The Georgetown University Energy Prize (GUEP) team (or Take Charge Corvallis) has given away over 90% of the 35,000 LED lightbulbs to Corvallis community members and are on track to have them all distributed by November 1<sup>st</sup>. The maps I've passed around show the distribution of bulbs across the community, at least the 350 that reported where they were installed and what type of bulb they replaced. The combined savings of these 35,000 LEDs will reduce our community's energy use by an estimated 2.7 million kWh per year. That's an annual savings of \$250,000 – more than twice the amount of money that was invested – and a reduction of 1,900 tons of CO<sub>2</sub>, equivalent to 400 cars.

The bulb giveaway has prompted many residents to take additional steps, as seen by the significant uptick in participation in their Direct Install program and interest in Harvest Sunshine and other solar programs.

Data tracking for the GUEP competition ends at the close of 2016. The top ten finishers in energy reduction will compete for the \$5 million prize by submitting Final Reports covering relevant aspects of the community's plan, performance, and future prospects. Updated standings for the competition are still not available, but the folks at Take Charge Corvallis continue to push for energy use reductions across the City.

## MEMORANDUM

TO: Climate Action Task Force

FROM: Zach Baker – Chair of the Climate Action Task Force

DATE: October 16, 2016

RE: **Climate Action Plan Next Steps**

---

As we head into our next meeting on October 25<sup>th</sup>, I need to (1) update you on some issues that have come up since our last meeting that have implications for our next steps, and (2) based on those issues, offer a revised path forward for our work for your consideration.

Until this point, we have met every deadline we have set for ourselves and heading out of our September meeting, it seemed like we were primed to continue to do so. The next steps were for staff to: (1) continue to refine/simplify the presentation of the action tables (2) work with the consultant on scaling some additional actions (3) develop implementation recommendations and (4) develop a staff-recommended plan for the Task Force's review. The Task Force would then review the staff recommended Climate Action Plan (CAP), staff would make any revisions asked for by the Task Force, issue the revised Draft CAP for public review, and provide the Draft CAP along with public comments to Council for consideration and ultimate adoption at the December 12<sup>th</sup> City Council meeting.

But, as staff was working through the items above, it became apparent that the tasks were a bit more complicated than originally expected. At the same time, the overall path for wrapping up all of the Council goals started to crystallize and is moving towards a mixture of adoption and acceptance by Council for each goal – recognizing that some things under each goal will be ready for adoption and others will still need to be worked through into next year. These issues, the implications of these issues for our next steps, and a recommended path forward based on these issues are further detailed below.

### **Description of Issues**

As mentioned above, staff ran into some challenges in putting together the Draft CAP. These largely centered on simplifying the presentation of information and working through the implementation considerations for the actions:

**1) Simplifying the Information/Presentation.** As the Task Force knows, simplifying the presentation of the technical information we have assembled has been an ongoing challenge. It's something we've talked about on multiple occasions and also heard about in public comment and from Council. As a result, staff really wanted to spend the time to try to improve the presentation of the information in advance of our next meeting and

ultimately in anticipation of Council review. Based on a draft of the charts I saw, I think you will notice a marked improvement in the simplicity of the presentation. But, this effort took substantial staff time, leaving staff with less bandwidth to work through the implementation considerations for each action item (which proved challenging in its own right as discussed below).

**2) Implementation Considerations/Drafting the CAP.** To complete a Draft CAP as planned, staff needed to work through the implementation considerations for each action. Some of the implementation considerations for the actions include timing of implementation (near-term, mid-term, long-term) and the continuum of implementation desired (education, voluntary incentives, regulation, or all of the above). The Task Force peripherally dealt with these issues by reviewing the actions, but we didn't have an in-depth conversation on these particulars. As a result, staff found themselves trying to sort these items out without specific guidance/direction.

As staff tried to work through these issues, there were other implementation considerations, particularly for the community plan portion of the CAP, that still were big unknowns – specifically which community entity or entities were going to commit to take the lead/partner with the city on a particular action. And, even if staff proceeded forward despite these questions, there was a bigger question of whether the Task Force would be able to have a satisfactory level of conversation about the prioritization in our last scheduled meeting and whether the public would have time to be informed about the prioritization and an adequate opportunity to comment prior to Council consideration. Given all of these challenges/questions, staff felt that it would be better to continue the implementation conversation with the Task Force into early next year.

As a start, staff identified possible implementation measures for each of the actions for the community plan. You'll see those in the charts located under a separate cover.

Outside of the challenges staff was working through, the Council has been trying to work through the larger questions about how the Council Goals fit together, how the goals will wrap up for this Council term, and what will be done with the recommendations coming out of the goal work into the next Council term and beyond. Not all of these pieces have been sorted out by Council, but it appears that for the goals with Task Forces, the goal work will likely continue into next year – with some portion of recommendations being adopted by Council before the end of this Council term and other recommendations being accepted for further consideration. This is likely to allow for continued coordination of the goals and provide additional time to work through implementation issues and funding needs.

Considering this overall context for the Council Goals and the recent challenges staff have experienced with completing a full draft of the CAP, I'm proposing a revised path forward for the CAP/completion of our goal. The details of the proposal follow below.

## Next Steps Proposal

Given the context above, instead of pushing forward with finalizing a fully complete CAP by the end of the year as originally planned, I suggest we do the following:

- 1) **Recommend Council Adoption of a CAP framework that includes the CAP goals, greenhouse gas reduction target, and the high priority mitigation and adaptation strategies and actions (along with the issue papers/documents that led to these).** The Draft CAP that you will see in the packet for the October 25<sup>th</sup> meeting includes this scope of information, with the issue papers transformed into three appendices. These items make up a substantial portion of the CAP and have been the subject of much Task Force work and public review. Adoption of these documents would mark a significant step in City and community efforts to address climate change by setting a greenhouse gas reduction target for the City and community and providing a framework of strategies and actions the City and community will pursue to mitigate and adapt to climate change.
- 2) **Recommend Council Acceptance of the possible implementation measure charts.** Acceptance of these charts will acknowledge the substantial work that has gone into these charts and provide a basis for further refinement/conversation on the implementation measures and how they might be prioritized. The detailed information in these charts goes well beyond any information we've had to date as a city and community to use in evaluating our options for mitigating and adapting to climate change.
- 3) **Recommend Council extend the work of the Climate Action Task Force into 2017 (for six months, January-June) with a charge for the Task Force to continue to work through implementation measures for the CAP strategies and actions and overall implementation of the CAP.** This recommendation would continue the momentum of the Task Force work, while providing some additional time for further analysis/conversation/public comment on specific CAP implementation measures.
- 4) **With the assistance of staff, recommend a few CAP actions for consideration/inclusion in next year's budget proposal.** These actions would likely be taken from the municipal operations portion of the CAP and would allow the city to begin to make progress on addressing climate change/implementing the CAP framework while the Task Force continues to work through recommendations/phasing for the other implementation measures.

## Conclusion

Before concluding this memo, let me say that there is probably no one who wants to see a completed CAP more than me. Having worked with the community group who originally brought the idea to Council, having campaigned on the importance of the City acting on climate

change, having helped secure the Council Goal to develop a climate action plan, and now, serving as Chair of the Task Force, I would really like to see us get to the finish line. And, I think we are substantially there. But, I think taking a few more months to fully work through the implementation considerations and solidify community partners as outlined above is a worthwhile approach. Ultimately, the CAP finish line is a metaphorical one, as even after it's complete, it will be a living document that will need to be regularly reviewed, tracked, evaluated, revised, and updated to ensure that we are able to respond to the challenges that climate change presents for our community into the future.

If we ultimately agree on pursuing the revised approach as outlined above, I do hope that you will continue to be willing to serve on the Task Force. It has been an absolute pleasure serving with all of you and your knowledge, expertise, commitment, and passion has been a real asset to our efforts.

And, whether or not you are willing to continue to serve if the Task Force continues, you should be proud of the work we have done to this point. Addressing climate change is not an easy issue, but you have laid a solid foundation for our city and community to begin to understand what it will take to tackle the issue and to make our city and community more resilient.

TO: Climate Action Task Force for October 25, 2016 Meeting  
FROM: Susie Smith, Project Manager  
DATE: October 17, 2016  
THROUGH: Mark W. Shepard, P.E., City Manager  
SUBJECT: Draft Climate Action Plan Review



Action Requested:

The Task Force is requested to review the attached materials and provide guidance to staff in preparing a draft Climate Action Plan (CAP) for additional public comment and consideration by the Corvallis City Council.

Discussion:

At the September 27<sup>th</sup> Task Force meeting, the Task Force reviewed the public comment received during the public outreach process and selected additional actions for Good Company to “scale.” That work has been completed, and the selected actions have been incorporated into the spreadsheet that reflects the summary of the consultant’s evaluations (which is included in this packet). Staff also was directed to prepare a draft CAP for review by the Task Force at its October 25<sup>th</sup> meeting.

As staff began the process of refining the collective of “strategies” and “actions,” we recognized that many of the actions were actually a mixture of “*what*” the City may focus on accomplishing and “*how*” we could accomplish it through implementing specific measures. In working to refine and simplify the lists of actions, we found it important to separate the actions from the many potential implementation measures that could be considered to accomplish the actions. This has been completed for the community plan element of the CAP. Staff did not develop the same level of refinement for the municipal operations element of the CAP.

The attached draft CAP includes a simplified set of materials relative to the content outline and overview documents reviewed previously by the Task Force. It includes an “Introduction and Overview” section, which was developed based on the previous documents reviewed by the Task Force. This section addresses the actions the Task Force has taken to establish greenhouse gas reduction targets, CAP goals and evaluation criteria, and references three appendices, which are the background documents the Task Force has reviewed and approved. It includes both Community and Municipal Operations elements with the strategies and actions that were ranked the highest and evaluated by the consultant. Both mitigation actions and adaptation actions are included. This draft CAP is recommended for your consideration as the document that would be forwarded to the City Council for adoption in December.

Also attached under a separate cover is the set of materials that includes the following:

1. Community Plan Element—Strategies, Actions and Implementation Measures for All Actions
2. Technical and Co-Benefits Evaluation of Highest Ranked Strategies and Actions for Both Community and Municipal Elements (Note that this is the Good Company Summary Table)
3. Master Lists of Strategies and Actions with Reference Codes, Initial Rankings, and Comments Received.

This set of materials is included as context for your review of the draft CAP and for your consideration to forward it to the City Council with a recommendation to accept (not adopt) it. It represents work that has been completed to date, including public input and consultant review, however, it is a “work in progress” and not ready for adoption.

Attachments:

1. Draft Climate Action Plan
2. Supplemental Packet of Supporting Materials

**DRAFT  
CORVALLIS  
CLIMATE  
ACTION  
PLAN**

**October 19, 2016**

## INTRODUCTION AND OVERVIEW

### *Corvallis Takes Bold Steps to Address the Threats of Climate Change...*

Scientific consensus is evident—warming of the global climate system is occurring, and the resulting impacts to natural systems, economic conditions and the well-being of communities throughout the world are increasing. Nations, states and communities across the globe are responding to this challenge. Corvallis has focused attention on this challenge since the 1990s, and the community has undertaken many initiatives that have reduced fossil fuel consumption and greenhouse gas emissions. This Climate Action Plan (Plan) is an extension of those efforts.

In 2015, the Corvallis City Council adopted a Climate Action Goal for 2015-2016, which included “...adopting and beginning to implement a comprehensive, long-term climate action plan that will significantly reduce Corvallis’ greenhouse gas emissions and foster Corvallis’ resilience to the effect of climate change.” The City Council appointed the Climate Action Task Force (Task Force) to develop the Plan. The Plan describes goals, targets, and evaluation criteria for strategies and actions to reduce greenhouse gas emissions. It also includes strategies and actions intended to help the community adapt and be resilient to the impacts of climate change. It is intended to serve as a guidance framework for future community and municipal actions.

### *Why Corvallis Should Act Now...*

Corvallis cannot significantly impact the global warming problem on its own. Even achieving the local targets identified in this Plan will require State and federal actions to spur increased efficiencies and to curb the generation of carbon dioxide and other greenhouse gas emissions associated with power production, vehicles, economies and other core elements of our society. However, local action to address climate action is beneficial for several reasons.

- Corvallis climate action strategies will help the community prepare for potentially significant impacts that will test our infrastructure, emergency and social services, and our access to food, water and energy supplies.
- Corvallis climate action strategies will have economic, social, and environmental benefits to the community over time and will support other community livability objectives.
- Corvallis climate action strategies will add to the “critical mass” of local community climate initiatives, which collectively can cause changes in existing State and federal policy frameworks, trigger climate mitigation actions of other communities and change supply markets.
- Failure to act could leave the community increasingly vulnerable to fluctuations in the supply and cost of food, water and energy, and may heighten the disruption of services, commerce and quality of life that could result from disasters such as floods, landslides and wildfires.

### *Corvallis Greenhouse Gas Reduction Target Addresses Global Concerns...*

According to the Intergovernmental Panel on Climate Change (Panel), which is the globally recognized leading authority on climate change, warming of the climate system is “unequivocal,” human influence is clear, and recent human-caused emissions of greenhouse gases are the highest in history.<sup>i</sup> Recent unprecedented changes in the climate have had widespread impacts on human and natural systems. And, based on existing atmospheric greenhouse gas concentrations and ongoing emissions at today’s levels, numerous challenging consequences are predicted to occur in the Willamette Valley and across the state. The Panel has concluded that “the risks of abrupt or irreversible changes will increase as the magnitude of the warming increases,”<sup>ii</sup> and that greenhouse gas concentrations must be reduced in order to stabilize

climate conditions and avoid passing catastrophic tipping points. (A summary of scientific conclusions regarding climate change and anticipated impacts is further provided in Appendix 1, pp. 1-3.)

Nations and communities around the world have been tackling this challenge for several decades. The Paris Accord, reached by 195 nations and the European Union in 2015, established pledges to dramatically reduce global greenhouse gas emissions in order to curb global warming at 2°C (with a goal of capping it at 1.5°C) over preindustrial global temperatures. (See Appendix 1, pp. 3,4.) This Accord, along with State and federal actions that have been taken to address climate change, is a call to action.

---

CORVALLIS COMMUNITY GREENHOUSE GAS  
EMISSIONS WILL BE REDUCED BY 75%  
BELOW 1990 LEVELS BY THE YEAR 2050.

---

The Task Force considered targets for the U.S., the State, and other communities before setting a target for Corvallis. Most targets that have been established to date are 75%-80% below 1990 levels by 2050. The U.S. has pledged to reduce emissions by 26-28% below 2005 levels by 2025. To accomplish this, the White House projects that “the U.S. target will roughly double the pace of carbon pollution reduction in the U.S. from 1.2% per year on average during the 2005-2020 period to 2.3-2.8% per year on average between 2020 and 2025.” The long-term U.S. target is to reduce emissions by 80% below 2005 levels by 2050.

The Oregon Legislature set the following targets for the State in 2007:

- By 2010, arrest the growth of Oregon’s greenhouse gas emissions and begin to reduce them;
- By 2020, achieve GHG levels that are 10% below 1990 levels; and
- By 2050, achieve GHG levels that are at least 75% below 1990 levels.

The Task Force set a target to reduce greenhouse gas emissions 75% by 2050 (as compared with 1990 levels), aligning with the State of Oregon target. This target equates to about a 3.2% reduction annually, factoring in projected population increases. (See Appendix 1, pp. 4-12 for additional information about how the Corvallis target was developed.)

### ***Climate Action Goals...***

The Task Force set the following goals to guide development and implementation of the Climate Action Plan:

Goal 1--The Climate Action Plan will establish and monitor greenhouse gas emissions reduction targets for the Corvallis community that guide short-, medium-, and long-term priority strategies and actions the City and community partners will undertake to achieve at least Corvallis’ proportionate share (or some other expression of commitment) of greenhouse gas mitigation. Periodic reporting and updates to the Climate Action Plan will enable the City to respond to changing conditions and needs.

Goal 2—The Climate Action Plan will reflect the urgent need to effect significant greenhouse gas emissions reductions in the near term by prioritizing, as highest and most immediate, actions which are relatively the most effective and readily achievable by the City organization and community partners.

Goal 3—The Climate Action Plan will support community preparation for anticipated climate change-related impacts (such as water shortages, severe weather events, and unpredictable energy prices and availability) and enhance the community’s ability to adapt and be resilient.

Goal 4—The Climate Action Plan will seek and foster cooperative partnerships and leadership from local public institutions, private businesses, non-profit organizations, and community members, as well as regional, state and federal agencies and interests that can have a significant impact on the Climate Action Plan’s success.

Goal 5—The Climate Action Plan will incorporate actions that achieve other co-benefits in addition to greenhouse gas emissions reductions, including:

- Energy efficiency and greater energy independence from fossil fuels
- Sound economic investments (positive cost-benefit or return on investments)
- Community livability
- Environmental quality and ecosystem resiliency
- Public health and well being
- Healthy local economy and local self-reliance
- Equity and accessibility for low income/disadvantaged community members

#### ***Climate Actions Will Have Multiple Community Benefits...***

A primary focus of this Plan is to identify actions that will be most effective at reducing community greenhouse gas emissions at relatively low cost (per metric ton of CO<sub>2</sub> equivalent) or that will result in cost savings over time. However, as shown in Goal 5, above, the Task Force also emphasized other “co-benefits” of climate actions to the community. The Task Force established evaluation criteria for the potential actions that addressed the potential effectiveness and feasibility, financial and economic, environmental, and social impacts of the potential actions. (See Appendix 2, pp. 6-9 for additional information about the co-benefits evaluation criteria. The scoring of co-benefits for the strategies and actions in this plan is provided under separate cover.)

#### ***Successful Climate Action Requires Community-wide Involvement...***

Development of the Plan has involved City staff, community partners, topic area experts (including a team of technical consultants), and participation of many members of the community with a focus on identifying the most feasible, productive and cost-effective actions we can take now to reduce greenhouse gas emissions. The Task Force listened to public input at all of its meetings, and incorporated three phases of community involvement in the process. As the Plan moves forward into implementation, ongoing collaboration and partnerships among a variety of organizations and institutions will be needed, along with broad-based community participation. (See Appendix 2, pp. 15, 16 for additional information about how the Corvallis Climate Action Plan was developed.)

#### ***How are Climate Actions Evaluated and Prioritized?***

Hundreds of possible climate mitigation and adaptation actions were considered in the preparation of this Plan. The process of refining these actions and evaluating how well they met the Task Force goals was a multi-step process. It involved preliminary screening and input from staff and the Task Team members, and a more in-depth analysis of the highest ranked potential actions in order to determine their greenhouse gas reduction potential and relative cost. This is a critical step in order to ensure that available community resources are applied most effectively for the highest productive benefit.

The project technical consultant performed this analysis, using Corvallis-specific data where possible, to determine how much greenhouse gas the actions could eliminate in Corvallis and at what cost. Where local data was not readily available, the consultant used regional or national data. Some of the actions were determined by the consultant to be “unscalable” for cost or mitigation potential, for a variety of reasons (primarily due to the general nature of an action, unknown time frames, or unpredictable potential results). The technical consultant also applied the “co-benefits” evaluation criteria (described above) to the highest ranked actions. (See Appendix 2, pp. 4-9 for additional information on how the potential actions were evaluated.)

Because of the limited time frame and budget for this project, not all of the identified actions could receive this level of evaluation. Over 80 of potential mitigation actions received detailed effectiveness evaluations. The highest ranked actions have been included in this Plan. The detailed analyses performed by the consultant are in a data base now housed at the City of Corvallis for reference in developing specific implementation measures and plans. (The summary information on the consultant’s evaluations is provided available under separate cover).

### ***Scope and Leadership Responsibilities...***

The Plan includes *community* and *municipal operations* elements. The *community* element includes strategies and actions targeted at reducing greenhouse gas emissions throughout the areas and activities within the Corvallis urban growth boundary (UGB). Community strategies and actions relate to current and future urbanization and management of the lands within the UGB, as well as the provision of urban services. Strategies affecting agricultural, forest and other rural uses, services and development patterns outside the UGB are outside the City’s current and projected jurisdiction and are, therefore, beyond the scope of this Plan.

For community actions that fall within the City’s services or regulatory jurisdiction, the City will lead their implementation. Many of the climate mitigation and adaptation actions, however, are outside the City’s regulatory jurisdiction. In these cases, other community service providers or organizations will need to lead the implementation of actions. This Plan *does not* mandate that external community partners perform identified actions--it *does* reflect the aspiration of the City Council and the Task Force that community partners will work together to achieve the goals and targets.

The *municipal operations* element includes strategies and actions that will reduce and mitigate greenhouse gas emissions associated with City of Corvallis municipal operations. It also includes actions the City can take to prepare City facilities, properties and services for the impacts of climate change over time. The City will lead all municipal operations climate actions. (See Appendix 2, pp. 1,2 for additional information on the scope of the Plan.)

### ***Relationship to Other City Goals, Plans and Existing Actions Underway...***

This Plan is one of several City Council undertakings for 2015-2016. The City Council also launched a Vision and Action Plan Goal, a Sustainable Budget Goal and a Housing Development Goal. The Task Forces for these initiatives have coordinated their efforts to ensure consistency, and to leverage actions the plans may have in common to accomplish high priority objectives for the community. The resulting scope and schedule for implementing climate actions will need to align with City and community priorities and available resources, and with the City’s provision of basic City services. (Go to <http://www.corvallisoregon.gov/index.aspx?page=66> for more information on the Council goals.)

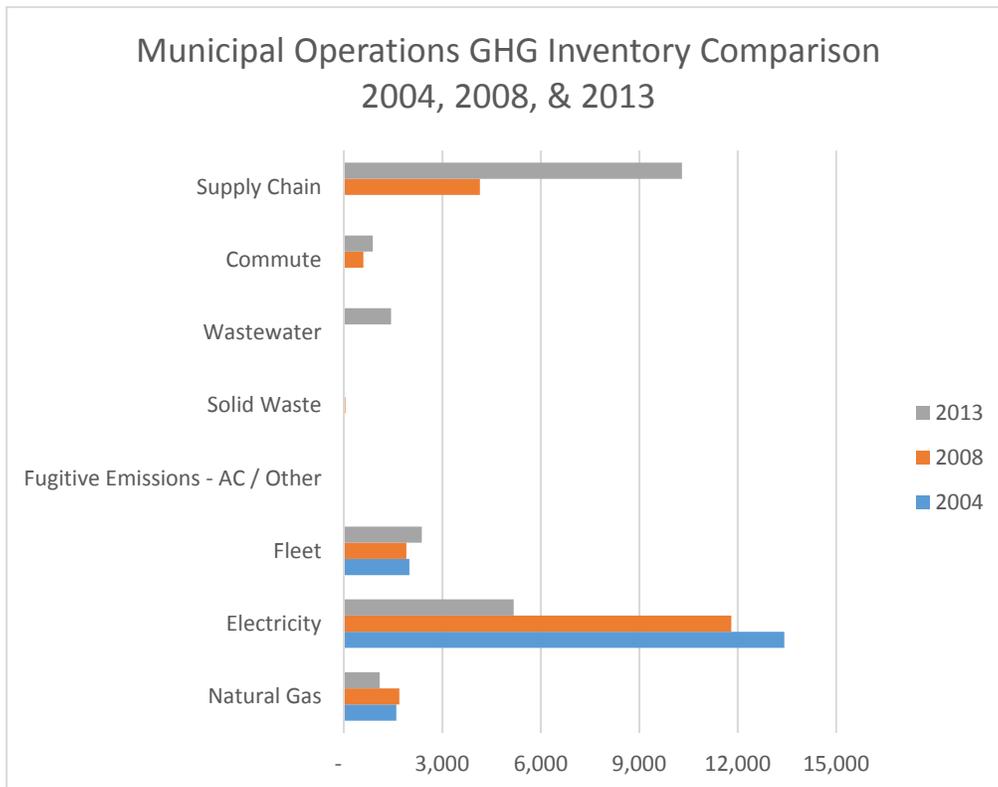
Other City and community plans will assist in implementing climate action objectives, and the strategies and actions identified in this Plan will likely impact many of them. For example, the Corvallis Comprehensive Plan (which relates to land use), the Transportation System Plan, the Stormwater Master Plan, the Urban Forestry Management Plan, and the Parks and Recreation Master Plan are all plans that either currently support, or that can be updated to support, implementation of climate mitigation and adaptation actions. In addition to supporting the implementation of high priority greenhouse gas reduction actions, these plans may help implement actions that would have relatively high co-benefits to the community, but which do not rise to the level of “high priority” in this Plan.

There also are existing plans and actions being undertaken throughout the community by a variety of other agencies and community organizations that will help meet the goals and targets of this Plan. (See Appendix 3, pp. 4-23 for information existing plans, policies and actions that support this Plan.)

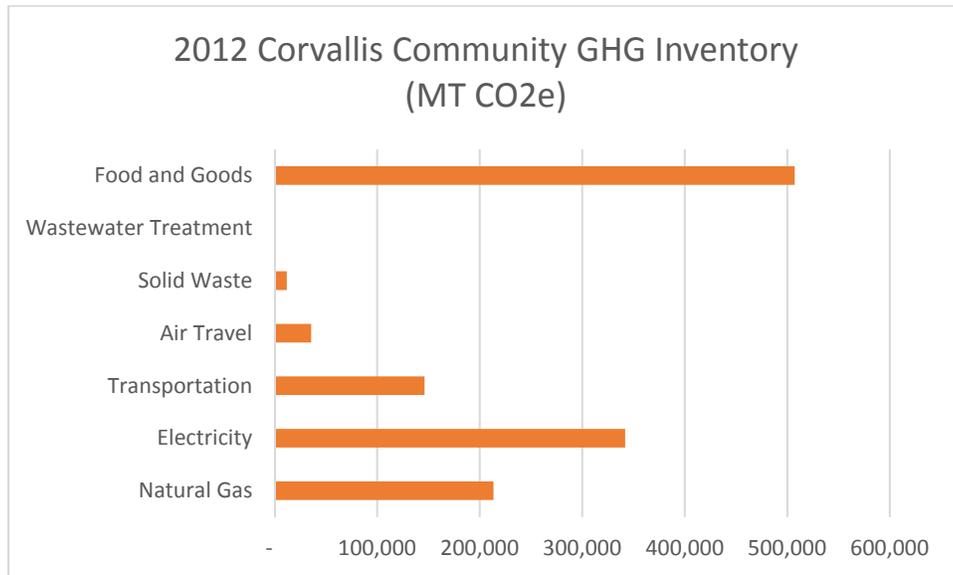
***The Corvallis Carbon Footprint—A Starting Point...***

Communities across the country maintain greenhouse gas inventories, which assist in identifying baseline emissions, targeting priority areas for emissions reductions, and tracking progress over time. The City of Corvallis conducted initial greenhouse gas emissions inventories for municipal operations in 2009 for the years 2004 and 2008, and recently completed an update for 2013. In 2013, the City completed an inventory for the 2012 Corvallis community emissions. (See Appendix 3, pp. 1-4 for additional information on Corvallis greenhouse gas inventories.)

Total greenhouse gas emissions generated by municipal operations in 2013 were 21,289 metric tons of CO<sub>2</sub> equivalent (MTCO<sub>2</sub>e). The breakdown of inventoried emissions for 2008 and 2013 are shown below.



Total emissions in 2012 for the Corvallis community are estimated at 1,257,115 MT CO<sub>2</sub>e. The figure below summarizes the findings based on the five Basic Emissions Generating Activities plus Household and Government Consumption.



### ***The Climate Action Plan is Organized into Six Action Areas...***

The strategies and actions in this Plan are categorized into the following six action areas:

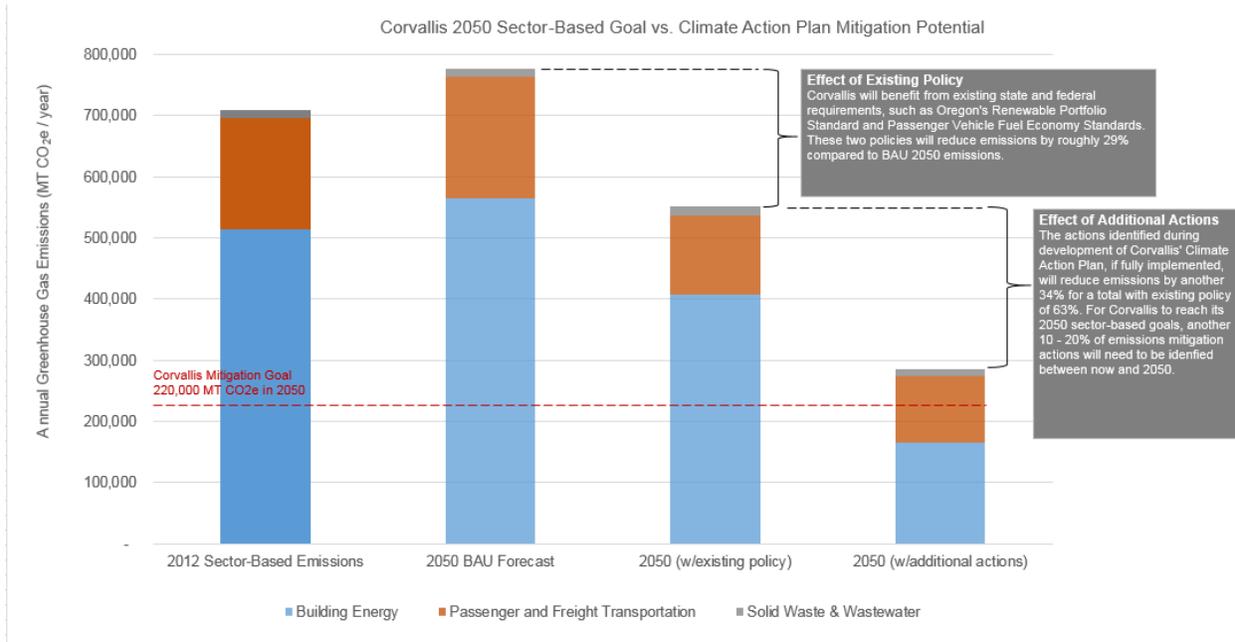
- Buildings and Energy
- Land Use and Transportation
- Consumption and Waste
- Food and Agriculture
- Urban Natural Resources
- Health, Social Services and Community Well-Being

Each section includes a description of the action area, and the highest ranked strategies and mitigation and adaptation actions for the community and municipal operations elements of the Plan. The first three sections (i.e. Buildings and Energy, Land Use and Transportation, and Consumption and Waste) are the primary target areas for mitigation actions, because the Corvallis community can impact greenhouse gas emissions the most in these areas. (The complete sets of mitigation and adaptation actions are available under separate cover.) (See Appendix 2, pp. 9-15 for detailed information on each of the six action areas.)

### ***Greenhouse Gas Reduction Potential of the Corvallis Climate Action Plan...***

The project technical consultant estimates that the policies and actions already set into motion at the State and federal levels will account for emissions reductions of nearly 30% in Corvallis. These actions, such as requirements for reducing coal-fired electrical generation and increasing the fuel efficiency of automobiles, will significantly reduce Corvallis' greenhouse gas emissions. But those actions alone do not get the Corvallis community to its 75% emissions reduction target. The actions identified in this Plan, if fully implemented, will reduce emissions by another 34%.

For Corvallis to reach its 2050 targets, another 10-20% of emissions mitigation actions will need to be identified between now and 2050. The chart below compares the Corvallis community emissions inventory with a projected 2050 “business as usual” case, and shows estimates of how much the actions evaluated in this Plan could contribute to meeting the target, along with the estimates of reductions that will accrue through State and federal actions. Even if Corvallis succeeds in capturing the reductions available from the “high priority” actions evaluated in this Plan, we will still have more work to do to meet our target.



### ***Plan Implementation—What Happens Next?***

The Climate Action Plan provides a solid foundation for pursuing effective community climate actions. Community partners that are poised and ready to assume leadership and act on actions identified in the Plan are encouraged to do so. However, more work needs to be done to achieve broad-based implementation of this Plan throughout the community.

The following are some of the specific steps to be considered as the community moves forward to implement the Plan:

- The greenhouse gas reduction target should be linked to community targets for reducing fossil fuel consumption, increasing reuse and recycling, etc. in order to translate greenhouse gas emissions to things to which people can better relate. An example might be a community-wide goal for people to reduce electricity use by X% by year Y.
- Oversight and coordination of community actions among the partner agencies is needed to identify willing lead community partners and to track the actions and resulting greenhouse gas reductions achieved over time. The mechanism for this needs to be identified.
- Municipal operations actions will need to be further reviewed by lead departments for timing, feasibility and resource requirements within the framework of budgets, capital improvement plans, and long-range housing, land use and transportation plans. This next step will aid the City in prioritizing and seeking funding for actions within the broader context of City functions and Council priorities.

- Communication strategies need to be developed and implemented to gain broader awareness, support and participation in climate change mitigation and adaptation actions.
- A schedule for reporting activities and progress toward the greenhouse gas reduction target to the City Council and other stakeholders, as well as a plan for periodic greenhouse gas emissions inventory updates, needs to be determined.

It will also be important to integrate implementation of this Plan with the other City and community goals, and within the resource capabilities of each community partner. Development of implementation plans to achieve the City Council’s Climate Action Goal will be included in the Community Action Plan work that will be moving forward as part of the Imagine Corvallis 2040 Vision and Action Plan work.

---

<sup>i</sup> Climate Change 2014—Synthesis Report: Summary for Policymakers; IPCC; 2014; p.2.

<sup>ii</sup> Climate Change 2014—Synthesis Report: Summary for Policymakers; IPCC; 2014; p.16.

## BUILDINGS AND ENERGY

### What is in the Buildings and Energy Category?

The Buildings and Energy Category addresses energy used in residential, commercial and industrial buildings in Corvallis. Buildings use energy to make and operate them. While the environmental (including GHG emissions) impacts of construction are noticeable, the day to day energy use of a building after construction adds up to a much greater impact over a building's life, and can be overlooked as a source of long-term emissions and, therefore, an opportunity for mitigation. Building energy sources include the variety of sources used to generate electricity, as well as those sources that are deployed onsite for mechanical, heat and cooling purposes. These include methane, propane and sometimes liquid fuels and onsite renewables. Generally, commercial and residential building systems use energy for lighting, appliances, computers, mechanical systems for heating, ventilating and air conditioning, and other lifestyle-related choices. For industrial buildings, energy sources may be different, especially for heat, steam and other mechanical energy. Some of the other energy sources considered are wood waste and other energy dense waste products.

### Why Does It Matter?

The emissions from buildings represent approximately 39 percent of the US CO<sub>2</sub>e emitted. (i.e., 21% in residential, 18% in commercial). Residential buildings endure longer than other energy consuming systems (according to the Center for Climate and Energy Solutions), so retrofitting and planning for lower energy consumption, while keeping people comfortable in changing conditions can make a significant impact on building-related GHGs. According to the U.S. Environmental Protection Agency, in developed nations, people spend up to 90% of their lives in buildings, so incorporating passive systems such as insulation into buildings is essential to provide comfort and greater energy efficiency in both colder and hotter conditions. There are also co-benefits that can result from increasing energy efficiency and reducing fossil fuel use, such as reduced energy bills (from home weatherization), and decreased environmental and health impacts from off-setting fossil fuel use with renewable resources and conservation.

### STRATEGIES AND ACTIONS BUILDINGS & ENERGY COMMUNITY MITIGATION

STRATEGY	POTENTIAL ACTIONS
Energy Conservation and Efficiency	Increase deployment of energy efficiency improvements (such as weatherization, solar attic vents, daylighting, shading, insulation of foundations, fuel efficient appliances, etc.) in new and existing buildings, as well as onsite renewables for commercial and residential sectors.
Home Performance Ratings	Implement an energy performance rating program for homes, so prospective buyers and renters make informed decisions on future energy use/cost.

STRATEGY	POTENTIAL ACTIONS
Promote Electric and Lower-Carbon Fueled Vehicles	Accelerate transition to electric vehicles.
Federal/State Policy Advocacy	Increase Renewable Energy Portfolio Standards for Electric Utilities.
Carbon Pricing	Promote policies at the local, state and federal level that implement carbon-based fees or taxes
Local Renewables Development	Support distributed solar energy development
Energy Conservation and Efficiency	Increase smaller housing options to reduce energy consumption, environmental impacts of construction and consumption of goods/materials.
Water Conservation and Efficiency	Increase deployment of water efficiency measures of existing buildings and new construction
Building Preservation	Promote adaptive reuse of historic or older buildings and weatherize to code.
Energy Supply Efficiency	Improve energy efficiency in existing commercial building mechanical systems.
Conservation and Efficiency	Support development and expansion of low-carbon district heating and cooling systems.
Shift to Renewable Energy	Focus economic development efforts on residential, commercial and industrial local renewable energy installations (based on economic benefits of import substitution).
Federal/State Policy Advocacy	Legislation to reduce greenhouse gas emissions.
Shift to Renewable Energy	Develop local smart grid technology and storage capacity of electricity (especially locally generated renewables) and natural gas.
Research	City-wide energy use study of residential and commercial structures.
New Technology	Capture heat from sanitary sewer for community use.
Energy Conservation and Efficiency	Utility rate structures, requirements and practices intended to reduce consumption and maximize efficiency.
Promote Lower Carbon Fuels	Conversion to electric leaf blowers, lawnmowers, string trimmers, etc.

STRATEGIES AND ACTIONS  
BUILDINGS & ENERGY  
COMMUNITY  
ADAPTATION

STRATEGY	POTENTIAL ACTIONS
Energy Conservation and Efficiency	Encourage passive daylight, shading, ventilation, insulated building envelopes, etc.
Water Conservation and Efficiency	Increase deployment of high efficiency toilets.
Water Conservation and Efficiency	Increase appropriate use of grey water to off-set production of potable water.
Fire Prevention Efficiencies, Building Codes	Deploy residential sprinklers to reduce catastrophic fire risk, and reduce water and fuel used in firefighting.
Resilience Planning/ Implementation	Water treatment process requirements to treat for new organisms and anticipated temperature changes.
Resiliency Planning/Implementation	Decrease power outages.
Landscaping Codes	Increase vegetation and shading.
Green Buildings	Increased use of basements in buildings for storing water, air cooling for heat pumps, thermoregulating, etc.
Alternative Technology	Enable composting toilets in residences.

STRATEGIES AND ACTIONS  
BUILDINGS & ENERGY  
MUNICIPAL OPERATIONS  
MITIGATION

STRATEGY	POTENTIAL ACTIONS
Conservation and Efficiency	Energy audits of City facilities and feasibility studies to determine passive to active systems to reduce energy and fuels in buildings.
	Convert remaining applicable City facilities lights to LEDs , prioritized by cost-effectiveness.
	Implement cost-effective building system upgrades and integrate energy efficiency improvements into all applicable capital improvement projects. Target efficiency improvements where the highest energy usage and losses are occurring.
	Identify and target water efficiency improvements where the highest water usage and losses are occurring.

<b>STRATEGY</b>	<b>POTENTIAL ACTIONS</b>
Purchasing	Shift towards 100% renewable and / or carbon free electricity. Purchase Blue Sky Power as an interim measure.
Energy Management	Develop and implement utility performance management plan including performance tracking for all City-owned buildings and facilities.
	Evaluate natural gas and methane use and practices at Regional Wastewater Treatment Plant. Analyze and implement strategies to increase methane reuse for vehicle fuel, heating buildings or for other beneficial purposes.
	Evaluate feasibility for solar installation and collecting heat from spill water at aquatic center.
Funding	Identify internal and external funding sources to finance energy-efficiency upgrades in City facilities. Explore “climate bonds” as one funding mechanism.
Targeted Outreach	Share high priority, cost-effective operational actions with other large business and institutional entities, along with life-cycle cost analyses and GHG reduction information.
Green Buildings	Design/construct all new City facilities to meet or exceed LEED Gold (Platinum) or better energy and water efficiency standards.
Fugitive Emissions	As refrigerants are replaced, use lower greenhouse gas intense chemicals.
	Identify fugitive emission sources in the Wastewater Treatment Collection System at points of storage, uphill pumping or vents.

STRATEGIES AND ACTIONS  
CONSUMPTION & WASTE  
MUNICIPAL OPERATIONS  
ADAPTATION

<b>STRATEGY</b>	<b>POTENTIAL ACTIONS</b>
Asset Management	Consider climate change impacts in evaluating asset life / replacements and repairs.
Wastewater Facilities Management	Consider new systems approach for the Wastewater Treatment Plant to increase its resiliency and avoid power outages in flood events. Evaluate potential to reduce demand for nutrient processing at the WWTP by employing Low Impact Development (LID) techniques and installing residential and commercial reuse systems.
Resiliency	Complete a feasibility study and plan for onsite and rooftop solar electric and hot water for City buildings.
Conservation and Efficiency	Study City buildings to improve readiness for increased temperatures and to reduce the need for air conditioning.

## **LAND USE AND TRANSPORTATION**

### **What is in the Land Use and Transportation Category?**

The Land Use and Transportation Category considers the use of land and its proximity to other uses, which sets the demand for transportation and the vehicles (or not) that move goods and people. This is true for residential, commercial, industrial, and institutional sectors. Whether it is industrial uses moving materials and supplies in and goods out, running errands, commuting to work, or accessing services and recreational opportunities, how the community develops will determine the transportation infrastructure needed to serve the land uses. For example, increased urban density and mixed uses can result in reduced reliance on automobiles for local services.

The transportation infrastructure can enable or prevent certain travel modes and vehicle types from functioning. The modes range from active transportation such as walking and biking to mass transit such as buses to personal vehicles to freight and utility vehicles. Behind each of these modes are varying sources of energy with their own GHG footprints and range from food, to liquid fuels to electricity. This category addresses the relationships between land use patterns and transportation requirements, and seeks to identify actions that can reduce community GHGs by reducing fuel consumed, and therefore, GHGs emitted through the transportation system.

### **Why Does It Matter?**

Transportation fuels are the source of 26% of US emissions. Vehicles and energy sources are changing rapidly and provide the community with genuine options for GHG reduction and climate change adaptation. Fleet fuel economy improvements, switching to alternative fuels and electric vehicles, and transitioning to a built environment and modes of travel that reduce reliance (and vehicle miles traveled) on single occupancy vehicles, can significantly reduce the community's long-term GHG emissions, air pollution, and result in other co-benefits to the community. For example, a 2012 report by the Union of Concerned Scientists showed the pollution equivalency to miles per gallon of electric vehicles (EVs) based upon regional electric grid mixes. Given that Renewable Energy Portfolio standards continue to rise, the MPG equivalency of EVs will rise over time.

\*Work to be Done... (Implementation Plan should: set goals for reducing energy consumption and increasing local renewable energy to achieve GHG reduction target; priority potential implementation measures that have been developed and evaluated as part of this plan; develop implementation plan to achieve high priority implementation measures, including time frames, funding and lead partners for each measure)

STRATEGIES AND ACTIONS  
LAND USE & TRANSPORTATION  
COMMUNITY  
MITIGATION

STRATEGY	POTENTIAL ACTIONS
Land Use/Development to reduce car dependency	Increase transit-oriented, walkable, node-oriented, mixed-use development that includes housing and services.
Transportation Demand Management	Reduce vehicle miles traveled and single occupancy vehicle trips and ownership.
Transportation System Management	Reduce idling and congestion.
Facilitate Active Transportation	Expand network of bike and pedestrian corridors, and enhance visual and physical safety protection measures.
Carbon Pricing	Promote policies at the local, state and federal level that implement carbon-based fees or taxes.
Electric and Lower-Carbon Fueled Vehicles	Accelerate transition to electric and other higher efficiency and low-carbon fueled vehicles.
Transportation Demand Management	Develop land use and transportation system alternatives that will reduce long-term GHG emission.
Transit	Increase the Corvallis Transit level of service.
Freight	Reduce GHG emissions related to freight movement.
Land Use / Development	Increase development of accessory dwellings (increase urban density).
Transit	Increase transit system efficiency.
Land Use and Transportation System Planning to reduce car dependency	Establish motor vehicle-free streets with exceptions for dedicated transit deliveries (possibly with time-of-day limitations), emergency vehicles and disability access).
Transportation Accessibility	Address Alternative travel needs of people with disabilities.
Technology Improvements	Increase accessibility to high-performance broadband connectivity to business and residences for e-commerce, telecommuting and improved emergency response.
Land Use/Development	Increase housing opportunities in commercial centers.

STRATEGIES AND ACTIONS  
 LAND USE & TRANSPORTATION  
 COMMUNITY  
 ADAPTATION

STRATEGY	POTENTIAL ACTIONS
Flood Protection	Plan to maintain accessibility throughout Corvallis by all transportation modes.
Pavement Reduction	Reduce street widths where appropriate and increase water absorption and urban greenspace.
Fire Prevention	Limit new development on high-risk areas.
Urban Heat Reduction	Management public rights-of-way to reduce urban heat concentrations.
Land Use / Development	Contain the urban growth boundary (UGB) to protect farm land (outside UGB) and accommodate new population growth (inside UGB).
Land Use / Development	Increase applications of “low impact development” (LID).
Land Use / Development	Increase connectivity of natural areas, residential areas and core commercial districts via paths / trails.
Infrastructure Planning and Management	Mitigate drought impacts in areas served by wells.
Land Use / Development	Discourage development on lands where it would endanger life, property or infrastructure, or where important ecological functions or environmental quality would be adversely affected.
Land Use / Development	Protect watersheds, water ways and floodplains.
Land Use / Development	Reduce impervious surface areas and replace them with pervious areas (such as urban forest, native prairie, xeriscaping or pervious alternatives to pavement).

STRATEGIES AND ACTIONS  
LAND USE & TRANSPORTATION  
MUNICIPAL OPERATIONS  
MITIGATION

STRATEGY	POTENTIAL ACTIONS
Purchasing and Specifications	Require carbon footprint when specifying concrete and/or asphalt in large quantities for projects.
Fleet Fuel Efficiency	Right size transit, heavy duty and light duty vehicles, increase fuel efficiency and use of low carbon fuels and electricity. Consider electric vehicles and hybrids where duty cycle allows - especially sedans.
Transportation Demand Management	Allow telecommuting when and where appropriate. Promote employee use of alternate commute modes, including carpooling, transit system, walking and biking.
Design Standards	Evaluate street design to encourage alternate modes while maintaining access for emergency vehicles.
Purchasing and Specifications	Incorporate contractor fuel efficiency / emissions standards into bids and contracts to ensure construction contractors working for the City use fuel efficient, low polluting vehicles and equipment.
Conservation and Efficiency	Implement vehicle tracking system to monitor excessive traveling, idling and vehicle performance to reduce fuel consumption and extend life of City's fleet.

STRATEGIES AND ACTIONS  
LAND USE & TRANSPORTATION  
MUNICIPAL OPERATIONS  
ADAPTATION

STRATEGY	POTENTIAL ACTIONS
Flood and / or Fire Protection	Prepare transportation system for long duration events (e.g., weather, outages etc.). Review standards for stormwater management for anticipated climate change impacts (e.g., increased flooding). Evaluate flood potential for roads, bike paths and sidewalks.
Infrastructure Management	Plan for increased impacts of waterline breaks

## CONSUMPTION AND WASTE

### What is in the Consumption and Waste Category?

The Consumption and Waste Category considers everything in the lifecycle of consumer goods from extraction of raw materials to manufacturing, packaging, distribution, product use and associated (energy and resources demands) and finally, disposal. Although “embodied” GHG emissions are in everything we buy due to the energy used to produce and transport them, they are mostly invisible and therefore are discounted (unless they are goods like appliances or other products that require energy to operate). That energy is produced somehow, generating some level of GHGs. Reusing, buying used, buying durable products, recycling and recovering energy from materials that cannot be re-used can significantly reduce the GHGs associated with product manufacturing. Diverting food and vegetative waste from the garbage/landfill, composting, anaerobic digestion and landfill gas capture and use can reduce GHG emissions by preventing the “fugitive emissions” associated with organic matter decay. Biomethane also can be used as a local source of lower carbon fuels for hauling fleets.

### Why Does It Matter?

The consumption of goods, foods, and services typically makes up about half of a community’s GHG emissions. Most consumption emissions occur elsewhere and are often overlooked because of this. Wiser consumption, like purchasing locally or buying more durable goods, can reduce emissions by decreasing the travel required to get the product to you or by lessening the need for replacement goods in the future. Waste comprises a smaller portion of the community’s GHG emissions (< 1%). Finding ways to convert “waste” into beneficial uses, like recovering methane from Coffin Butte Landfill, or composting home food and yard waste also can result in environmental and economic co-benefits for the community.

\*Work to be Done... (Implementation Plan should: set goals for reducing energy consumption and increasing local renewable energy to achieve GHG reduction target; priority potential implementation measures that have been developed and evaluated as part of this plan; develop implementation plan to achieve high priority implementation measures, including time frames, funding and lead partners for each measure)

### STRATEGIES AND ACTIONS CONSUMPTION & WASTE COMMUNITY MITIGATION

STRATEGY	POTENTIAL ACTIONS
Waste Reduction--Materials	Increase recycling.
Waste Reduction--Food	Reduce the volume of food waste generated and sent to the landfill.
Reuse and Repair	Promote reuse and repair.

STRATEGY	POTENTIAL ACTIONS
Procurement	Increase purchasing of materials containing recycled material content, that have reduced packaging, and that can be returned to the manufacturer for remanufacturing /reuse/or full recycling.
Federal / State Policy Advocacy	Increase product stewardship.
Carbon Pricing—materials related	Promote policies at the local, state and federal level that implement carbon pricing related to product and materials life cycles (e.g., emissions cap or carbon tax), including imports (border adjustment mechanism / carbon tariff if necessary).

STRATEGIES AND ACTIONS  
 CONSUMPTION & WASTE  
 COMMUNITY  
 ADAPTATION

STRATEGY	POTENTIAL ACTIONS
Materials Management	Maintain and plan for infrastructure and service adequacy for materials management under warming conditions and extreme events.
Model Programs	Increase resource efficiency in schools and other organizations.
Materials Management	Reduce / minimize dangerous disposal practices
Waste Recovery	Increase recovery of recyclable materials.
Product Reuse / Repair	Increase sharing of tools and materials.

STRATEGIES AND ACTIONS  
 CONSUMPTION & WASTE  
 MUNICIPAL OPERATIONS  
 MITIGATION

STRATEGY	POTENTIAL ACTIONS
Purchasing	Evaluate elements of supply chain that have highest impact to carbon footprint - prioritize efforts accordingly.
	Procure major purchases based on total ownership / lifecycle cost, with priority given to low carbon content, especially lower carbon paving, throughout the supply chain. Include maintenance and operations in setting procurement guidance (see DEQ's low carbon purchasing toolkit for local

STRATEGY	POTENTIAL ACTIONS
	<p>government). Evaluate the need for paving at City-owned facilities and use environmentally friendly alternatives where possible.</p> <p>Establish a local forum for sharing best low carbon purchasing practices (include purchasing experts from major institutions like hospital, schools, and county).</p> <p>Cut paper use 10% each year, ultimately reducing paper use by 25%.</p> <p>Review Urban Sustainability Director's Network Toolkit for new procurement actions.</p>
Federal / State Policy Advocacy	<p>Support state efforts to develop a consumption-based GHG inventory methodology and to adopt standards, incentives, and / or mandates for carbon foot-printing and labeling of products.</p> <p>Participate actively in the process to develop state and federal product stewardship programs and legislation. Support opportunities for producers to develop responsible manufacturing, product and package design and reuse of recovered materials.</p>
Waste Reduction	Track common waste materials to determine if more is being purchased than is needed and whether they can be diverted from the waste stream.
Recycling and Composting	<p>Review recycling stations in all buildings for proper signage and convenience.</p> <p>Evaluate alternate handling of snails from Wastewater Reclamation Plant.</p>

## FOOD AND AGRICULTURE

### What is in the Food and Agriculture Category?

The Food and Agriculture Category includes everything related to our food production, delivery and distribution. It can also relate to local food distribution networks that support low income people, people with restricted mobility, and that divert food from the waste stream. Farms of all types serve Corvallis directly, and are a driver in the Corvallis area's economy because of agricultural exports.

### Why Does It Matter?

Farms are a source of income and food for much of the Corvallis community. Changing physical conditions due to climate change may require new crops and/or new cropping regimes and agricultural practices due to weather, pests, weeds, and water availability. Local food production also may change due to changing availability or cost of food transported into the community from elsewhere. A general shift in food consumption toward an increasingly plant based diet can reduce GHG emissions generated by the meat and dairy sectors, which are significantly more GHG producing than plant-based agriculture. Agriculture may provide a carbon sequestration opportunity and agricultural practices are evolving to include methods that are less fuel and carbon-based chemical intensive. In a resource constrained world, local agriculture could focus on feeding the local community as a first priority. Severe climate events could impact the local food supply, which may impact disadvantaged community members disproportionately. In a more optimistic scenario, Corvallis' agriculture segment of the economy can continue to prosper and create incomes. There are also co-benefits that can result from strategies such as community gardens that can support community livability and provide increased food security to some community members, and from local agricultural practices that generally improve the environment.

\*Work to be Done... (Implementation Plan should: set goals for reducing energy consumption and increasing local renewable energy to achieve GHG reduction target; priority potential implementation measures that have been developed and evaluated as part of this plan; develop implementation plan to achieve high priority implementation measures, including time frames, funding and lead partners for each measure)

### STRATEGIES AND ACTIONS FOOD & AGRICULTURE COMMUNITY MITIGATION

STRATEGY	POTENTIAL ACTIONS
Food Purchasing	Increase purchasing of local, low carbon content food alternatives throughout the community.
Food Production Methods	Reduce GHG intensive inputs and retain carbon and other nutrients on agricultural land.
Food Awareness	Increase public knowledge and awareness of the impacts of food purchasing and dietary choices on climate.
Shift to Renewable Energy	Increase onsite production of renewable energy / biofuels for farm machinery.

STRATEGIES AND ACTIONS  
FOOD & AGRICULTURE  
COMMUNITY  
ADAPTATION

STRATEGY	ACTION
Local Food System	Increase participation in and accessibility to local food programs.
Edible Landscapes	Model and promote edible landscaping and gleaning.

## URBAN NATURAL RESOURCES

### What is in the Urban Natural Resources Category?

The Urban Natural Resources Category addresses the natural systems that support the soil, air, water, plants, and animals in the city. Urban natural systems addressed in this CAP include: streams, their riparian areas and contributing watersheds; drinking water sources; natural and constructed drainage features that filter, retain, and clean stormwater; wetlands; wooded natural areas; vegetated open space areas; and the inventory of trees that create an “urban forest.”

### Why Does It Matter?

The collective community maintenance and management of urban natural resources contributes to GHG emissions in only a very modest way, and can offset the release of GHGs in a modest way as well, through sequestration of carbon and cooling the environment. However, protecting, maintaining and enhancing natural resources within the urban environment can support the community’s preparedness and resiliency to predicted impacts of climate change. Increased heat, drought, extreme weather events predicted to occur in the coming decades will challenge our infrastructure and services, and may threaten community health and the adequacy of local vegetation, habitat and water supplies that sustain local communities. Wetlands, healthy streams and drainageways, and open areas that provide groundwater recharge can help mitigate flashy peak stormwater/flood flows that might otherwise overwhelm constructed infrastructure, and can help maintain groundwater aquifers and water quality in the face of prolonged drought. In warmer conditions, urban forests provide local heat reduction and can provide relief in hot weather for high risk populations such as low income people and those with limited mobility - without access to air conditioned spaces. Vegetation provides soil retention and water filtration, which can help urban infrastructure functions, prevent landslides and bank failures, and protect wildlife habitat. All of these environmental and natural resource protection strategies provide general livability and sustainability co-benefits to the community.

\*Work to be Done... (Implementation Plan should: set goals for reducing energy consumption and increasing local renewable energy to achieve GHG reduction target; priority potential implementation measures that have been developed and evaluated as part of this plan; develop implementation plan to achieve high priority implementation measures, including time frames, funding and lead partners for each measure)

### STRATEGIES AND ACTIONS URBAN NATURAL RESOURCES COMMUNITY MITIGATION

STRATEGY	POTENTIAL ACTIONS
Carbon Storage	Manage lands for carbon storage.

STRATEGIES AND ACTIONS  
URBAN NATURAL RESOURCES  
COMMUNITY  
ADAPTATION

STRATEGY	POTENTIAL ACTIONS
Funding	Establish a range of diverse, stable, long-term funding sources for the acquisition, maintenance, restoration, and preservation of prime natural areas.
Urban Heat Reduction and Drought Tolerance	Protect existing trees and increase new tree planting and climate appropriate vegetation on private and public lands and rights-of-way.
Natural Assets and Habitat Connectivity, and Water Quality Protection	Develop more complex and broader floodplains that include wetlands and a diverse matrix of habitats.
Water Supply and Conservation	Increase focus on water conservation and options for appropriate alternatives to potable water usage.
Educate Youth	Increase knowledge and awareness of future community members.
Stormwater Management	Reduce or eliminate piped stormwater from draining directly into streams to reduce stormwater peaks and improve water quality.

STRATEGIES AND ACTIONS  
URBAN NATURAL RESOURCES  
MUNICIPAL OPERATIONS  
MITIGATION

STRATEGY	POTENTIAL ACTIONS
Integrated Pest Management	Improve Landscaping Manual and Integrated Pest Management Policy and Plan for all city facilities and train staff. Consider need for inputs such as water and manage towards zero.
Equipment and Fuels	Create policy for electric lawn mowers, chain saws, leaf blowers and weed eaters.
Forest Management	Ensure that the City’s watershed forest is managed for carbon storage over time, consistent with water quality and other ecosystem values.
	Expand opportunities to maintain carbon in wood by using wood from urban forest management for products with long lives.

STRATEGIES AND ACTIONS  
URBAN NATURAL RESOURCES  
MUNICIPAL OPERATIONS  
ADAPTATION

STRATEGY	POTENTIAL ACTIONS
Urban Forest Management / Fire Prevention	Evaluate urban forest management policies and practices to address susceptibility to increase risk of wildfires, such as reducing fuel loads in understory of fire prone habitats.
Natural Resources Asset Management	Update / maintain natural features inventories to support monitoring and management of climate-sensitive and other significant natural resources.
	Evaluate and monitor street trees and vegetation, modify species selections as appropriate to address climate change. Include OSU lands in natural resource planning.
	Create a landscaping policy for our facilities that considers options for using native vegetation, firewise / waterwise landscaping and rain gardens.
	Leverage local, state, and federal partners for a more comprehensive approach to natural resource management in the City.
	Create both large and small networks of natural areas with diverse functions and habitats.
	Implement a trial "Park Pesticide Free" designation for select parks.
	More community gardens in natural areas. Require use of native species in all public projects.
Stormwater Management	Reduce piped stormwater flows and peaks by incorporating public stormwater assets that infiltrate, store and slow peak stormwater flows.
Infrastructure Planning and Management	Update water, stormwater and wastewater master plans to address climate change. Context should include framing stormwater and wastewater as resources including planning to expand the use of reclaimed water for irrigation and other non-potable uses.
	Retrofit city facilities with Green Infrastructure. Train staff to maintain green infrastructure (which have different skills and methods than traditional infrastructure maintenance) and provide adequate tools.
Urban Heat Reduction	Modify design standards and specifications to ensure field coordination and field change approvals do not preclude trees in the right-of-way.
Codes and Design	Evaluate codes (both City and County) for conflicting regulations with regard to adaptation projects. Improve consistency across jurisdictional boundaries.
Public Well-being	Update Parks Master Plan to include planned access throughout community to Parks and Recreation facilities as cooling areas.

STRATEGY	POTENTIAL ACTIONS
Watershed Planning	Partner with local, regional, and state agencies to encourage water conservation and efficiency and expand and diversify the water supply.
	Consider the expansion of ongoing maintenance in conjunction with increased implementation of existing natural resources.
	Expand senior capstone project concept with OSU to identify larger projects that address this issue (need to get professors on board and needs to be guided)
Urban Forest Management / Resiliency	Maintain Urban Forest Plan implementation and funding to monitor and improve the health and resilience of street trees, including species selection, planning for mitigating urban heat areas and by increasing pruning cycle to industry-standard of 5 to 7 years, and increasing tree/shade coverage on public properties.
Education and Outreach	Expand educational outreach and public stewardship programs regarding natural resources restoration / management, tree stewardship, on-site vegetation and stormwater management for resiliency, etc.
	Convene Community Involvement and Diversity Advisory Board (CIDAB) twice a year for listening sessions with City on UNR issues
Funding	Development fee directed to protecting natural areas.

## HEALTH, SOCIAL SERVICES AND COMMUNITY WELL-BEING

### What is in the Health, Social Services and Community Well-Being Category?

The Health, Social Services and Community Well-Being Category addresses community health, care and assistance programs, emergency services, and preparedness (or risk management) for potential/predicted negative community impacts of climate change. Changing conditions (such as increases in temperature, extreme weather, and fires), regulations and energy sources will create new and sometimes unanticipated changes that will affect people in many ways. The need to mitigate emissions creates opportunities to create health through active modes. The ability to adapt requires monitoring of the range of disease and carriers of disease, such as the West Nile Virus carried by mosquitoes farther north.

### Why Does It Matter?

Changing conditions such as increased energy costs, will disproportionately affect the lower income populations. Migration of people, flora and fauna may introduce new challenges such as fauna-carried diseases, and loss of existing native habitats that maintain natural system functions. More extreme weather events may threaten lives, such as elderly or health-compromised people in prolonged heat waves. Prolonged and extreme rains, or rapid snow melt can cause flooding and landslides, and heat waves and droughts may bring wildfires that threaten neighborhoods at the urban-wildland interface. There are also co-benefits that can result from strategies that promote increased community awareness and preparedness for things like hazards, disasters, and disease vectors, and the availability of services in the community to provide support.

\*Work to be Done... (Implementation Plan should: set goals for reducing energy consumption and increasing local renewable energy to achieve GHG reduction target; priority potential implementation measures that have been developed and evaluated as part of this plan; develop implementation plan to achieve high priority implementation measures, including time frames, funding and lead partners for each measure)

### STRATEGIES AND ACTIONS HEALTH, SOCIAL SERVICES & COMMUNITY WELL-BEING COMMUNITY ADAPTATION

STRATEGY	POTENTIAL ACTIONS
Community Health--Research and Planning	Address community health impacts of climate change and the capacity for treatment.
Emergency Preparedness (Responders / Service Providers)	Address emergency response needs related to the impacts of climate change.
Community Awareness and Individual Preparedness	Increase community's awareness of potential risks and adaptive actions they can take.
Population Forecasting	Develop and understanding of likely population impacts related to climate refugees.

STRATEGY	POTENTIAL ACTIONS
Community Economic Well-Being	Address financial implications from climate change impacts.

STRATEGIES AND ACTIONS  
 HEALTH, SOCIAL SERVICES & COMMUNITY WELL-BEING  
 MUNICIPAL OPERATIONS  
 ADAPTATION

STRATEGY	POTENTIAL ACTIONS
Education / Emergency Preparedness	Educate City staff on Climate Action Plan and identify what role departments play in addressing health and social service needs.
Prepare for Fuel Shortages	In case of power outages, ensure operability of backup generators and other vital systems; investigate transition to non-fossil fuel alternatives.
Health Care	Emphasize preventive health care in City's health and wellness programs and insurance programs.
Risk Management	Develop fuel allocation systems to ensure availability for Police, Fire, wastewater collection / treatment, water treatment, and emergency medical response.

## **CORVALLIS CLIMATE ACTION PLAN APPENDIX 1**

### **Climate Change Background and Framework for Development of Long-Term and Interim Greenhouse Gas Emissions Reduction Targets for Corvallis**

#### **ISSUE:**

As part of the foundation for development of a community climate action plan (CAP) for Corvallis, the City Council-appointed Climate Action Task Force (CATF) is recommending establishment of a greenhouse gas (GHG) reduction target (or targets). This issue paper provides a science-based context, as well as background on the global, national, state and other local efforts to address GHG reduction targets. Three potential frameworks for determining GHG emissions reduction targets are discussed in this paper as points of reference and a context for the CATF's consideration of a target for the Corvallis CAP. The CATF reviewed the matter at its February 2, 2016 meeting and set a recommended preliminary target and interim targets in alignment with the targets set by the State of Oregon.

#### **BACKGROUND:**

##### **Summary of Scientific Conclusions:**

According to the UN administered Intergovernmental Panel on Climate Change (IPCC)<sup>1</sup>, which is recognized globally as the leading authority on climate change, warming of the climate system is “unequivocal,” human influence is clear, and recent human-caused (anthropogenic) emissions of GHGs (primarily carbon dioxide) are the highest in history.<sup>2</sup> Recent unprecedented changes in the climate have had widespread observed impacts on human and natural systems, such as:

- Warming of the atmosphere and oceans, changes in weather patterns, increased drought and wildfires;
- Acidification of the oceans and resulting loss of aquatic life and damage to fisheries;
- Rising sea levels and resulting hazards to and displacements of communities; and
- Diminishing snowpack and glaciers leading to loss of fresh water supplies for drinking and irrigation.

The Industrial Revolution marked the beginning of the dramatic increase in anthropogenic GHG emissions. Between 1880 and 2012, global average temperature increased by approximately 0.85° centigrade (C).<sup>3</sup> Since the 1950s, the rate of change of anthropogenic GHG emissions has increased dramatically. Similarly, the rates of increase in global average temperature and sea level have accelerated. The IPCC estimates that over half the increase in global average temperature during this period was due to anthropogenic causes, predominantly resulting from increased fossil fuel combustion related to economic and population growth.<sup>4</sup>

---

<sup>1</sup> The Intergovernmental Panel on Climate Change (IPCC) is the leading international body for the assessment of climate change. It is a scientific body representing the collective scientific review and input of thousands of scientists world-wide, under the administration of the United Nations. IPCC assessments provide a scientific basis for governments at all levels to develop climate-related policies. See [IPCC - Intergovernmental Panel on Climate Change](#)

<sup>2</sup> Climate Change 2014—Synthesis Report: Summary for Policymakers; IPCC; 2014; p.2

<sup>3</sup> Climate Change 2014—Synthesis Report: Summary for Policymakers; IPCC; 2014; p.2

<sup>4</sup> Climate Change 2014—Synthesis Report: Summary for Policymakers; IPCC; 2014; pp. 3-5

Warming can also be accelerated by the loss of natural carbon sinks and positive feedback loops. While carbon dioxide accumulates in the atmosphere and ocean, the Earth's biome has the ability to sequester some of this carbon in soil, plants and trees. However, human and climate induced forest and wetland loss are decreasing the capacity of this type of carbon sequestration. Positive feedback loops accelerate warming. For example, the increase in dark surface area (which absorbs sunlight more readily) due to the loss of large areas of more reflective ice and snow leads to increased heat absorption, causing further ice and snow loss and warming.

Reducing GHG emissions now can mitigate, but will not stop significant warming from affecting natural and human systems for a long period of time. Based on existing atmospheric GHG concentrations and emissions at today's levels, a study of likely consequences of climate change in the Upper Willamette River Basin identified several important changes that are expected to affect communities in that geographic region. These include:

- Increased average annual temperatures of 6° to 8° F (~3°-4° C) by the end of the century;
- Reduced snowpack and resultant lower and warmer stream flows in summer;
- Increased demand for water for agricultural uses;
- Reduced hydroelectric power generation capacity (due to lower stream flows in summer) and increased summer demand for electricity;
- Increased storm intensity, flooding, wildfires and landslides
- Higher rates of heat-related illness, exhaustion, asthma, and respiratory diseases.<sup>5</sup>

While GHGs are usually expressed as Carbon dioxide (CO<sub>2</sub>) and CO<sub>2</sub> equivalents (CO<sub>2</sub>e), the following gases and groups of gases are of primary concern for their effects on global temperatures and are named in The Kyoto Protocols:

- Carbon dioxide (CO<sub>2</sub>)
- Methane (CH<sub>4</sub>)
- Nitrous oxide (N<sub>2</sub>O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur hexafluoride (SF<sub>6</sub>)
- Nitrogen trifluoride (NF<sub>3</sub>)

Given its proximity to the Upper Willamette River Basin study area, the Corvallis community can reasonably expect similar impacts locally. "Climate Change in the Northwest—Implications for Our Landscapes, Waters, and Communities" (2013) provides a detailed analysis and conclusions about key regionally consequential risks and anticipated impacts in the Northwest.<sup>6</sup>

The IPCC has concluded that "the risks of abrupt or irreversible changes will increase as the magnitude of the warming increases,"<sup>7</sup> and that GHG concentrations must be reduced in order to stabilize climate conditions and avoid passing catastrophic tipping points. To accomplish this, dramatic reductions in human-generated GHG emissions are needed. Adaptive and risk-management measures also are necessary to address the increasing problems and risks associated with the climate changes that already have and will continue to occur.

There is scientific consensus that the global average temperature increase (above pre-industrial temperatures) must be capped at 1.5°-2.0° C in order to avoid catastrophe climate change. If no action is

<sup>5</sup> 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, 2009.

[http://static1.1.sqspcdn.com/static/f/551504/6420038/1270512823240/willamette\\_report3.11FINAL.pdf](http://static1.1.sqspcdn.com/static/f/551504/6420038/1270512823240/willamette_report3.11FINAL.pdf)

<sup>6</sup> Dalton, M. M., Mote, P. W., Snover, A. K., [Eds.]. 2013; "Climate Change in the Northwest—Implications for Our Landscapes, Waters, and Communities," Washington D.C: Island Press.

<http://cses.washington.edu/db/pdf/daltonetal678.pdf>

<sup>7</sup> Climate Change 2014—Synthesis Report: Summary for Policymakers; IPCC; 2014; p. 16

taken, referred to as “business as usual”, global average temperature will increase at least 4°C by the year 2100. In order to cap the global temperature increase to 2.0° C, atmospheric concentrations of GHGs would have to decrease from current levels, which exceed 400 parts per million (ppm), to about 350 ppm. The longer CO<sub>2</sub> concentrations remain at greater than 350 ppm, the greater the risk that excessive and rapid warming will exceed levels that human social systems and infrastructure are prepared to handle. Therefore, in addition to dramatic reduction in future GHG emissions, CO<sub>2</sub> currently concentrated in the atmosphere must be removed and sequestered through reforestation or yet-to-be invented technologies.

**Global, National, and State Context for GHG Emissions Reduction Goals:**

Nations around the world, as well as states and local governments around the U.S., began to focus on GHG emissions reduction targets over twenty years ago. In 1993 the United Nations Environment Program and the International Council for Local Environment Initiatives (ICLEI) initiated the Cities for Climate Protection Campaign to facilitate GHG emissions reductions at the local government level. The first global pact—the Kyoto Protocol—was ratified by 141 countries in 2005. The information below describes the current global, national and state context, and provides examples of targets from Oregon communities that have enacted plans to combat climate change. While not an exhaustive inventory, this information is intended to help frame a range of alternatives for consideration in setting a community target for Corvallis.

Global:

The 2015 United Nations Climate Change Conference, held in Paris, resulted in a negotiated agreement on the reduction of climate change, which was adopted by consensus on December 12, 2015 by all 195 participating nations and the European Union. The agreement is driven by a science-based limit of global warming to 2°C above pre-industrial levels. In addition, wording was added to the agreement to stress a “best effort” of participating nations to limit warming to 1.5°C. Nations around the world submitted GHG reduction commitments for interim target dates ranging from 2025 to 2030 in order to ensure they establish a reduction trajectory that can ultimately lead to achievement of the 2050 targets. While the agreement states this 2°C limit as motivation, the Intended Nationally Determined Contributions (INDC), or voluntary pledges of emissions cuts by nation, are projected to limit average global temperatures to 2.7°C warming.<sup>8</sup> Examples of commitments submitted by several countries to the United Nations Framework Convention on Climate Change (UNFCCC) in advance of the Paris Conference are provided in Figure 1 below.

Figure 1. Intended Nationally Determined Contribution (INDC) (to GHG reductions)—Select Countries Submittals to the UNFCCC prior to the 2015 Paris Climate Change Conference

Country	Target Emissions Reduction	Year Target Reduces Below	Year to Achieve Target
United States	--26-28%	2005	2025
European Union	40%	1990	2030
Norway	40%	1990	2030
Switzerland	50%	1990	2030
Mexico	25-40%	2013	2030
United Kingdom	50%	1990	2027
Germany	40%	1990	2020
	55%	1990	2030

<sup>8</sup> Climate Action Tracker is an independent scientific analysis produced by a consortium of four research organizations: Climate Analytics, ECOfys, New Climate Institute, and Potsdam Institute for Climate Impact Research; more information at <https://climateactiontracker.org/>

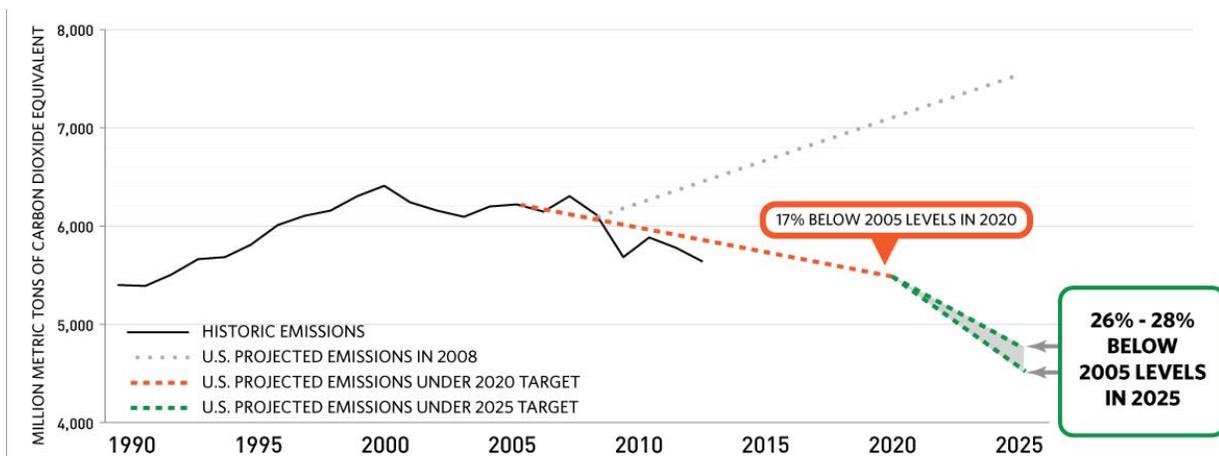
According to the Climate Action Tracker (CAT), the INDCs submitted to the UNFCCC by the end of 2015 represent 187 countries, which comprise 98% of the global population and about 95% of global GHGs. Another 3% of global GHG emissions come from global air travel and shipping.

It is important to note that while the Paris Agreement represents important quantitative targets for global emissions reductions, it does not contain explicit, legally binding country specific reduction targets and it has yet to be officially ratified by enough participating countries.

National – U.S.:

President Obama submitted the U.S. GHG reduction target commitment to the UNFCCC on March 31, 2015. The U.S. INDC submittal declared a commitment to reduce GHG emissions levels to 26-28% of 2005 levels by 2025. “The U.S. target will roughly double the pace of carbon pollution reduction in the U.S. from 1.2% per year on average during the 2005-2020 period to 2.3-2.8% per year on average between 2020 and 2025.”<sup>9</sup> The reduction target was based on an analysis of cost-effective pollution reductions achievable under the Clean Power Plan (CPP), and establishes the path to achieve GHG emissions of 80% by 2050. The U.S. INDC GHG reduction targets are shown in Figure 2. below.

Figure 2. U.S. Emissions Under 2020 and 2025 Targets



Source: U.S. INDC, 2015

The CPP is the legal mechanism to reduce U.S. GHG emissions and is administered by the EPA. It requires individual states to meet emissions reduction targets through a variety of pathways. Currently, state level compliance begins in 2022. It is important to note that though the US Supreme Court has ruled that the EPA can regulate CO<sub>2</sub> as a pollutant, the specific legal framework used by the EPA to require and enforce emissions targets (as part of the CPP) has been challenged by 26 states and is currently scheduled for review by the US Supreme Court.

State Actions:

According to the Center for Climate and Energy Solutions, there are now twenty states in the U.S. that have established GHG emissions reduction targets, most of which have established targets of 75-80% below 1990 or more recent base line years by 2050. California was the first to establish a target, and has recently established the most aggressive target in the country. California and Oregon summaries are

<sup>9</sup> Fact Sheet: U.S. Reports its 2025 Emissions Target to the UNFCCC; White House Office of the Press Secretary; March 31, 2015

provided below. Information on the other state's targets can be found at <http://www.c2es.org/us-states-regions/policy-maps/emissions-targets>.

California:

In 2006, the California legislature enacted the Global Warming Solutions Act (AB-32), which established statewide policies and programs to reduce GHG emissions to 1990 levels by 2020. This was the first comprehensive state-enacted set of climate change mitigation policies in the country.<sup>10</sup> Through adoption and statewide implementation of the 2008 Climate "Scoping Plan," tracking emissions over time, and completing a 2014 Scoping Plan update, California has demonstrated that is on track to meet the 2020 target. In April, 2015, Governor Jerry Brown issued Executive Order B-30-15, which issued the most aggressive target in the nation to date—a 40% reduction below 1990 levels by 2030.<sup>11</sup> This interim target will put the state on track to meet the 2050 goal of 80% below 1990 levels. The Scoping Plan is currently being updated to reflect B-30-15.

Oregon:

The 2007 Oregon Legislature enacted HB3543 which established climate protection goals for the state and created the Oregon Global Warming Commission (OGWC) to coordinate state and local efforts to reduce Oregon's GHGs consistent with Oregon's goals. The HB3543 GHG reduction targets are as follows:

By 2010, arrest the growth of Oregon's GHG emissions and begin to reduce them

By 2020, achieve GHG levels that are 10% below 1990 levels

By 2050, achieve GHG levels that are at least 75% below 1990 levels.

These targets were based on the assessment of the IPCC on GHG reductions necessary to avoid dangerous interference with the climate system—60-80% below 1990 levels. That target is based on limiting CO<sub>2</sub> to double the level that existed prior to 1750.<sup>12</sup>

In its 2015 Biennial Report to the Legislature, the OGWC reported that Oregon's GHG emissions are now nearly back to 1990 levels of 61 million metric tons of CO<sub>2</sub> equivalent (MMTCO<sub>2e</sub>) (i.e. the 2010 target). However, the state projects "Oregon's 2020 emissions to be 11 MMTCO<sub>2e</sub> above the target level set by the legislature for that year (i.e. 51 MMTCO<sub>2e</sub>), with the gap between emissions and our goals widening each year to 2050 and beyond unless additional action is taken to contain and drive down emissions."<sup>13</sup> In order to get the state on a track that can ultimately achieve the 2050 target, the OGWC is recommending that an interim target be set for 2035, by a straight line projection between the 1990 emissions level (56.177 MMTCO<sub>2e</sub>) and a 2050 goal of 14.2 MMTCO<sub>2e</sub> (i.e. 75% reduction from 1990 levels). This would create a 2035 interim target of 44% below 1990 levels (32.7 MMTCO<sub>2e</sub>).<sup>14</sup> Oregon's GHG reduction targets will require an average annual reduction of 3.76%.

This goal would be roughly similar to California's target. It should be noted that the state also has concluded that even with the implementation of a range of measures that reduce emissions from buildings (commercial and residential), industrial processes, transportation (of people and freight), materials, agriculture, waste, and the generation of electricity, the state will likely fall short of achieving the 2035

---

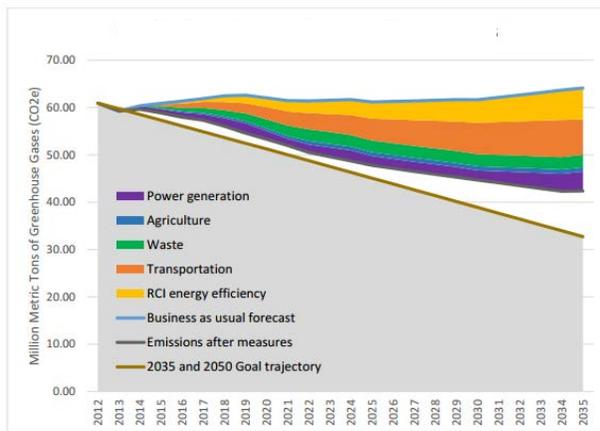
<sup>12</sup> Oregon Global Warming Commission website—Keep Oregon Cool; more information at <http://www.keeporegoncool.org/content/goals-getting-there>

<sup>13</sup> Oregon Global Warming Commission Biennial Report to the Legislature 2015; Oregon Global Warming Commission; September, 2015; p.6

<sup>14</sup> Oregon Global Warming Commission Biennial Report to the Legislature 2015; Oregon Global Warming Commission; September, 2015; p.8

interim target unless carbon pricing mechanisms are added to the mix.<sup>15</sup> Figure 3. below depicts the OGWC’s projections of available and reasonably possible future emissions reductions that could be achieved and the gap between the 2035 interim target and what is achievable without placing a value or price on carbon.

Figure 3. Statewide Emission Reduction Measures



	2015	2020	2025	2030	2035
<b>BAU forecast</b>	60.9	62.0	61.2	61.6	64.1
<b>Emissions after measures</b>	59.0	54.0	48.7	45.8	43.4
<b>Emission reduction measures:</b>					
<i>Transportation</i>	0.5	2.7	5.0	7.2	8.7
<i>RCI energy efficiency</i>	0.2	1.5	2.7	3.6	4.9
<i>Power generation</i>	0.8	1.7	1.9	2.0	4.1
<i>Agriculture</i>	0.2	0.5	0.8	0.9	0.9
<i>Waste</i>	0.2	1.5	2.0	2.1	2.2
<b>Total Reductions</b>	1.9	8.0	12.4	15.8	20.8
<b>2035 Goal Trajectory</b>					
	57.3	51.2	45.1	38.9	32.7
<b>Gap to meet goal</b>	1.7	2.8	3.7	6.9	10.6

Note: All Units are in Million Metric Tons of Carbon Dioxide Equivalent.

Source: Staff Presentation to the Oregon Global Warming Commission; September, 2015

Local Actions:

Although the U.S. never ratified the Kyoto treaty, by 2007, 500 mayors across the country had signed the U.S. Mayors Climate Protection Agreement (Mayors Agreement) committing to strive to meet or exceed the GHG reduction targets set in the Kyoto Protocol. The Mayors Agreement established the first local GHG reduction targets at the local level—a 7% reduction over 1990 levels by 2012. Sixteen Oregon mayors have signed the Mayors Agreement. The cities of Portland and Eugene have adopted CAPs, and the City of Ashland is beginning an effort to develop a CAP as well.

Portland/Multnomah County:

The City of Portland began addressing climate change with the 1993 adoption of the Carbon Dioxide Reduction Strategy. This was followed by joint Portland and Multnomah County plans adopted in 2001 and 2009. Through these efforts, Portland and Multnomah County established a goal of reducing GHGs by 80% over 1990 levels by 2050, with an interim target of 40% by 2030 (which is the same as California’s target). As a result of their collective efforts and a shrinking economy, GHG emissions in 2013 were 14% below 1990 levels while the population during the same period had increased by 31%.<sup>16</sup>

The Portland/Multnomah County CAP was updated in 2015, and the 2030 and 2050 GHG targets were not changed. Achieving the 2030 and 2050 targets will require an average annual decrease of 1.5% per year from 2013 to 2030, and a 1.8% decrease per year from 2030 to 2050. In order to accomplish these objectives, the Portland/Multnomah County CAP translates GHG emissions reductions to a “carbon budget,” and focuses on primary generators of GHGs in the Portland/Multnomah County area, including:

<sup>15</sup> Oregon Global Warming Commission Biennial Report to the Legislature 2015; Oregon Global Warming Commission; September, 2015; p.6

<sup>16</sup> Climate Action Plan 2015—Local Strategies to Address Climate Change; City of Portland and Multnomah County; 2015

- Energy used in buildings and industry--60% of total emissions;
- Fuels used in transporting people and goods--37% of total emissions; and
- Methane from the landfills that accept waste from residents and businesses--1% of total emissions.

In developing a carbon budget for these GHG emission sources, many assumptions were made about future energy sources, conversion to electric vehicles and increases in energy efficiency, among other things. Carbon emissions are allocated on a per capita basis, and population projections are used to determine future emissions due to community growth. Portland and Multnomah staff developed and modeled Scenarios to determine energy use and GHG emissions reduction targets in each sector. The resulting sector-based and per capita-based GHG emissions reduction targets are shown in Figures 4. and 5. below.

Figure 4. Portland/Multnomah County Sector-Based Reductions in GHG Emissions to Meet Targets

Sector (in metric tons CO <sub>2</sub> e)	1990	2012	Percent Change from 1990	2030	Percent Change from 1990	2050	Percent Change from 1990
Building energy	5,512,000	4,772,000	-13%	3,707,000	-33%	1,112,000	-80%
Transportation	2,979,000	2,830,000	-5%	1,661,000	-44%	655,000	-78%
Waste disposal	498,000	93,000	-81%	40,000	-92%	10,000	-98%
Sub-total	8,989,460	7,695,000	-14.4%	7,695,000	-40%	1,777,000	-80%
Food and goods		9,400,000*					
Total		17,095,000					

Source: Portland/Multnomah CAP, 2015, pp.20, 36, 37.

\*Note: This data is from 2011 and does not have associated reduction targets.

Figure 5. Portland/Multnomah County Per Capita Reductions to Meet Targets

	1990	2012	Percent Change from 1990	2030	Percent Change from 2012	2050	Percent Change from 2012
Population	584,000	766,000	31%	923,000	20%	1,148,000	+50%
Per capita carbon emissions (metric tons)	15	10	-35%	6	-42%	2	-85%
Natural gas (therms per capita)	390	350	-10%	300	-14%	140	-61%
Electricity (kWh per capita)	13,000	11,000	-15%	8,630	-20%	4,130	-62%
Passenger miles per day per capita	17	17	-1%	12	-29%	6	-64%

Source: Portland/Multnomah CAP, 2015, p.20

These sector- and per capita-based targets are only provided for illustrative purposes to show the magnitude of change that will be necessary in a metropolitan area like Portland, which has aggressive GHG emissions reduction programs in place. They also reflect the fact that GHG reduction opportunities will vary across the sectors and that sector targets will vary accordingly. The assumptions, projections and scenarios modeled are not directly transferrable to Corvallis and Benton County.

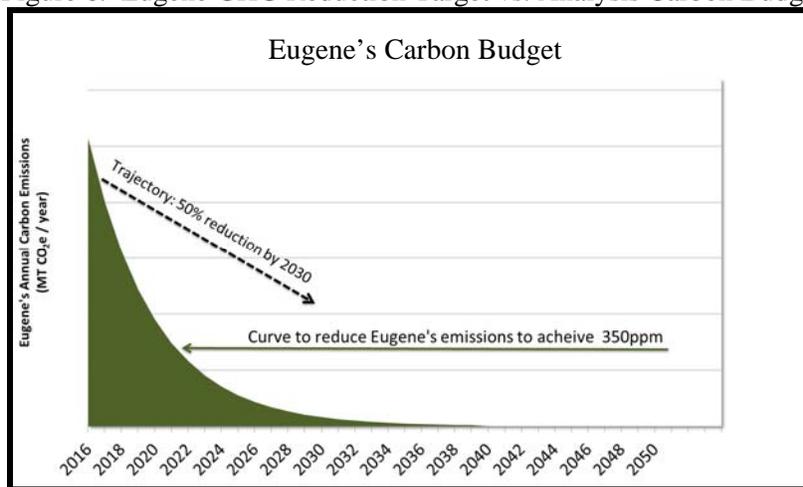
Eugene:

The City of Eugene adopted the Community Climate and Energy Action Plan for Eugene in 2010. In that plan, the City set GHG emissions reduction goals as they were previously established by the state of Oregon---10% below 1990 levels by 2020, and 75% below 1990 levels by 2050.<sup>17</sup> Eugene tracks community fossil fuel use and emissions annually. The City has reduced fuel consumption by an average of 2% annually, and is on a trajectory that, if sustained, will meet its goal of a 50% reduction in fossil fuel consumption by 2030. In 2014, the Eugene City Council passed a Climate Recovery Ordinance, which, among other things, calls for the City to develop a carbon budget for GHG emissions reductions consistent with achieving 350 ppm of CO<sub>2</sub> in the atmosphere.

The City is in the process of developing a localized community carbon budget, based on what has been declared to be *scientifically necessary* as opposed to what may be *feasible* given resource allocation and cultural acceptance. Eugene developed the carbon budget by downscaling the global carbon budget developed by climate scientists at NASA’s Goddard Institute for Space Studies and Columbia University.<sup>18</sup> Based on Eugene’s preliminary calculations, annual GHG emissions reductions will need to be well beyond those required to meet the current community goal of reducing fossil fuel use 50% by 2030.

This magnitude of reductions will not be possible for Eugene to achieve on its own. Federal and state policies and programs, and the implementation of new technologies not readily available today would have to complement Eugene community efforts to reduce GHG emissions. In addition, reducing atmospheric concentrations to 350 ppm will require drawing CO<sub>2</sub> out of the atmosphere through reforestation. Therefore, an amount of carbon sequestration through reforestation will be included in the carbon budget. Eugene’s preliminary projections of emissions reductions needed to meet the 350 ppm target is shown in Figure 6. below. Please note that this graph is based on preliminary information and the estimated numeric data and annual percentage reductions necessary to meet the 350 ppm scenario are not available. Matt McRae, Climate and Energy Analyst for the City of Eugene will provide additional background and a current status of Eugene’s carbon budget development process.

Figure 6. Eugene GHG Reduction Target vs. Analysis Carbon Budget



Source: City of Eugene

<sup>17</sup> Community Climate and Energy Action Plan, 2010; City of Eugene; p.7

<sup>18</sup> Hansen J, Kharecha P, Sato M, Masson-Delmotte V, Ackerman F, Beerling DJ, et al., 2013; Assessing “Dangerous Climate Change”: Required Reduction of Carbon Emissions to Protect Young People, Future Generations and Nature. PLoS ONE 8(12): e81648. Doi:10.1371/journal.pone.0081648. (Source of citation—City of Eugene staff)

## DISCUSSION:

### **What does this all mean for Corvallis?**

The CATF set the following goal to guide development and implementation of a CAP that can achieve a fair share of GHG emissions mitigation.

*The CAP will establish and monitor GHG emissions reduction targets for the Corvallis community that guide short-, medium-, and long-term priority strategies and actions the City and community partners will undertake to achieve at least Corvallis' proportionate share (or some other expression of commitment) of GHG mitigation. Periodic reporting and updates to the CAP will enable the City to respond to changing conditions and needs.*

Determining a “proportionate share” reduction target for Corvallis is an imprecise analytical exercise. Differences in GHG emissions reporting methods, assumptions, baseline years, and other factors across national, state and local governments make it difficult to evaluate where Corvallis’ GHG emissions can be placed on the continuum from 1990 to 2050 relative to others. A complicating factor is that Corvallis’ first year of community energy consumption and GHG emissions data—2012—is a baseline that cannot accurately be correlated with the historical and projected GHG emissions reduction curves generated by the City of Portland and to the State of Oregon, for example. Therefore, determining what a GHG reduction target similar to the state (i.e. 75% below 1990 levels) or Portland (i.e. 80% below 1990 levels) with reasonable accuracy is not possible.

As described above, there are three readily available frameworks Corvallis could use to set interim and long-term GHG emissions reduction targets that would roughly approximate Corvallis’ proportionate or “fair” share. At this stage, Corvallis’ CAP development process is focused on total community GHG emissions. Additional analysis will be needed to identify sector-based reduction potentials. A description and review of these options is provided below.

- 1) National framework: Corvallis could set targets based on the national reduction commitments expressed in the U.S. INDC: 1.2% per year on average through 2020, then doubling to 2.3-2.8% per year on average between 2020 and 2025 as an interim target. The U.S. INDC states that this trajectory would result in an 80% reduction by 2050. We were unable to locate information that would provide an indication of how GHG emissions from cities (which vary greatly across the nation in terms of efforts to reduce fossil fuel consumption and GHG emissions) would fit into the federal picture, so selecting this option as a proxy for Corvallis’ proportionate share would require judgment that the reductions could and should be distributed equally across the country.
- 2) State framework: Corvallis could set targets based on the Oregon statewide model. This requires estimating where Corvallis is on the state GHG reduction trajectory between the baseline of 1990 levels and the state target (75% reduction of 1990 levels), and determining the reductions needed from Corvallis’ baseline of 2012 GHG emissions to what Corvallis’ 2050 reduction target would be. This analysis is shown in Figures 7. and 8. below. To estimate this, we used historic population data and State of Oregon population projections to correlate the Oregon GHG emissions estimates with Corvallis. The relevance of this framework to Corvallis requires an assumption that the Corvallis community is similar to the rest of the state regarding per capita GHG emissions.

Using the estimated emissions based on Oregon per capita emissions, Corvallis would need to reduce GHG emissions by 3.52% annually from 2013 to 2050 to meet the state target. Using Corvallis actual inventoried GHG emissions in 2012, the average annual GHG emissions

reduction percentage would be reduced to 3.175%. As with the state target, and based on the state’s modeling of projected feasible GHG reduction assumptions, this reduction target is not considered possible without significant state and federal policy and program changes including carbon pricing at \$60 per ton of CO<sub>2</sub>e.<sup>19</sup>

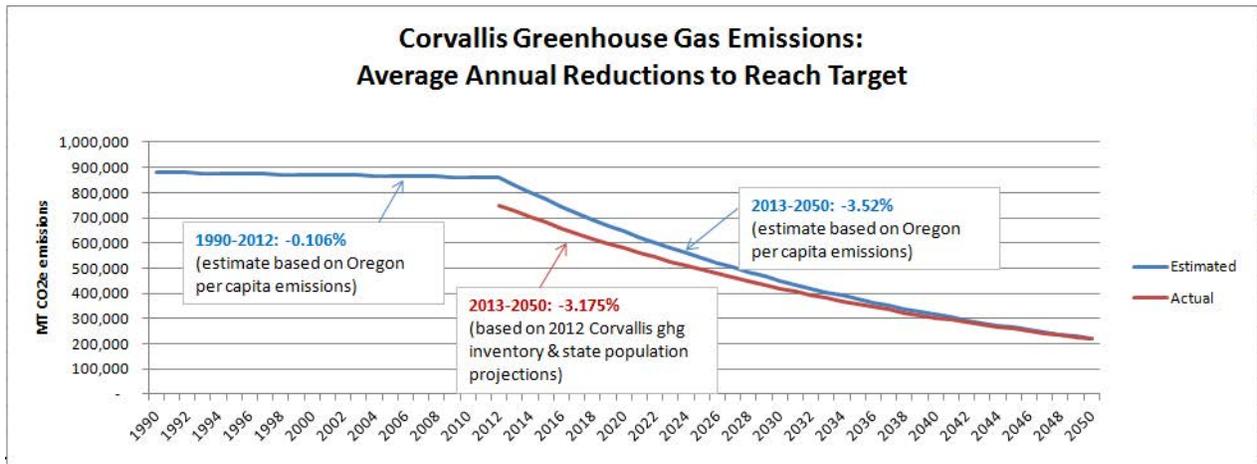
Figure 7. Corvallis GHG Emissions and Reductions Needed to Meet a 75% Reduction Target.

Oregon and Corvallis Emissions Estimates in MTCO <sub>2</sub> e	1990	2012	Percent Change from 1990	2035	Percent Change from 1990	2050	Percent Change from 1990
Oregon emissions	56,177,000	60,900,000	8.4%	32,700,000	-44%	14,200,000	-75%
Oregon per capita emissions	19.6	15.6	-20.4%	6.6	-66.3%	2.5	-87.2%
Corvallis emissions (estimated based on state per capita)	880,186	859,959	-2.3%	377,137	-57.2%	220,047	-75%
Corvallis emissions (2012 inventory)	Unavailable	749,845	-14.8%	357,013*	-59.4%	220,047*	-75%
Corvallis per capita emissions (based on 2012 inventory)	-	13.6	-	5.5	-	3.11	-

Sources: State of Oregon GHG inventory data and population projections; Corvallis Community GHG Inventory, 2012

\*Based on Corvallis population projections and the estimated 1990 Corvallis emissions.

Figure 8. Average Annual Corvallis GHG Emissions Reductions Needed to Meet a 75% Reduction Target.



- Carbon budget framework: Corvallis could calculate theoretical targets based on Corvallis’ share of a theoretical global per capita carbon budget, which, combined with reforestation and other carbon sequestration efforts, would achieve an atmospheric concentration of 350 ppm. This

<sup>19</sup> Oregon Global Warming Commission Biennial Report to the Legislature 2015; Oregon Global Warming Commission; September, 2015; p.9

would entail using the City of Eugene’s peer-reviewed methodology and equations for assigning a per capita-based carbon budget to the population of Corvallis. It is safe to assume that the resulting GHG emissions reduction curve would look similar to the Eugene curve shown in Figure 6. Above. While the carbon budget framework illustrates what will be needed at a global scale to restore the atmosphere to 350 ppm of CO<sub>2</sub>e, applying this framework to Corvallis will result in a purely aspirational goal at this time.

As noted above, Matt McRae will provide a more detailed review of the carbon budget framework and how Eugene is considering incorporating it into its community Climate and Energy Action Plan strategies.

### CONCLUSIONS:

Given that Corvallis GHG emissions data begins at 2012, and given the differences across GHG emissions inventory methods, it makes it difficult to determine how much progress Corvallis has made relative to other cities, states and the nation. We have insufficient data to accurately benchmark emissions reduction targets to 1990, which leaves a span of 22 years of unknown energy consumption and GHG emissions data. And, differences in inventory methods make it difficult/expensive to correlate Corvallis to other communities. However, we can conclude that Corvallis has been actively pursuing energy efficiency improvements and decreased reliance on fossil fuels for many years.

For example, a 2008 partnership of the Energy Trust of Oregon and the Corvallis Sustainability Coalition implemented \$112,000 of residential energy efficiency improvements. The Corvallis City Council adopted a “Community Energy Strategy: A 2020 Framework” in 2010, which recognized Corvallis’ long-term efforts and incorporated many strategies and actions to significantly reduce energy consumption by 2020. Over the years, many solar installations have occurred, offsetting fossil fuel generated GHG emissions. Corvallis was recognized for its accomplishments by becoming the first city to be named the EPA’s Green Power Community of the Year. Finally, the “Take Charge Corvallis” project that is being implemented as part of the City of Corvallis’ climate action goal, also is a strong indicator the Corvallis is making steady and substantial progress toward GHG emissions reductions.

Therefore, it is safe to assume that the community has made steady progress in reducing GHG emissions, and that on a per capita basis, Corvallis is more similar to the “deep carbon” reducing cities like Portland, and less similar to cities and states across the country that have not made increased resource efficiency and decreased fossil fuel consumption a priority. However, no specific targets have ever been established and the results of the community’s efforts have not been measured over time. Based on the assumptions made in setting the national and statewide GHG emissions reductions, it is important to recognize that achieving targets of 75% or 80% GHG emissions reductions (from 1990 levels), as contemplated in Oregon and across the country, will require new state and federal programs and policies to be successfully implemented. In other words, Corvallis cannot achieve this level of GHG emission reductions without an enabling state and federal policy context. For example, the U.S. target assumes dramatic reductions will be achieved through the wide-spread reduction in GHGs generated by coal plants. The regulations that will drive this change are currently tied up in the courts. In Oregon, the Global Warming Commission has recognized that new state and federal policies would need to be adopted, as well as a carbon pricing strategy, in order to realize the energy efficiency gains and fuel source transitions needed to meet the state target.

### CORVALLIS CLIMATE ACTION TASK FORCE (CATF) ACTIONS:

On February 2, 2016, the CATF heard presentations on this topic from Jessica Shipley, staff to the Oregon Global Warming Commission, and Matt McRae, Project Manager for the City of Eugene Climate and Energy Action Plan. After reviewing this material and considering the presentations, the CATF

decided by consensus to recommend a preliminary target and interim targets for Corvallis that align the community's targets with the State of Oregon's.

On September 27, 2016, the CATF reviewed public comments received throughout the public outreach process and revisited the preliminary GHG emissions reduction target. The CATF reaffirmed its conclusion that aligning with the State of Oregon target is prudent and did not revise the target for the Corvallis CAP.

## **CORVALLIS CLIMATE ACTION PLAN APPENDIX 2**

### **Climate Action Plan Elements, Plan Development Process and Evaluation Criteria**

#### **ISSUE:**

The Corvallis City Council and the Climate Action Task Force (CATF) established goals and project guidance for development of the Climate Action Plan (CAP). It also is important to establish a common understanding of the CAP elements, terminology and process for development of the CAP consistent with the CATF-established goals. This paper details the elements that make up the CAP, defines terms for the purposes of their use in the Corvallis CAP, and describes the criteria established by the CATF to evaluate and prioritize the CAP actions identified and refined throughout the planning effort.

#### **SCOPE:**

The City Council and the CATF established the scope of the CAP at the outset of the process. The CAP incorporates both municipal operations component for the City of Corvallis and a broader community component. Both components of the CAP address actions intended to reduce future and past greenhouse gas (GHG) emissions. This mitigation will help the City and the community prepare for and adapt to impacts of climate change that are now underway and that will accelerate in the coming decades. The components of the CAP are described below.

#### **CAP Community Component:**

The community plan component of the CAP addresses the collective inventory of GHG emissions generated throughout the city limits and areas of its jurisdiction or service provision. The “City of Corvallis 2012 Community Greenhouse Gas Inventory Report,” completed in 2012, serves as the baseline of GHG emissions information against which future actions will be developed to meet the CATF’s GHG emissions reduction target. Because GHGs are generated and can be mitigated across all sectors of the community, the City cannot solely develop or implement a community CAP without the partnership and participation of the broader community. The City will play a significant role in implementing the community elements of the plan through its programs and services. However, other government and non-government agencies, businesses, non-profit organizations and citizens also will have roles to play in implementing a CAP that will succeed in reducing community-wide GHG emissions. In fact, many of the strategies and actions are outside the scope of City services and will necessarily be led by willing community partners. Therefore, development of the community plan has included broad solicited involvement from external stakeholders.

The City solicited participation from a broad spectrum of public institutions and agencies, businesses, industries, non-profit organizations, utilities, and experts to serve as representatives of potential external partners who could join in identifying, prioritizing and implementing strategies and actions associated with the climate action goals. The community CAP will serve as a road map that can assist in future planning, interagency cooperative efforts, and as a basis to develop public-private partnerships in the interest of achieving meaningful GHG emissions reductions. However, it should be noted that a CAP that is adopted only by the City of Corvallis will not be a mandate or binding on any other community entity.

## **CAP Municipal Operations Component:**

The municipal operations plan component of the CAP addresses internal municipal functions only. The “Greenhouse Gas Inventory for Municipal Government Operations,” completed in 2009 for 2008 and updated for the year 2013, serves as the baseline of GHG emissions information against which future actions will be developed to meet the CATF’s GHG emissions reduction target. Strategies and actions included in the municipal operations plan also will support the community plan by reducing fossil fuel consumption and GHG emissions, and by achieving co-benefits to the community, like improving safety, conserving community water supplies, and even potentially reducing some of the long-term and life-cycle costs of services to the community. The municipal operations plan also may support the community plan by providing examples of high priority strategies and actions that can be implemented in other similar organizations in the community to reduce GHG emissions.

## **CAP BUILDING BLOCKS—UNDERSTANDING THE CAP COMPONENTS AND TERMINOLOGY:**

Across the spectrum of climate action plans that have been developed across the state and the nation, there is no standardized use of terms, formats or content. Therefore, it is important that a common definition or description of terms be developed for the Corvallis CAP to enhance clear communication and achieve common understandings. The Corvallis CAP includes the following terms and elements, with the understanding that other communities may define the framework for their plans differently.

- Goals
- Targets
- Strategies
- Actions
- Implementation Measures

### **Goals:**

Development of the Community and Municipal Operations CAP is guided by a set of goals established by the CATF. They are an expression of desired outcomes for the plan and apply to all of the CAP elements. Goals provide the highest level overarching direction to set what the CAP is intended to achieve. All CAP targets, strategies, actions and implementation measures should ultimately be consistent with the goals. The goals are described in the Overview section of the CAP.

### **Targets:**

Targets are specific performance outcomes that relate to defined timeframes or specific dates and specific actions or strategies. Strategies and actions are developed to enable achievement of established targets. For example, the CATF has recommended greenhouse gas reduction targets to aim for in developing and implementing the CAP. The CATF set the Community GHG reduction targets to mirror the targets established by the State of Oregon, as follows:

- Reduce GHG emissions by 10% below 1990 levels by 2020;
- Reduce GHG emissions by 44% below 1990 levels by 2035; and
- Reduce GHG emissions by 75% below 1990 levels by 2050.

The background on how these targets were established is found in Appendix 3.

### **Strategies:**

Strategies are focused areas or categories of actions and may define or direct modes of accomplishing specific actions. For example, a strategy might be “residential energy efficiency” and could be implemented

through a partnership with a utility that could result in many actions from weatherization, to re-lamping to ductless heat pump installations. Strategies provide helpful organizing principles under which numerous actions and implementation measures may fit. It should be noted that many CAPs use the terms “objectives” and “strategies” almost interchangeably. For the purpose of clarity, the Corvallis CAP will only use the term strategies.

### **Actions:**

Actions are specific statements of “what” needs to be done in a given strategy. For the purposes of the CAP, actions are identified that can mitigate climate change by reducing GHG emissions, and that support the community in adapting to local physical impacts of climate change that are occurring already and will accelerate regardless of mitigation actions taken from this point forward. Actions also may promote or create “co-benefits” for the community in addition to achieving varying degrees of GHG mitigation or preparedness. Co-benefits include things like improvements to general environmental or ecosystem health, water and air quality, community health and wellbeing, and social equity.

### **Implementation Measures:**

Implementation measures are tasks which describe “how” the actions will be accomplished. Actions can have multiple implementation measures that will each have varying degrees of effectiveness, and are prioritized accordingly.

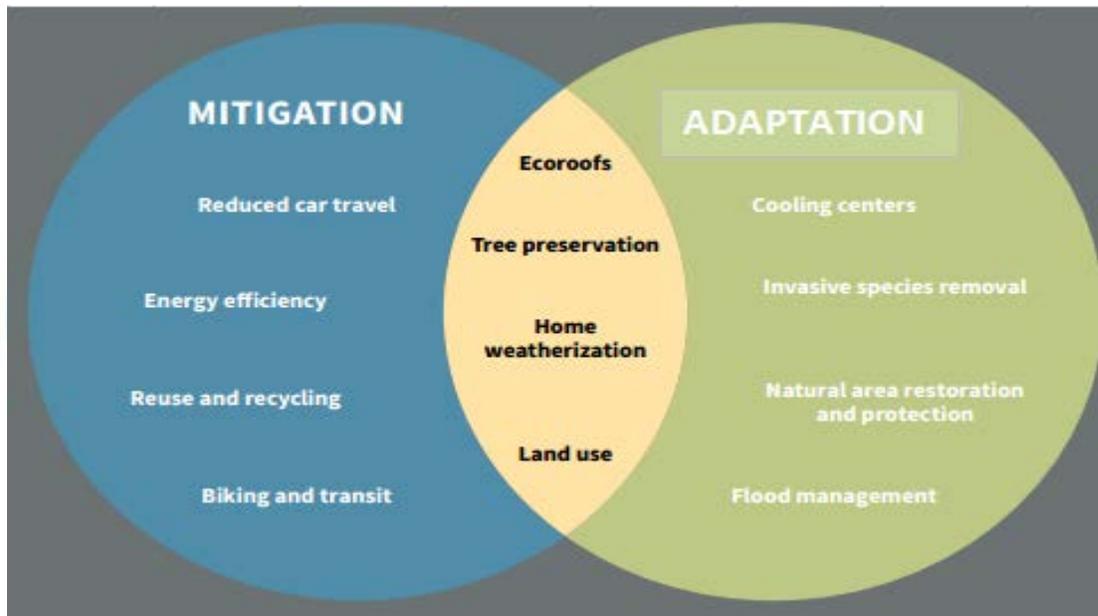
### **Climate Mitigation Actions vs. Adaptation, Preparedness and Resiliency Actions:**

Both climate mitigation and climate adaptation actions and implementation measures (including actions that address community preparedness and resiliency) address climate change. The difference is that mitigation actions aim to reduce or prevent the generation of greenhouse gas emissions within the community or that are related to activities that occur within the community (like the manufacture and transport of goods and services that the community consumes). In contrast, adaptation actions prepare a community for the unavoidable chronic, accumulated or acute impacts of climate change, such as extreme weather events and sea level rise. Climate mitigation and adaptation actions are not always mutually exclusive and can have benefits in both areas.

Figure 1. below illustrates some examples of actions that relate to mitigation, adaptation or both.<sup>1</sup> Please note that this is for illustrative purposes only—not all of the actions identified have applicability to Corvallis.

---

<sup>1</sup> Climate Smart Communities Climate Action Planning Guide; prepared by VHB Engineering, Surveying and Landscape Architecture, P.C. for the State of New York: New York State Energy Research and Development Authority (NYSERDA), Department of State, Department of Environmental Conservation, Department of Health, Department of Transportation, and the Public Service Commission; March, 2014, p. 5.



**Mitigation:** the globally responsible thing to do

Actions that reduce the emissions that contribute to climate change.

**Adaptation:** the locally responsible thing to do

Actions that minimize or prevent the negative impacts of climate change.

**Figure 1. Climate Mitigation vs. Climate Adaptation**

*Source: Natural Resources Canada's Climate Change Adaptation Initiatives and City of Portland Climate Action Plan 2015.*

**PRIORITIZING THE ACTIONS AND IMPLEMENTATION MEASURES:**

The process of prioritizing potential actions and implementation measures is a multi-step process. In order to initially prioritize actions, the cost effectiveness of GHG mitigation potential was roughly assessed for each action. This exercise provided an initial lens to determine which actions have the greatest potential to reduce GHGs. The next step is to evaluate actions and implementation measures on their merit beyond GHG mitigation potential and score their capacity to contribute co-benefits and other important considerations (e.g., duration of benefit, life-cycle value). That step requires the development of evaluation criteria.

**GHG Mitigation Potential:**

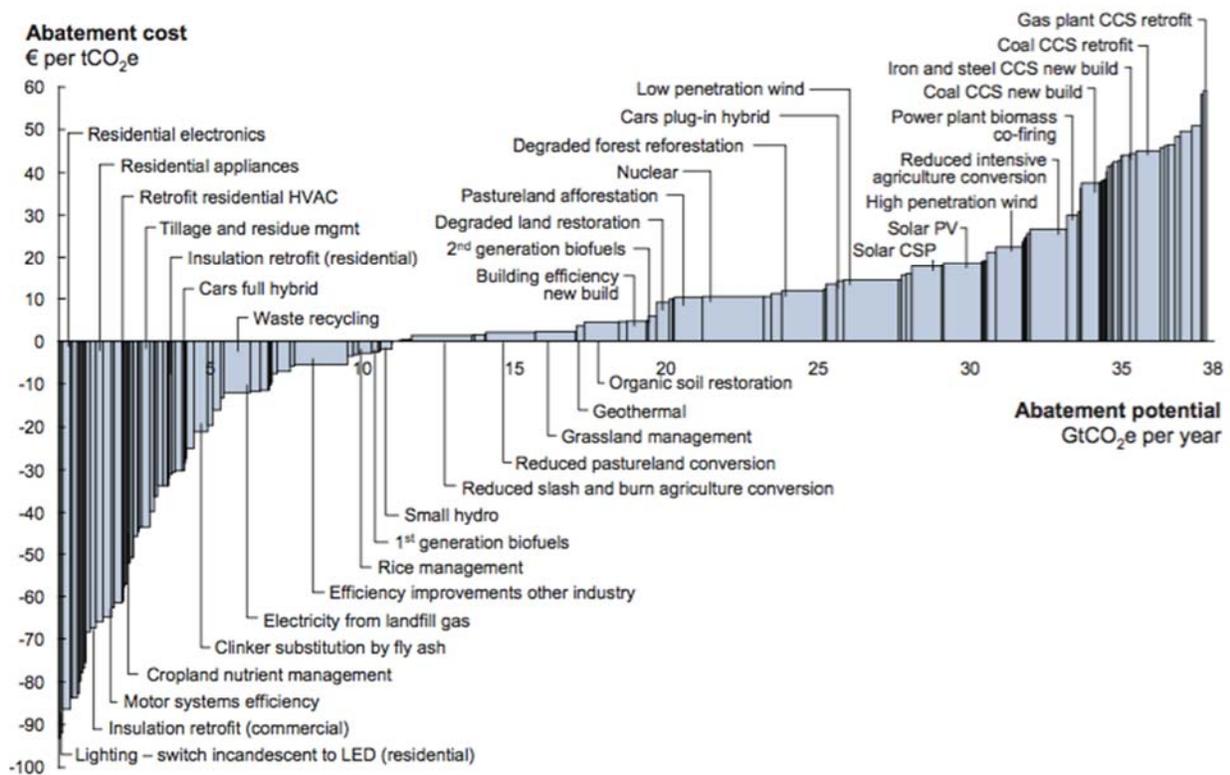
Marginal greenhouse gas abatement cost curves (MACCs) were used to provide the initial lens for the cost effectiveness of GHG mitigation actions for Corvallis. McKinsey & Company first published a MACC in 2007 comparing mitigation options for the global economy. The McKinsey curve and subsequent MACCs are helpful because they graphically convey both the cost of mitigation and the total mitigation potential of an action or block of actions. Ultimately, MACCs can signal the mitigation options that can make the most significant reduction in emissions while being cost effective. Given the context and types of actions Corvallis is assessing, the following MACCs were evaluated:

- Oregon Greenhouse Gas Marginal Abatement Cost Curve (Oregon Department of Energy)

- Pathways to a Low-Carbon Economy (McKinsey & Company)
- King County Strategic Climate Action Plan
- University of Washington Climate Action Plan

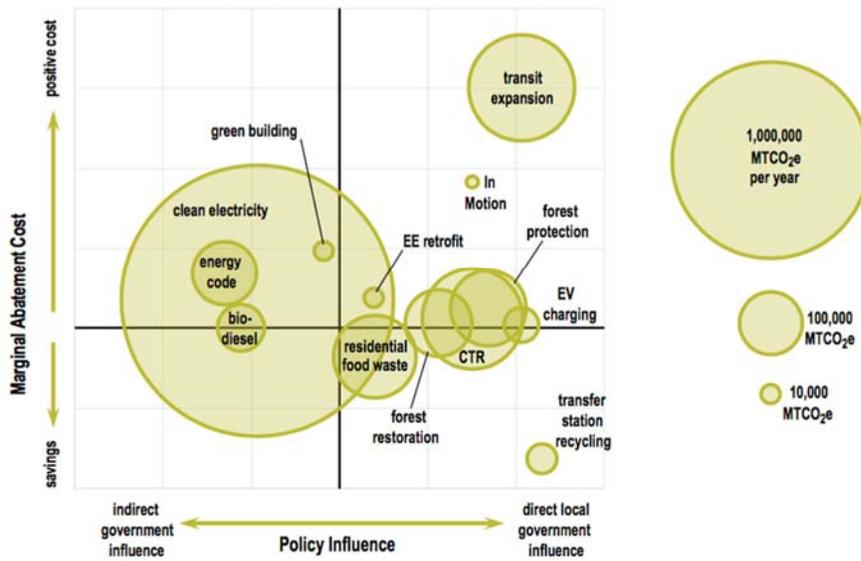
How they work:

MACCs are organized graphically on a X-Y axis. Action bars are shown left to right with the least expensive options on the left and the most expensive options for reducing GHGs on the right. The width of the bar shows the potential emissions reductions possible by employing that action. The horizontal axis shares the potential number of metric tons that could be achieved in a future year (e.g., 2022, 2035) and the vertical axis shows the cost of mitigation (in terms of cost per ton). Actions on the left side of the graph below the horizontal axis (negative cost in value) are cost saving measures that not only reduce GHG emissions but also reduce operational costs.



Source: <http://www.mckinsey.com/business-functions/sustainability-and-resource-productivity/our-insights/pathways-to-a-low-carbon-economy>

**COST EFFECTIVENESS PILOT ASSESSMENT RESULTS - SELECT 2015 SCAP STRATEGIES**



Source: King County Climate Action Plan, 2015

[http://your.kingcounty.gov/dnrp/climate/documents/2015\\_King\\_County\\_SCAP-Full\\_Plan.pdf](http://your.kingcounty.gov/dnrp/climate/documents/2015_King_County_SCAP-Full_Plan.pdf)

One of the main limitations of abatement curves is that they are susceptible to dynamic changes to models and assumptions. Cost estimates used in MACCs are imprecise, in part because they make a number of assumptions based on the assumed project context, which changes over time. For instance, solar PV prices have dropped significantly since 2009, while at the same time becoming more efficient. Additionally, abatement curves assume different levels of policy pathways and support from state and federal programs. Also, abatement curves often compare different timeframes (e.g., 2022 vs. 2035), mitigating a metric ton of carbon.

A MACC assessment is focused on GHG emissions and does not evaluate additional relevant factors and co-benefits outside of GHGs emissions reductions. The use of abatement curves is not meant to be a standalone analysis but rather to set the stage for evaluating actions by a comprehensive set of criteria. The following section describes additional evaluation criteria used to assess potential climate actions.

**Evaluation Criteria:**

The evaluation criteria are tools that provide a framework to assess potential climate mitigation actions for their ability to achieve or implement the overarching goals, targets, and strategies of the CAP. A set of preliminary criteria were developed by staff and the consultants based on review of the CAP goals and a growing base of climate action planning standard guidance and practices. The CATF reviewed and modified (added to) the criteria at their March 29, 2016 meeting. The resulting criteria are described below. In addition to the GHG mitigation potential ranking conducted as a “pre-sort,” additional evaluation criteria fall into four major categories, including: effectiveness and feasibility, financial, co-benefits—people, and co-benefits—local ecosystems. The evaluation criteria that capture community co-benefits address the larger issues of community “livability” and “sustainability.” The rating scheme applied uses “1,” “2,” and “3” ratings with “1” being best. The ratings help characterize, compare and prioritize the actions. The evaluation criteria and scoring metrics are provided below.

Effectiveness Criteria:

Duration of Benefits. – *How long will this action provide its benefit before stopping?*

(Could be mitigation or adaptation benefits, but may not apply to all adaptation actions):

“1” = Long term--Benefits last greater than 50 years

“2” = Mid-term--Benefits last 21-50 years

“3” = Short term—Benefits last 0-20 years

Implementation Time -- *How long will the action take to implement before it provides benefit?*

(Most important for mitigation actions because mitigation that occurs now has a much greater benefit related to achieving the target than mitigation that won't result for several years. There is more time flexibility in implementing adaptation measures because impacts of climate change are happening over a span of decades):

“1” = Action can be accomplished within next 5 years

“2” = Action will take 5 to 20 years to accomplish

“3” = Action will take longer than 20 years to accomplish

Mitigates and Adapts in One Action – *The Action provides for a decrease in greenhouse gas emissions and provides for resilience to a changing physical climate.*

“1” = Does both well

“2” = Does one better than the other

“3” = Does only one

Leverages Existing Efforts – *This action can share resources or be included into an existing program of set of activities. Reduces or eliminates upfront or ongoing costs.*

“1” = Already planned or underway; can easily be added to existing effort; or can easily be accommodated within current funding levels

“2” = Existing plans (e.g. CIP) support and can accommodate action

“3” = Needs new approval, funding, and possibly enabling policy

Political Support – *Will this action and the resources required have elected or administrative support to implement it?*

“1” = Aligns with existing policies

“2” = Likely to be supported

“3” = Unlikely to be supported in next 5 years

Community Participation/Acceptance – *Will the action have support, in the form of participation or acceptance, from the community?*

“1” = High participation – greater than 50%

“2” = Moderate participation – 25% to 50%

“3” = Low participation – less than 25%

Financial Criteria:

(Keep in mind that the actions are also ordered by cost per volume of GHGs mitigated as an effectiveness/cost-effectiveness ranking that is calculated in the “pre-sorting” process described above.)

Life Cycle Value – *What is the **total** cost/benefit of ownership or implementation? Includes upfront costs, operation and maintenance costs, decommissioning costs and any revenues or income made.*

“1” = Small upfront investment extends asset and operating costs are less expensive than existing

“2” = Higher upfront capital cost, but lower life cycle cost of ownership

“3” = Higher total life cycle cost

Revenue Generation or Cost Avoidance – *Will this action reduce existing costs or add new revenues?*

“1” = New revenue or cost reductions

“2” = Revenue neutral/break-even over time

“3” = Increased costs over time

Infrastructure – *What changes are necessary to community infrastructure (roads, water/wastewater treatment plants, supply and waste piping etc.) due to this action?*

“1” = Zero or minor changes required

“2” = Major modifications required

“3” = Total replacement required

Co-benefits—People:

Health and Safety – *Will the action promote ongoing health and/or provide for protection from acute hazards?*

“1” = Promotes health and wellbeing or prevents disease or protects during acute events within Corvallis.

“2” = Promotes health and wellbeing or prevents disease or protects during acute events outside of Corvallis (indirect benefit)

“3” = No or unknown health and safety benefits

Air Quality – *Will the action also reduce local air toxics that can harm human health? (Please note that this is grouped with “people” because of the significant impact air quality can have on human health)*

“1” = Expected improvement

“2” = No change

“3” = Gets worse

Jobs – *Will the action directly or indirectly create jobs? Note that temporary jobs and “permanent” jobs should be considered differently.*

“1” = New jobs expected locally as a result of the action

“2” = The action may cause new jobs to replace other jobs lost locally, or add jobs to the broader economy (indirect job benefit)

“3” = Unknown impact or lost jobs predicted

Distribution of Benefits (Opportunities for Social Equity) – Will the actions provide benefits to everyone in the community?

“1” = Improves equitable access to mitigation and adaptation opportunities throughout the community

“2” = Equal across neighborhoods/community sectors

“3” = Serves selected members of the community but not all

Scope of Community *Adaptation* Benefits – *How broadly will the adaptation benefits extend?*

“1” = City/County

“2” = State

“3” = Nation

#### Co-benefits—Local Ecosystem:

Water Quality, Supply – *Does the action directly enhance or protect our drinking water supply or potential other sources?*

“1” = Expected improvement

“2” = No change

“3” = Gets worse

Natural System Function (sequestration, soil health, bank stability, flood control, water filtration, habitat function, urban heat management) – *Will the action provide benefit for local ecosystems, whether it has a direct connection to human wellbeing or not?*

“1” = Restores or enhances degraded conditions

“2” = Supports or protects existing conditions/functions

“3” = Degrades conditions

#### **CAP Categories:**

The categories described below are focus areas for mitigation and adaptation strategies, actions, and implementation measures. The categories defined in the Corvallis CAP mirror or closely follow the categories established in many (perhaps the majority) of plans that have been developed throughout the country. While each category is a relatively distinct segment of focus, there is necessarily some overlap between and amongst them. This is a result of the interconnectedness of community impacts and benefits and should be expected to simplify the designation of responsibilities and resources to implement them. The following descriptions and discussion points under each category are intended to generally illustrate the category, why it is important, the scope and types of strategies that are generally included for mitigation and adaptation purposes and some implementation considerations that should be factored into implementation plans for climate action. The descriptions are not intended to be exclusive, but rather to provide an understanding of the categories.

#### Buildings and Energy:

*What is it?* This category addresses energy used in residential, commercial and industrial buildings in Corvallis. Buildings use energy to make them and to operate them. While the environmental (including GHG emissions) impacts of construction are noticeable, the day to day energy use of a building after construction adds up to a much greater impact over a building’s life, and can be overlooked as a source of long-term emissions and, therefore, an opportunity for mitigation. Building energy sources include the

variety of sources used to generate electricity, as well as those sources that are deployed onsite for mechanical, heat and cooling purposes. These include methane, propane and sometimes liquid fuels and onsite renewables. Generally, commercial and residential building systems use energy for lighting, appliances, computers, mechanical systems for heating, ventilating and air conditioning, and other lifestyle-related choices. For industrial buildings, energy sources may be different, especially for heat, steam and other mechanical energy. Some of the other energy sources considered are wood waste and other energy dense waste products.

*Why does it matter?* The emissions from buildings represent approximately 39 percent of the US CO<sub>2</sub>e emitted. (i.e., 21% in residential, 18% in commercial). Residential buildings endure longer than other energy consuming systems (according to the Center for Climate and Energy Solutions), so retrofitting and planning for lower energy consumption, while keeping people comfortable in changing conditions can make a significant impact on building-related GHGs. According to the U.S. Environmental Protection Agency, in developed nations, people spend up to 90% of their lives in buildings, so incorporating passive systems such as insulation into buildings is essential to provide comfort and greater energy efficiency in both colder and hotter conditions. There are also co-benefits that can result from increasing energy efficiency and reducing fossil fuel use, such as reduced energy bills (from home weatherization), and decreased environmental and health impacts from off-setting fossil fuel use with renewable resources and conservation.

*What is the scope of actions for this element/category?* New and old buildings, energy sources/generation, retrofits and devices for adaptation and efficiency, and on-site energy generation and storage.

*What types of strategies mitigate GHG emissions or support adaptation in this element/category?*

- Strategies that promote better weatherized outer shells and those that promote energy savings in the residential, commercial, and industrial sectors represent some of the most cost-effective options.<sup>2</sup> (Both mitigation and adaptation)
- Strategies that promote conversion of fossil fuel-derived energy sources to renewable energy sources. (Mitigation mostly)
- Strategies that engage state and federal policies and programs to impact efficiency standards, fuel sources and prices paid for fossil fuels. (Both mitigation and adaptation)
- Sources of energy that are local and do not depend on fossil fuel systems or interstate infrastructure to deliver power to the area. (Adaptation)
- Water efficiency inside the building that may reduce the need for scarcer water over time. (Adaptation)

*Implementation and effectiveness considerations.*

- In considering and prioritizing GHG reduction strategies, even in cases where electricity is relatively inexpensive and has relatively low GHG emissions, reducing consumption and/or redirecting the newly created margin of low carbon power toward carbon intensive uses, such as transportation or heating, helps manage a community's overall carbon (or GHG) footprint. Overlooking efficiency improvements reduces the pace of mitigation and families' ability to stay comfortable in chronic or acute cold or hot temperatures.
- Efforts should be made to strike a balance between investment in transitional technologies such as more efficient uses of natural gas and technologies that may need to develop further or reduce in cost before mass deployment such as onsite energy storage. Where funding can be identified, investing in long-term solutions can avoid two transitions costs and bring greater GHG reduction gains.

---

<sup>2</sup> Oregon Global Warming Commission 2015 Biennial Report to the Legislature, p. 39.

## Land Use and Transportation:

*What is it?* This category considers the use of land and its proximity to other uses, which sets the demand for transportation and the vehicles (or not) that move goods and people. This is true for residential, commercial, industrial, and institutional sectors. Whether it is industrial uses moving materials and supplies in and goods out, running errands, commuting to work, or accessing services and recreational opportunities, how the community develops will determine the transportation infrastructure needed to serve the land uses. For example, increased urban density and mixed uses can result in reduced reliance on automobiles for local services.

The transportation infrastructure can enable or prevent certain travel modes and vehicle types from functioning. The modes range from active transportation such as walking and biking to mass transit such as buses to personal vehicles to freight and utility vehicles. Behind each of these modes are varying sources of energy with their own GHG footprints and range from food, to liquid fuels to electricity. This category addresses the relationships between land use patterns and transportation requirements, and seeks to identify actions that can reduce community GHGs by reducing fuel consumed, and therefore, GHGs emitted through the transportation system.

*Why does it matter?* Transportation fuels are the source of 26% of US emissions. Vehicles and energy sources are changing rapidly and provide the community with genuine options for GHG reduction and climate change adaptation. Fleet fuel economy improvements, switching to alternative fuels and electric vehicles, and transitioning to a built environment and modes of travel that reduce reliance (and vehicle miles traveled) on single occupancy vehicles, can significantly reduce the community's long-term GHG emissions, air pollution, and result in other co-benefits to the community. For example, a 2012 report by the Union of Concerned Scientists showed the pollution equivalency to miles per gallon of electric vehicles (EVs) based upon regional electric grid mixes. Given that Renewable Energy Portfolio standards continue to rise, the MPG equivalency of EVs will rise over time.<sup>3</sup>

*What is the scope of actions for this category?* Land use policies; transportation systems and infrastructure; accessibility, efficiency and safety of bike and pedestrian infrastructure. Travel modes and vehicles, and fueling/energy infrastructure, delivery and production for use in Corvallis vehicles.

*What types of strategies mitigate GHG emissions or support adaptation in this element/category?*

- Strategies that encourage and support conversion of fleets to more efficient and/or renewably powered vehicles. (Mitigation mostly)
- Strategies that promote reduced vehicle miles traveled. (Mitigation and adaptation if energy sources disrupt or may be limited)
- Strategies that transition neighborhoods to mixed-use neighborhoods with goods, services and employment centers within walking/biking distance. (Both)

*Implementation and effectiveness considerations.*

- Changes in land use policies and zoning can have a substantial long-term impact. However, the resulting changes in the built environment and supporting infrastructure that in turn can result in GHG emissions reductions and increased resiliency to climate change impacts can take a very long time. Transportation infrastructure often needs modification, and increased mass transit service needs urban density and increased ridership to achieve GHG emissions reductions. Given that mitigations are

---

<sup>3</sup> State of Charge—Electric Vehicles Global Warming Emissions and Fuel Cost Savings across the United States; Anair, Don and Mahmassani, Amine; June, 2012

needed more now given the pace of climate change than tomorrow, these should be considered for timing of benefit.

- Promotion/increases of active travel modes (i.e. biking and walking) can generate health and livability co-benefits as well as adaptation resiliency benefits. Considerations of safety must be paramount to encourage large scale movement of people in corridors with other modes.
- Alternative liquid fuels have limits to scaling based on availability and desirability of feedstocks. However, local low-carbon sources of energy should be considered essential for both resiliency and mitigation and are solutions that are deployed right now.
- Electric vehicles are highest efficiency options, including embedded and lifecycle energy consumption, for commute vehicles and nearly all of the uses for a vehicle other than occasional long distance trips.

### Consumption and Waste:

*What is it?* This category considers everything in the lifecycle of consumer goods from extraction of raw materials to manufacturing, packaging, distribution, product use and associated (energy and resources demands) and finally, disposal. Although “embodied” GHG emissions are in everything we buy due to the energy used to produce and transport them, they are mostly invisible and therefore are discounted (unless they are goods like appliances or other products that require energy to operate). That energy is produced somehow, generating some level of GHGs. Reusing, buying used, buying durable products, recycling and recovering energy from materials that cannot be re-used can significantly reduce the GHGs associated with product manufacturing. Diverting food and vegetative waste from the garbage/landfill, composting, anaerobic digestion and landfill gas capture and use can reduce GHG emissions by preventing the “fugitive emissions” associated with organic matter decay. Biomethane also can be used as a local source of lower carbon fuels for hauling fleets.

*Why does it matter?* The consumption of goods, foods, and services typically makes up about half of a community’s GHG emissions. Most consumption emissions occur elsewhere and are often overlooked because of this. Wiser consumption, like purchasing locally or buying more durable goods, can reduce emissions by decreasing the travel required to get the product to you or by lessening the need for replacement goods in the future. Waste comprises a smaller portion of the community’s GHG emissions (< 1%). Finding ways to convert “waste” into beneficial uses, like recovering methane from Coffin Butte Landfill, or composting home food and yard waste also can result in environmental and economic co-benefits for the community.

*What is the scope of actions for this category?* Individual and organizational purchasing patterns. Individual and organizational waste management and recycling systems. Purchasing locally produced goods and services.

*What types of strategies mitigate GHG emissions or support adaptation in this element/category?*

- Reduce/share goods; (Mitigation and adaptation)
- Repair and re-use working objects; (Mitigation and adaptation)
- Buy used, buy recycled content, durable and energy efficient; (Mitigation) and
- Recycle after useful life, compost, recover energy. (Mitigation and adaptation)

*Implementation and effectiveness considerations.*

- It is important to keep in mind that while robust recycling is an important consideration, modification of the how and what of consumption of goods on the front end makes the greatest impact on GHG emission reductions.

## Urban Natural Resources:

*What is it?* This category addresses the natural systems that support the soil, air, water, plants, and animals in the city. Urban natural systems addressed in this CAP include: streams, their riparian areas and contributing watersheds; drinking water sources; natural and constructed drainage features that filter, retain, and clean stormwater; wetlands; wooded natural areas; vegetated open space areas; and the inventory of trees that create an “urban forest.”

*Why does it matter?* The collective community maintenance and management of urban natural resources contributes to GHG emissions in only a very modest way, and can offset the release of GHGs in a modest way as well, through sequestration of carbon and cooling the environment. However, protecting, maintaining and enhancing natural resources within the urban environment can support the community’s preparedness and resiliency to predicted impacts of climate change. Increased heat, drought, extreme weather events predicted to occur in the coming decades will challenge our infrastructure and services, and may threaten community health and the adequacy of local vegetation, habitat and water supplies that sustain local communities. Wetlands, healthy streams and drainageways, and open areas that provide groundwater recharge can help mitigate flashy peak stormwater/flood flows that might otherwise overwhelm constructed infrastructure, and can help maintain groundwater aquifers and water quality in the face of prolonged drought. In warmer conditions, urban forests provide local heat reduction and can provide relief in hot weather for high risk populations such as low income people and those with limited mobility - without access to air conditioned spaces. Vegetation provides soil retention and water filtration, which can help urban infrastructure functions, prevent landslides and bank failures, and protect wildlife habitat. All of these environmental and natural resource protection strategies provide general livability and sustainability co-benefits to the community.

*What is the scope of actions for this category?* Natural resources/systems within the Corvallis urban growth boundary, and neighborhoods throughout the city.

*What types of strategies mitigate GHG emissions or support adaptation in this element/category?*

- Strategies that achieve significant watershed and riparian restoration can provide water quantity and quality when there is more population pressure and challenged supplies or storage of water. (Adaptation)
- Deciduous trees near buildings can provide shade in warm months and sunlight access in cold months. (Mitigation and Adaptation)

*Implementation and effectiveness considerations.* Passive infrastructure systems that work with natural systems tend to cost less over time and are more adaptable to future conditions (e.g. natural stormwater management systems and pervious vegetative areas to support groundwater supplies). Vegetation management needs to consider existing conditions and predicted changes in climate conditions. The benefits of trees relate more to community resiliency and adaptation than mitigation because the length of time it takes and the amount of carbon sequestration achieved per dollar spent is not effective at the local level.

## Food and Agriculture:

*What is it?* This category includes everything related to our food production, delivery and distribution. It can also relate to local food distribution networks that support low income people, people with restricted mobility, and that divert food from the waste stream. Farms of all types serve Corvallis directly, and are a driver in the Corvallis area’s economy because of agricultural exports.

*Why does it matter?* Farms are a source of income and food for much of the Corvallis community. Changing physical conditions due to climate change may require new crops and/or new cropping regimes and agricultural practices due to weather, pests, weeds, and water availability. Local food production also may change due to changing availability or cost of food transported into the community from elsewhere. A general shift in food consumption toward an increasingly plant based diet can reduce GHG emissions generated by the meat and dairy sectors, which are significantly more GHG producing than plant-based agriculture. Agriculture may provide a carbon sequestration opportunity and agricultural practices are evolving to include methods that are less fuel and carbon-based chemical intensive. In a resource constrained world, local agriculture could focus on feeding the local community as a first priority. Severe climate events could impact the local food supply, which may impact disadvantaged community members disproportionately. In a more optimistic scenario, Corvallis' agriculture segment of the economy can continue to prosper and create incomes. There are also co-benefits that can result from strategies such as community gardens that can support community livability and provide increased food security to some community members, and from local agricultural practices that generally improve the environment.

*What is the scope of actions for this category?* Corvallis metropolitan area and surrounding agricultural lands. Farms and food providers to the local community. Local non-profit service providers/food pantries, etc.

*What types of strategies mitigate GHG emissions or support adaptation in this element/category?*

- Capturing methane from animal waste (Mitigation)
- Reduction in the use of high carbon intensity nitrogen manufactured in other communities (Mitigation)
- Carbon sequestration and soil building through no-till practices (Mitigation and adaptation)
- Selecting crop types or new crops that can grow in the future conditions without the need for additional resources, such as irrigation from surface or ground water (Adaptation and Mitigation)

*Implementation and effectiveness considerations.*

The level of effort and resources required vs. the benefits gained for GHG emissions mitigation and climate change adaptation should be carefully considered. There is clearly resiliency, cultural and community development benefits from investing effort in a robust local food production and supply system, however, it should be recognized that these efforts cannot be expected to produce significant GHG mitigations in the near-term.

#### Health, Social Services and Community Wellbeing:

*What is it?* This category addresses community health, care and assistance programs, emergency services, and preparedness (or risk management) for potential/predicted negative community impacts of climate change. Changing conditions (such as increases in temperature, extreme weather, and fires), regulations and energy sources will create new and sometimes unanticipated changes that will affect people in many ways. The need to mitigate emissions creates opportunities to create health through active modes. The ability to adapt requires monitoring of the range of disease and carriers of disease, such as the West Nile Virus carried by mosquitoes farther north.

*Why does it matter?* Changing conditions such as increased energy costs, will disproportionately affect the lower income populations. Migration of people, flora and fauna may introduce new challenges such as fauna-carried diseases, and loss of existing native habitats that maintain natural system functions. More extreme weather events may threaten lives, such as elderly or health-compromised people in prolonged heat waves. Prolonged and extreme rains, or rapid snow melt can cause flooding and landslides, and heat waves

and droughts may bring wildfires that threaten neighborhoods at the urban-wildland interface. There are also co-benefits that can result from strategies that promote increased community awareness and preparedness for things like hazards, disasters, and disease vectors, and the availability of services in the community to provide support.

*What is the scope of actions for this category?* Mostly, this category address adaptation and resilience action. Consideration of emergency management measures and actions that ensure the availability of social service life lines and access to medical services are part of expected adaptation needs. However, if the community transitions to eating a more local and plant-based diet, and toward increased walking and biking as modes of transportation, the results can include long-term GHG emissions reduction and a healthier and resilient group of people.

*What types of strategies mitigate GHG emissions or support adaptation in this element/category?*

- Encouragement of active transportation and eating more plants. (Mitigation and adaptation)
- Establishment of Emergency response protocols to deal with landslides, wildfire and or flooding. (Adaptation)
- Surveys of data and assets to determine where the physical hazards or disease patterns that may emerge under the future conditions. Planning accordingly. (Adaptation)

*Implementation and effectiveness considerations.*

- In developing emergency plans and social services that will support adaptation to predicted climate change impacts, it will be important to consider all neighborhoods and communities within the city and their levels of service.
- Although scientific studies show that the type of food we consume impacts on GHG emissions (i.e. animal-based food (meat and dairy) is a much higher intensity producer of GHGs than plant-based agriculture), the public's willingness to fundamentally shift their dietary patterns as a means to address the local GHG emissions reduction target is at best a significant uncertainty. Investing efforts and resources in persuading people to change their diets would, at best, produce long-term rather than short-term GHG mitigation benefits.

#### CAP DEVELOPMENT AND PUBLIC OUTREACH PROCESS:

The City Council and the CATF established a time frame for development of the CAP that requires completion (i.e. adoption by the City Council) by December 31, 2016. They also established a scope and process that includes significant involvement from City staff, local community partners, interested stakeholders, and the general public. The process to develop the plan within the time frame was necessarily focused and time constrained. Tools were developed by staff and the project consultant to support efficient and effective identification, evaluation and prioritization of actions and implementation measures.

Six "Task Teams" were created to work on each of the six categories of the CAP (see "CAP Categories" above). The Task Teams were composed of City staff throughout the organization, as well as representatives from major public institutions, non-profit service organizations, businesses and industries that are either service providers in the community, may be impacted significantly by climate change and mitigation efforts, or who have the potential to help in the community's efforts to reduce greenhouse gas emissions in significant ways. The City staff and external partners on the Task Teams were either topic experts or have access to multiple topic experts in their organizations to support development of the plan.

The Task Teams were provided with background documents to help in understanding the science and the goals for the CAP, as well as tools to help them identify potential climate change mitigation or adaptation

actions and to evaluate them based the evaluation criteria described above. The Task Teams were provided with an inventory of many typical climate change mitigation and adaptation actions that are being implemented by local communities throughout the nation. The actions were “pre-sorted” based on their GHG mitigation potential as described above.

Staff and the project consultant collected, assembled and ordered the Task Team-recommended actions by the effectiveness and cost-effectiveness metrics. Each Task Team met in a half-day workshop with the project staff and consultant to discuss, clarify and prioritize their recommended high priority actions. The results were combined, and actions were refined. The resulting strategies and actions were then sent to a group of external “Reviewers” who were asked to review, collect suggestions/ideas from interest groups they are part of, and provide that input to the City. Staff and the project consultant compiled all of the feedback, and refined and reprioritized the actions using each stage of input. The potential actions that rose to the top of the list in each of the categories were then evaluated in detail by the consultant for their GHG reduction potential relative to the municipal and community emissions inventories, and the cost per metric tonne of CO<sub>2</sub>. The consultant also applied the evaluation criteria to the highest priority actions using best professional judgment and considering input gained from the Task Teams.

In August and September, the broader CATF convened three public outreach sessions. At these sessions the Corvallis community was invited to learn and comment on the potential climate change mitigation and adaptation strategies as well as the goals, GHG reduction target, and evaluation criteria. All input received at these sessions and online was forwarded to the CATF for their initial consideration. The CATF final review and guidance for preparing a draft CAP for City Council consideration occurred on October 25, 2016.

## **CORVALLIS CLIMATE ACTION PLAN APPENDIX 3**

### **The Community Context for Developing the Corvallis Climate Action Plan: Existing Conditions, Strategies, Policies, Plans, and Practices**

#### **ISSUE:**

This paper describes the context for the development of a Climate Action Plan (CAP) in Corvallis. It includes summaries of existing greenhouse gas (GHG) inventories for the City's municipal operations and for the community. It also includes background information on local efforts and strategies to quantify or reduce greenhouse gas emissions or address and mitigate the impacts of rising greenhouse gas emissions. These efforts and strategies include both previous and existing policies, plans, practices, and programs that affect the community's greenhouse gas emissions or mitigate its impacts by the municipal and county governments, local non-profits, local businesses, and state, regional, and national organizations and government entities.

This document is not all-inclusive, but is representative of a significant amount of input that was provided by stakeholders throughout the development of the CAP. It provides a look at higher-profile, community-wide efforts conducted mainly by the City of Corvallis, Benton County, the Corvallis Environmental Center, and the Corvallis Sustainability Coalition through government-funded or government-supported programs.

#### **CITY OF CORVALLIS:**

The City of Corvallis has been engaged in climate change issues since at least the year 2000, when the City committed to the Cities for Climate Protection Campaign. By 2005, the City had signed on to the Mayors Climate Protection Agreement and the City Council passed a resolution committing to purchasing renewable energy for the organization and encouraging community members to do the same. In 2008, the Corvallis Energy Challenge, Oregon's first community energy project, was underway with leadership from the Corvallis Sustainability Coalition and Energy Trust of Oregon. Additionally, the City joined ICLEI – Local Governments for Sustainability, to advance its climate protection efforts. In 2009, the City completed its first organizational greenhouse gas inventories.

In 2010, the community was recognized for its use of renewable energy and awarded the U.S. Environmental Protection Agency's (EPA) first Green Power Community of the Year award, and was awarded an EPA Climate Showcase Communities grant. That three-year grant created several programs that are still working to reduce energy use in the community: Take Charge Corvallis and Classrooms Take Charge. Additionally, funding from the grant supported the Community Greenhouse Gas Inventory, conducted in 2013 by City staff. Also in 2010, the City Council's Energy Strategy Ad Hoc Committee (ESAHC) 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 clean energy business. The ESAHC also compiled existing energy and sustainability policies, and conducted a gap assessment to determine where City could be doing more to achieve community energy goals.

## GREENHOUSE GAS INVENTORIES:

Greenhouse gas inventories provide a starting point and periodic points of comparisons to track how communities and organizations are progressing in achieving GHG reductions in accordance with established targets.

The City of Corvallis conducted initial GHG emissions inventories for its own operations in 2009 for the years 2004 and 2008. The City recently completed an update using 2013 data. A GHG emissions inventory for the community was completed in 2013 using 2012 data. Methodologies and results are summarized below.

### **Municipal Operations Greenhouse Gas Inventories:**

The 2004 and 2008 municipal operations inventories were conducted at the same time in order to establish an initial year (2004) and comparison year (2008). They both followed the Local Government Operations Protocol, which was developed as a collaboration of The Climate Registry (TCR), the California Air Resources Board (CARB), the California Climate Action Registry (CCAR, now the Climate Action Reserve), and ICLEI—Local Governments for Sustainability. Emissions data were then collated and calculated using ICLEI’s Clean Air and Climate Protection (CACP) 2009 software program, which was obsolete by the time the 2013 inventory was started. The 2013 inventory used the same Local Government Operations Protocol, but a version updated in 2010.

The data sets available for 2004 and 2008 were different, so only a partial comparison is possible. During 2008, City of Corvallis emissions from fuel and power use by buildings and vehicles were 20,198 Metric Tonnes of Carbon Dioxide Equivalent (MT CO<sub>2</sub>e). This represented a 2% increase over 2004 in Scope 1 emissions (i.e. direct emissions from owned or controlled sources) and Scope 2 emissions (i.e. indirect emissions from the generation of purchased energy). Scope 3 emissions (i.e. all other indirect emissions other than those from Scope 2, which include all lifecycle emissions from the supply chain of goods and services procured, for example) were not included in the 2004 data. Therefore, Scope 3 emissions for the organization can only be compared from 2008 to 2013.

In 2013, total GHG emissions rose to 21,289 MT CO<sub>2</sub>e, a 5.4% increase over 2008 emissions. (This comparison includes Scope 3 emissions as well as Scopes 1 and 2). The reasons for the increased emissions are difficult to pinpoint due to differences in the methodologies used to estimate emissions, variations in emission sources included, and the now-obsolete software used in the 2004 and 2008 inventories made data access impossible. The chart below summarizes the emissions data for 2004, 2008 and 2013. While some areas of emissions, such as electricity and stationary combustion went down over this time period (as should be expected from the significant energy efficiency improvements, reductions in fossil fuel usage for electricity production, and the economic recession that occurred during this time period), some areas (such as wastewater and the supply chain) increased markedly for reasons we cannot attribute to actual changes in City operations. The breakdown of inventoried emissions for 2004, 2008 and 2013 are shown in Figure 1 below.

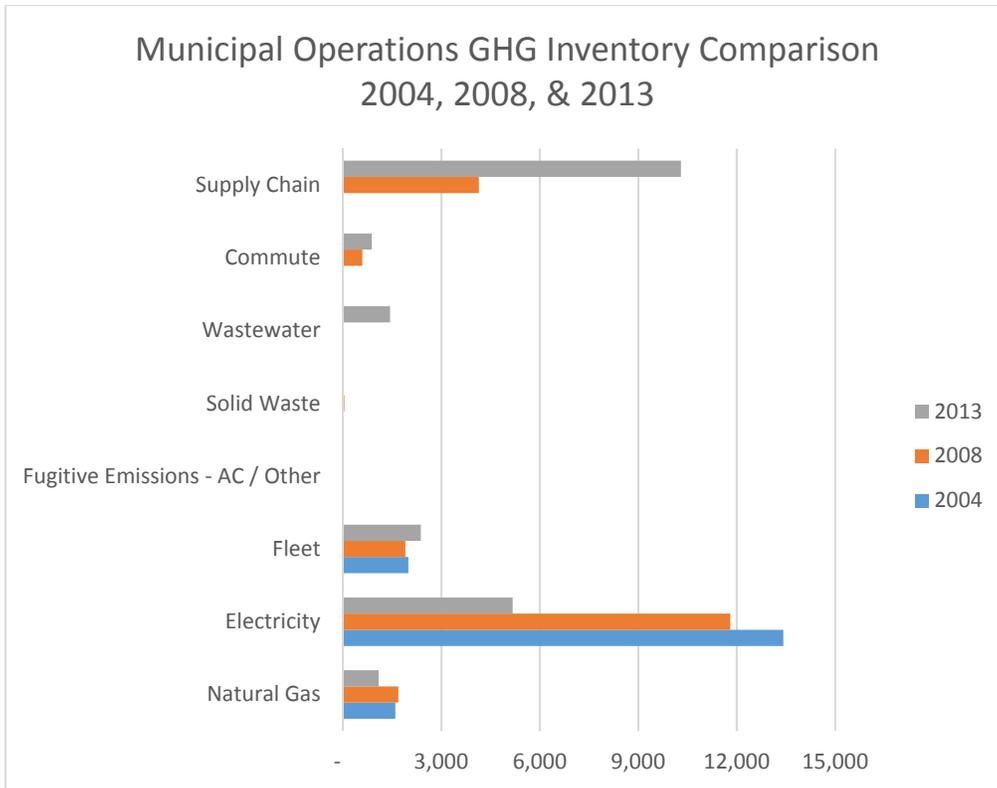


Figure 1. 2004, 2008 and 2013 Greenhouse Gas Emissions from City Operations.

**Community Greenhouse Gas Inventory:**

As noted above, the City of Corvallis conducted a Community Greenhouse Gas Inventory for Corvallis, Oregon for the 2012 calendar year. The city limits serve as the physical boundaries. The inventory 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. 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.

Total emissions in 2012 for the Corvallis community are estimated at 1,257,115 MT CO<sub>2</sub>e. Figure 2 below summarizes the findings based on the five Basic Emissions Generating Activities plus Household and Government Consumption.

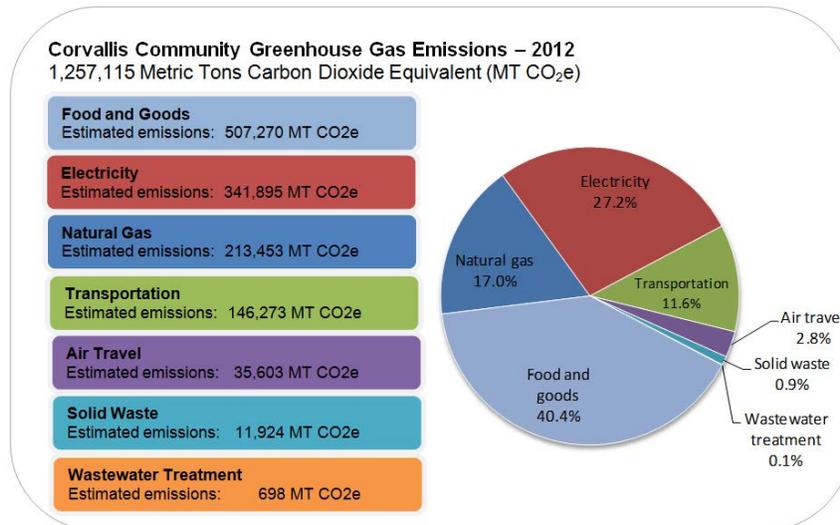


Figure 2. Corvallis Community Greenhouse Gas Emissions--2012

**EXISTING PLANS AND POLICIES THAT SUPPORT CLIMATE ACTION:**

**City of Corvallis:**

The City of Corvallis has several adopted long-range plans (or is currently updating existing plans) and/or policies that support actions that already have been implemented to reduce GHG emissions or that will be contemplated in developing the CAP to further mitigate climate change. These plans and policies serve as the existing context for near term actions. And, a review of existing plans and policies relative to newly identified climate change mitigation and adaptation actions will help reveal gaps in agency programs and policies. An implementation and tracking data base tool has been developed that includes relevant policies and plans, and that identifies policy gaps. Once priority actions are determined and added to the implementation tool, areas where additional policies or enabling ordinances are needed can be identified for future development.

Policies and Plans that are included in the implementation tool to date include:

- Corvallis Comprehensive Plan (1997)
- Energy Conservation Policy
- Organizational Sustainability Policy
- Transportation System Plan (2016)
- Stormwater Master Plan (2002)
- Community Energy Strategy

Plans that have been examined but do not have specific elements to include:

- Water Master Plan (1998)
- Wastewater Master Plan (1998)
- Corvallis 2020 Vision Statement (1998)
- Community Sustainability Policy

These policies and plans touch on both community and operational elements in each of the selected categories except Food and Agriculture.

### **Benton County:**

Benton County's work touches on all categories with a broad web of policies, programs, plans, and practices that work to improve public health. For example, in collaboration with the Oregon Health Authority's Public Health Division, Benton County Health Department worked to develop the Climate and Health Adaptation Plan. Using the Centers for Disease Control's five-step Building Resilience Against Climate Effects (BRACE) framework allowed Benton County to provide an overview of local climate change and health projections, and for the development of possible interventions that would allow communities and identified vulnerable populations to adapt to predicted changes.

Benton County provides a broad array of services to the community, and as such they have a long list of policies, plans, and practices employed to address climate change mitigation and adaptation. A summary of those policies and practices will be identified in the public engagement process where many County employees will be included and asked to identify specific policies, plans, and practices and their link to action items in the CAP.

### **Corvallis Environmental Center:**

The Corvallis Environmental Center (CEC) has been a long-time advocate, sponsor, and host for community energy efficiency programs and campaigns. From 2011-2014, CEC's efforts were integral to the programs funded by the Climate Showcase Community grant from the EPA. The resulting "Energize Corvallis" programs engaged one in ten Corvallis residents and reduced emissions by more than 15,000 MT CO<sub>2</sub>e. Take Charge Corvallis, Classrooms Take Charge, and Campuses Take Charge are extensions of those programs and have continued to reach more of the community.

Since 2015, the CEC has led the effort behind the Corvallis community competing for the \$5 million Georgetown University Energy Prize, continuing to motivate the community to find innovative ways to save energy.

### **Corvallis Sustainability Coalition:**

The Corvallis Sustainability Coalition (Coalition) has been vital in gaining momentum around sustainability issues since its inception in 2007. They have twelve Action Teams working in specific areas of sustainability:

- Community Inclusion
- Economic Vitality
- Education
- Energy
- Food
- Health & Human Services
- Housing
- Land Use
- Natural Areas
- Transportation
- Waste Prevention
- Water

These Action Teams rely on volunteers with interest or expertise in a particular area to advance the community towards the Coalition's goals for that area. Each Action Team is guided by goals documented in the [2013 Framework for Action](#), developed through an inclusive, community-wide initiative involving a

broad cross-section of the community. For example, the Coalition has two goals related to water that the Water Action Team pursues. One of those goals seeks, by 2050, to reduce the quantity of water flowing through the Corvallis municipal water systems by 50% compared to 2008 levels. Specific strategies and actions identified in the *Framework for Action* guide the direction of those reduction efforts.

The efforts of the Coalition's Action Teams began in 2008 with the first iteration of the *Framework for Action*, called the *2008 Action Plan*. Insight into the types of programs and their effectiveness will come as the public engagement process proceeds, as many members of the Action Teams have been identified as possible Task Team members or Reviewers. Later that year, the Coalition, in partnership with the Energy Trust of Oregon, provided leadership for the Corvallis Energy Challenge, the first, community-wide, residential energy reduction program.

### **Climate Action Plan for Corvallis, Oregon 2015 (Developed by a citizen/community task force):**

The Climate Action Plan, prepared by a citizen group called the Corvallis Climate Action Plan Task Force (which should not be confused with the City Council-appointed Climate Action Task Force that is overseeing preparation of the City of Corvallis Climate Action Plan), strives to offer direction and focus for the entire community to address climate change and its impacts. The report prepared by community volunteers puts forth a considerable list of existing programs and recommended potential partners and programs, which will be considered by the City in developing the Corvallis organizational and community CAP. The following excerpts from the community CAP include lists of existing and potential programs and partners, organized in the same categories that will be used in the Corvallis CAP.

#### Buildings and Energy:

Numerous organizations are working to increase energy efficiency and reduce greenhouse gas 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 (Seeds 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 occupancy vehicles. City staff works with national and local alternate modes advocates to develop more active 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 amenities. 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 State mandated 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' provider of garbage, recycling and organics collection and 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 (OSU) 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 Recycle Mania 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 related to climate change. 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 Services

### 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, U.S. Forest Service, U.S. Fish and Wildlife Service, Oregon Department of State Lands, Oregon Department of Fish and Wildlife and Oregon Department of Environmental Quality. 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 (2015)

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

#### Task Team Input:

Community stakeholders and City staff combined efforts to develop lists of existing actions currently underway and organized them in the same categories used in the Corvallis CAP. The lists are provided in the following sections at the end of this document.

- Section A – Buildings and Energy
- Section B – Food and Agriculture
- Section C – Land Use and Transportation
- Section D – Consumption and Solid Waste
- Section E – Health and Social Services
- Section F – Urban Natural Resources

#### CONCLUSIONS:

The Corvallis community's achievements in energy efficiency, climate change awareness, and strategies to achieve renewable energy development reflect strategic planning and strong, collaborative efforts of City government, residents, non-profits, businesses, and educational institutions. These serve as a foundation for the City's development of future strategies and actions to mitigate climate change and to prepare the community to adapt and be resilient to changes in the climate and local natural systems and infrastructure.

**SECTION A: BUILDINGS AND ENERGY—EXISTING ACTIONS**

<b>ACTIONS:</b>	<b>MITIGATES</b>	<b>ADAPTS</b>	<b>COMMUNITY</b>	<b>CITY OPERATIONS</b>
City of Corvallis--Low Income Homeowner housing program provides financial assistance to retrofit existing homes or construct new homes to be more energy efficient.	x		x	x
Benton County—with Energy Trust, completed facility upgrades/retrofits for improved energy efficiency: boilers, chillers, windows, lighting, and installation of variable frequency drives.	x		x	
Benton County--promotes operational energy conservation behaviors, audits energy and water usage, and is working to increase recycling and composting, and to decrease irrigation.	x		x	
Benton County--proposing geothermal heating using domestic sewer system for the BC courthouse.	x		x	
Corvallis Environmental Center—implementing the Residential Take Charge program: door-to-door outreach targeting 15% of Corvallis residents asked to choose 3-5 actions to improve energy efficiency at personal residences with a focus on transportation and purchasing behaviors.	x		x	
Corvallis Environmental Center and City of Corvallis—distributing 35,000 LED light bulbs to Corvallis residents.	x		x	x
Corvallis Environmental Center partners with retrofit organizations to improve energy efficiency across the community.	x		x	
Corvallis Environmental Center—implementing Seeds for the Sol program which provides loans for solar installation on residences (City of Corvallis has provided	x		x	x

\$100,000 and Unitarian Church has provided \$28,000 in loans).				
Corvallis Environmental Center—implements ongoing volunteer energy efficiency promotion/education programs.	x		x	
City of Corvallis Fire Department—has instituted a “no idle policy” for vehicles.	x			x
City of Corvallis—retrofitting lights at all Parks and Recreation facilities to LEDs.	x		x	x
City of Corvallis—has implemented “smart irrigation systems to reduce irrigation, and is reducing fertilizer application on grass to reduce required mowing.	x	x	x	x
City of Corvallis—has installed variable frequency drives, high efficiency faucets and shower heads at Osborne Aquatic Center.	x		x	x
City of Corvallis—urban forestry and land management practices are increasing tree planting.	x	x	x	x
City of Corvallis—managing 2,500 acres of watershed to optimize growth of trees.	x	x	x	x
City of Corvallis--water treatment and wastewater reclamation plants have implemented upgrades and optimization practices to increase efficiency of pump and lift stations, treatment processes and distribution.	x			x
City of Corvallis—has completed energy efficiency studies and evaluations of numerous facilities, including: wastewater reclamation plant (WWRP), strategic energy management program at Taylor water treatment plant (WTP); micro-hydro at Rock Creek WTP; interior and exterior lighting upgrades; chiller/boiler upgrades, smart lighting systems – daylight systems; evaluating potential uses for WWRP methane.	x			x
City of Corvallis—is completing retrofits of City street lights to LEDs in phases.	x		x	x

City of Corvallis—has installed high efficiency shower heads, solar panels, and increased efficiency HVAC systems at fire stations.	x			x
Energy Trust of Oregon provides cash incentives for energy projects; solar installation – both residential and commercial; stand alone incentives (\$550) for gas furnaces – rental properties; residential loan programs to assist lower income homes be more efficient.	x		x	
City of Corvallis--Livability Code in effect in September 2016 will address some energy efficiency upgrades for renters on a complaint basis.	x	x	x	x
Energy Trust of Oregon provides incentives for single family residences for HVAC and weatherization improvements, including the Savings within Reach program which provides incentives to renters.	x	x	x	
City of Corvallis and community members purchase Blue Sky power.	x		x	x
Corvallis Environmental Center--installations of heat pumps and heat pump water heaters are increasing (heat pumps provide air conditioning benefits).		x	x	
Benton County—has implemented a new standard requiring white membranes on most commercial and institutional roof installations.		x	x	
Community—there is a growing network of people engaging in new programs and education for future decisions.		x	x	
Benton County—has developed an adaptation plan for emergency services for continuity of essential services during events.		x	x	
Hewlett Packard has established a goal of 100% renewable energy use by 2040 as part of the Paris Climate agreement.	x		x	

Republic Services converted their entire fleet to Compressed Natural Gas.	x		x	
---	---	--	---	--

**SECTION B —FOOD AND AGRICULTURE: EXISTING ACTIONS**

<b>ACTIONS:</b>	<b>MITIGATES</b>	<b>ADAPTS</b>	<b>COMMUNITY</b>	<b>CITY OPERATIONS</b>
Food Bank and Farmers Market—Provide cooking demonstrations (to adapt the community needs basic cooking skills).		x	x	
Sustainability Coalition Food Action Team--Food preparedness for more than three days and possibly at the neighborhood level.		x	x	
OSU Extension Service Master Food Preservers—Food preservation classes.		x	x	
Sustainability Coalition—Conducting an “eat 40% local challenge” which includes a focus on seasonal food.		x	x	
Farmers Market--takes SNAP for seeds and vegetable starts.		x	x	
Food Bank—has a grant to provide plant starts to grow food.		x	x	
Corvallis Environmental Center—School Gardens Program is teaching kids to grow and appreciate fresh food.		x	x	
Ten Rivers Food Web—Helping transition from retiring farmers to younger generation of new farmers.		x	x	
Statewide land use laws protect local farm and forest lands.		x	x	
City of Corvallis--Has implemented land use code changes to allow for community gardens, chickens, and food stands.		x	x	x
City of Corvallis—Is incorporating xeriscaping practices into public landscapes.		x	x	x
Robust gleaning groups in Corvallis as compared to the rest of Oregon, working to develop a mechanism to distribute information to residents on food sharing.		x	x	
Corvallis Environmental Center, OSU, and 509J—working to implement the Farm to School Program	X	X	X	

OSU Extension Small Farms Program-- Growing Resilience: Water Management Workshop Series <a href="http://smallfarms.oregonstate.edu/wmws">http://smallfarms.oregonstate.edu/wmws</a> Dry Farming Demonstration <a href="http://smallfarms.oregonstate.edu/dry-farming-demonstration">http://smallfarms.oregonstate.edu/dry-farming-demonstration</a> Dry Farming Collaborative - <a href="#">Facebook</a> <a href="#">page</a>	X	X	X	
---	---	---	---	--

**SECTION C—LAND USE AND TRANSPORTATION: EXISTING ACTIONS**

<b>ACTIONS:</b>	<b>MITIGATES</b>	<b>ADAPTS</b>	<b>COMMUNITY</b>	<b>CITY OPERATIONS</b>
City of Corvallis—has a bike share program for employees.	x			x
OSU--has a Climate Action Plan and is currently updating it.	x		x	
City of Corvallis—evaluating conversion of transit fleet to Compressed Natural Gas and electric buses.	x			x
City of Corvallis--synchronizes traffic signals to reduce congestion at intersections; additional projects are planned for the future.	x		x	x
City of Corvallis, Land Trust and others--setting aside natural system areas to allow for additional water runoff storage and eliminating urban development in areas that could be impacted by flood.		x	x	x
City of Corvallis—has mapped landslide areas; information can be used to guide future development.		x	x	x
City of Corvallis--has converted all diesel vehicles to renewable diesel (R-99) fuel.	x	x		x
City of Corvallis--uses recycled asphalt during grind/inlay road improvement projects (10-25%) and provides material (asphalt grind and concrete) to Benton County for reuse.	x			x
City of Corvallis—implementing fleet management program with efficiency goals: Vehicle Replacement Policy considers replacement with electric or hybrid;	x			x

evaluates appropriate vehicle for intended use; and evaluates distance/type of travel. Also evaluates usage/needs to “right-size” fleet, extends use of boxes on new chassis, incorporates LED lighting on apparatus, maximizes length of vehicle use before disposal, and maintains a “no-idle” policy.				
City of Corvallis--encourages employees to use fuel efficient pool vehicles whenever appropriate as opposed to assigned vehicles that are less efficient.	x			x
City of Corvallis—has converted all traffic signals to LED lights.	x		x	x
City of Corvallis is converting street lights to LEDs in phases.	x			
City of Corvallis has enacted design standards that require arterial and collector roads to be a minimum of one foot above the 100-year flood plain.		x	x	x
City of Corvallis has restrictive floodplain standards and restricts development in landslide-prone areas.		x	x	x

**SECTION D—CONSUMPTION AND WASTE: EXISTING ACTIONS**

<b>ACTIONS:</b>	<b>MITIGATES</b>	<b>ADAPTS</b>	<b>COMMUNITY</b>	<b>CITY OPERATIONS</b>
OSU purchasing of goods and services: sustainability built into some contracts; e.g., Office Max has changed packaging and added green purchases; reduction of deliveries by establishing a \$ threshold for orders; Athletics contract transitioning to fully compostable products; packing material requirements, e.g., Dell computers are now packaged in cardboard.	x		x	
OSU has an extensive recycling program: use clean waste streams to reduce handling of materials; all Styrofoam is stored and transported	x		x	

to St. Vincent DePaul for recycling; e-recycling; participate in Master Recycler program, and promote recycling among community and student population.				
OSU: promotes re-purposing and extending life of products through purchase deferment, conducting Repair Fairs and participating in surplus resales (in partnership with Corvallis, Albany, etc.).	x		x	x
Benton County: the Materials and Recovery Center takes construction and demolition materials in the sorting area.	x		x	
Benton County: Has reduced waste hauling by purchasing a compactor and consolidating waste from County facilities for one pick up by Republic Services.	x		x	
HP has a landfill reduction program: they provide take back and recycling for electronic products sold by HP; working to identify value in recycle streams; changing from product-based purchases to service-based purchases, e.g. they provide printers as a service for a business instead of selling printers – moving into this for computers, which allows for repurposing of older products that are being replaced.	x		x	
HP: Has included a materials intensity metric in annual sustainability report, i.e., quantity of materials put to market divided by revenue, with the goal to grow business without increasing materials use through practices such as reducing the size of computers.	x		x	
HP: Participating in establishing national sustainable purchasing criteria.	x		x	
Republic Services: Provides public education and outreach – co-facilitation of Master Recycler program; flyers to every address with information on reuse	x		x	

opportunities; four hazardous waste events per year; spring clean-up event – yard debris, wood, metal; curbside recycling, organics, yard debris; working on a material recovery center.				
State Department of Environmental Quality (DEQ): Working to reduce environmental impacts over full product life cycle (i.e., 2050 Vision for Materials Management).	x		x	
DEQ: Legislature has reinstated grants program (this year funding projects as diverse as a tool lending program, furniture salvage program, edible food collection program for food banks, equipment for a Habitat For Humanity store, replacement of disposable silverware with reusable silverware, salvage and rehab bicycle program); focus on food waste and plastics recovery program and multi-tenant recycling; support of a partnership with grocery stores to allow for collection of film plastic; activity on upstream prevention programs – 40% of food produced not eaten – food recycling, composting, edible food salvage, reduction of food waste (Refed report).	x		x	
DEQ: SB 263 (2015) requires DEQ to establish "outcome-based" recovery rates and goals that operate in parallel to weight-based rates for wastesheds (e.g., Benton County). "Outcomes" could include energy, greenhouse gases, or others. DEQ plans to start developing outcome-based measures later in 2016.	x		x	
City of Corvallis: has a sustainability policy for new purchases.	x			x
City of Corvallis: recycles electronics back to manufacturers.	x			x
City of Corvallis: purchases paper that is 30%-100% recycled content.	x			x

City of Corvallis: have reduced paper usage.	x			x
City of Corvallis: Urban Forester is working with local mills and the City of Albany to repurpose or reuse all wood bi-products.	x			x
City of Corvallis: Works to resell or give away used materials.	x			x
Corvallis Sustainability Coalition Waste Prevention Action Team has a network of Recycling Block Captains providing outreach to 4,000 households on a quarterly basis. With support, this program could be expanded to include all households in the community.	x		x	
Republic Services: provides images of recyclables for recycling bins so people have a better understanding of what is recyclable.	x		x	

**SECTION E—HEALTH, SOCIAL SERVICES, AND COMMUNITY WELL-BEING: EXISTING ACTIONS**

<b>ACTIONS:</b>	<b>MITIGATES</b>	<b>ADAPTS</b>	<b>COMMUNITY</b>	<b>CITY OPERATIONS</b>
Community Services Consortium – Linn Benton Food Share on HWY 34 is isolated during flood events – planning underway for a facility in South Corvallis		x	x	
Benton County--Communication and tracking for viruses affecting the area		x	x	
Corvallis Environmental Center--Farm to School Program is sourcing local foods for schools		x	x	
Samaritan Health Services--addressing addiction health services; reduction in opiate (pain killers) prescriptions		x	x	
City of Corvallis and Benton County have moderate fuel supplies at City and County facilities – both sides of town		x	x	x
Benton County Senior Services has gatekeeper programs to check on seniors living by themselves; Meals-on-Wheels program		x	x	

Jackson Street Youth Shelter – possibly expand these types of services		X	X	
City of Corvallis and Benton County—Natural Hazards Mitigation Plan for Witham Hill landslide area is nearing completion		X	X	X
Heartland Humane Society--works with CARDV to assist in housing pets during emergency situations; allow pets from people staying at a local shelter; BC allows livestock at fairgrounds during severe weather events		X	X	
Vulnerable Population Planning Group provides support – first responder agencies – to elderly, pets		X	X	
Continuity of Operations (COOP) – shelter availability within City, American Red Cross services / education & training		X	X	
Samaritan Health Services (?) – working to establish an emergency water supply		X	X	
City of Corvallis and Benton County—Emergency Operations Plan is being developed; needs to include Emergency Support Functions		X	X	X
City of Corvallis—has snow and ice policies that address tree removal to mitigate hazards and outages and to aid emergency services to respond to icy roads		X	X	X
Benton County Wildfire Protection Plan—Being developed for City interface areas (i.e., watershed and Skyline West)		X	X	
OSU has created improved buffer areas to protect from fire		X	X	
Emergency operations centers have been established		X	X	X
City of Corvallis—water storage reservoirs are equipped with earthquake valves to prevent water losses		X	X	X

City of Corvallis—including mechanisms to get to South Corvallis during flood events		X	X	X
--	--	---	---	---

**SECTION F—URBAN NATURAL RESOURCES: EXISTING ACTIONS**

<b>ACTIONS:</b>	<b>MITIGATES</b>	<b>ADAPTS</b>	<b>COMMUNITY</b>	<b>CITY OPERATIONS</b>
City of Corvallis Parks and Recreation urban forest management actions: changing species list to increase diversity of urban forest to reduce impacts of climate change/pests; reducing impact of service vehicles to water street trees by asking residents to help; investigating electric chain saws; increasing coordination with local groups to plant more trees.	X	X	X	X
City of Corvallis Public Works – maintenance of urban streams, detention ponds – working closely with Parks and Recreation urban forester to maintain habitat when possible; potentially leaving a portion of hazardous trees instead of full removal.		X	X	X
City of Corvallis Parks and Recreation—maintains Parks Master Plan which is the backbone of natural inventory, connection of parks, streams, paths, natural features inventory to improve the ecosystem; update may propose Land Development Code changes to improve vegetation areas; working to improve accuracy of natural features inventory; comprehensive approach.		X	X	X
City of Corvallis Parks and Recreation—landscape maintenance practices are expanding pesticide free/water wise landscaping; identifying ‘right’ plants (not just native plants) to reduce maintenance required and increased viability under changing climate conditions; working to		X	X	X

improve soil instead of just using pesticides/fertilizers.				
City of Corvallis--Clean Water Act water quality permit compliance (NPDES stormwater discharge permit and Total Maximum Daily Load best management practice implementation) and Endangered Species Act guidelines and/or requirements provide regulatory context for on-going stream temperature monitoring; riparian planting – plant diversity; rain garden and downspout disconnection program; illicit discharge monitoring; erosion control measures; City evaluation of new development best management practices for water quality; public outreach events – education, planting days, residential property evaluations.		X	X	X
City of Corvallis--sells tree removal waste to a mill to support reuse and reduce waste; developing programs to help identify urban forest issues or concerns using residents for input; program for developers to pay the City to plant trees in new developments to improve survival rate and reduce contractor maintenance.	X	X	X	X
City of Corvallis--maintains a Watershed Stewardship Plan which ensures property is managed for forest health, endangered species protection, plant health, aquatic improvement, meadow restoration, thinning to increase diversity of tree stands, stream/fish monitoring and surveys.		X	X	X
Marys Peak Alliance--bringing attention to public about Marys Peak – promotion of the Peak and water source.		X	X	
Sierra Club--working with School District 509J to plant more trees along riparian buffer near school zones, providing increased street vegetation buffer.		X	X	

Sustainability Coalition Water Action Team--working on streams and low impact development; provides stream tours; education on the importance of urban streams, changing perspective of streams to water retention areas; conducts low impact development demonstrations, examples, and education on guidelines and City requirements.		X	X	
Greenbelt Land Trust – manages 400,000 acres; undertaking a planning process to identify most important investment areas in the Willamette Valley for climate change; developed a map for conservation areas of interest (80,000 acres); permit protection for approximately 3,000 acres within the urban growth boundary; planted approximately 300,000 trees along the Willamette River; installed fish-friendly culverts; manage invasive weeds; remove trees for fire prevention; stream side planting efforts; partnership of non-profit organizations interacting with local government to improve the amount of work that can be completed, sharing of information, data, resources; identifying long term value of actions.		X	X	
Marys Peak Watershed Council--improving local creeks by installing large woody debris and riparian plantings; educating elementary students to create next generation of stewards; completes restoration activities outside of urban area that have a big impact within urban areas.		X	X	
City of Corvallis Parks and Recreation—currently implementing four restoration projects.		X	X	X
City of Corvallis Parks and Recreation—maintains policies/plans that support adaptation/resiliency: Urban Forest		X	X	X

Management Plan to manage trees in the right of way; Integrated pest management program; cooperative agreement with Benton County on shared borders; Willamette Valley Planning Atlas; working with Planning on low impact development; use of “City Green” to evaluate water quality and stormwater runoff from new developments.				
Visit Corvallis: Encourages the use of local natural areas for stay-cations (offsetting climate impact of travel).	x		x	
City of Corvallis Public Works Utilities - incentivizes water conservation activities that increase water efficiency in industry and residential areas (high-efficiency toilet rebates).		x		x
City of Corvallis Public Works Utilities - has evaluated the number and impact of direct storm drain outfalls on local waterways.		x		x
City of Corvallis Parks and Recreation - Maintains carbon in wood by using wood from urban forest management for products with long lives.	x			x

**DRAFT**

**CORVALLIS**  
**CLIMATE ACTION**  
**PLAN**

**SUPPLEMENTAL**  
**DOCUMENTS**

**October 19, 2016**

STRATEGIES, ACTIONS, AND POTENTIAL IMPLEMENTATION MEASURES  
 BUILDINGS & ENERGY  
 COMMUNITY  
 MITIGATION

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	ANNUAL GHG REDUCTION POTENTIAL (MT CO2e)	COST OF CO2e REDUCTION (per metric tonne)	POTENTIAL PARTNERS
Energy Conservation and Efficiency	Increase deployment of energy efficiency improvements (such as weatherization, solar attic vents, daylighting, shading, insulation of foundations, fuel efficient appliances, etc.) in new and existing buildings, as well as onsite renewables for commercial and residential sectors. (MC-1, MC-4, MC-16, MC-18, MC-20, MC-21, MC-25, MC-29)	<ul style="list-style-type: none"> <li>Public education and outreach programs (MC-1)</li> <li>Incentive programs</li> <li>Low income and rental property programs</li> <li>Local building code changes to Increase building energy efficiency (Eg, energy performance targeted at net zero by 2030; other requirements consistent with 2011 Oregon Energy Reach Code) (MC-16, MC-20)</li> <li>Local building code changes to require green buildings and solar applications; (MC-16, MC-25)</li> <li>Advocate for state building code changes (MC-4, MC-21)</li> <li>Re-establish “Green Shares program, which educates builders/developers on efficient HVAC equipment, including life cycle costs, and promotes highly efficient options like heat pump water heaters and ductless heat</li> </ul>	<p><u>MC-1</u> 80,000</p> <p><u>MC-16</u> 3,000 (in 2030) and 8,000 (in 2050).</p> <p><u>MC-4</u> 10,000</p> <p><u>MC-18</u> 12,000 (HVAC) 6,000 (hot water)</p>	<p><u>MC-1</u> \$ -400 to \$ 0</p> <p><u>MC-16</u> Legal and other implementation costs to fully adopt and implement the Oregon Reach Code have not been estimated.</p> <p><u>MC-4</u> \$ 100</p> <p><u>MC-18</u> \$ -40 to \$ 0</p>	<p>Energy Trust of OR, Take Charge Corvallis, Corvallis Sustainability Coalition Energy Action Team, Corvallis Environmental Center, Seeds for the Sol, Habitat for Humanity, Community Services Consortium, Benton County Planning, League of OR Cities, OR Dept. of Consumer and Business Services-- Building Codes Division, elected officials</p> <p>City of Corvallis – Community Development and Public Works</p>

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	ANNUAL GHG REDUCTION POTENTIAL (MT CO2e)	COST OF CO2e REDUCTION (per metric tonne)	POTENTIAL PARTNERS
		pumps where appropriate (MC-18, MC-29) <ul style="list-style-type: none"> <li>• Provide “real time” energy usage information to influence energy consumption behavior (MC-8)</li> </ul>	<u>MC-8</u> 1,400	<u>MC-8</u> \$ 300	
Home Performance Ratings	Implement an energy performance rating program for homes, so prospective buyers and renters make informed decisions on future energy use/cost. (MC-2)	<ul style="list-style-type: none"> <li>• Incorporation into Assessment and Taxation database</li> <li>• Create voluntary program for interested homeowners</li> <li>• Establish mandatory program</li> </ul>	<u>MC-2</u> 20,000	<u>MC-2</u> Development and implementation costs not estimated.	Home Energy Rating System  City of Corvallis – Community Development
Promote Electric and Lower-Carbon Fueled Vehicles	Accelerate transition to electric vehicles. (MC-3, MC-13)	<ul style="list-style-type: none"> <li>• Public education and outreach programs</li> <li>• Building code changes to incorporate “plug-in” capability (MC-3)</li> <li>• Support for utility requirements (MC-3)</li> <li>• Advocate for incentives (rebates, tax credits, etc.)</li> <li>• Develop a program to install vehicle plug-in stations (homes first, work second and other locations third) (MC-13)</li> </ul>	<u>MC-3</u> 9,000	<u>MC-3</u> Costs not estimated.	Pacific Power, Consumers Power, Benton County Planning, electric vehicle manufacturers  City of Corvallis – Community Development and Public Works

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	ANNUAL GHG REDUCTION POTENTIAL (MT CO2e)	COST OF CO2e REDUCTION (per metric tonne)	POTENTIAL PARTNERS
Federal/State Policy Advocacy	Increase Renewable Energy Portfolio Standards for Electric Utilities. (MC-5)	<ul style="list-style-type: none"> <li>Lobby Oregon Legislature and Congress to mandate increased shift to renewables</li> </ul>	<u>MC-5</u> 95,000	<u>MC-5</u> \$ 10	OR Governor's Office, Oregon Department of Energy, elected officials  City of Corvallis – City Manager’s Office
Carbon Pricing	Promote policies at the local, state and federal level that implement carbon-based fees or taxes (MC-6)	<ul style="list-style-type: none"> <li>Develop local GHG fees</li> <li>Lobby Oregon Legislature and Congress to implement carbon-based fees or taxes (Consider advocating for the US government Social Cost of Carbon as minimum price per metric ton of CO2e) (MC-6)</li> </ul>	<u>MC-6</u> 35,000, 80,000, 130,000, or 180,000, depending on carbon price.	<u>MC-6</u> \$ 10 \$ 30 \$ 60 \$ 90	OR Governor's Office, Oregon Department of Energy, Citizens Climate Lobby-Corvallis Chapter, elected officials  City of Corvallis – City Manager’s Office
Local Renewables Development	Support distributed solar energy development (MC-7, MC-24)	<ul style="list-style-type: none"> <li>Advocate at state and federal level for protection of net metering (MC-7)</li> <li>Develop/support incentive or cost-saving mechanisms for utility customers</li> <li>Identify and eliminate tax disincentives to installing solar (such as property tax escalation from increased valuation) (MC-24)</li> </ul>	<u>MC-7</u> 160,000	<u>MC-7</u> \$ -150 to \$ 0	OR Governor's Office, Oregon Department of Energy, Pacific Power, Consumers Power, elected officials  City of Corvallis – City Manager’s Office

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	ANNUAL GHG REDUCTION POTENTIAL (MT CO <sub>2</sub> e)	COST OF CO <sub>2</sub> e REDUCTION (per metric tonne)	POTENTIAL PARTNERS
Energy Conservation and Efficiency	Increase smaller housing options to reduce energy consumption, environmental impacts of construction and consumption of goods/materials. (MC-9)	<ul style="list-style-type: none"> <li>• Incorporate development of mechanisms to develop a variety of small footprint housing options into the City’s Affordable Housing Development Plan</li> <li>• Develop incentive programs and/or code changes</li> </ul>	<u>MC-9</u> 4,000	<u>MC-9</u> \$ - 1,000	Local builders  City of Corvallis – Community Development
Water Conservation and Efficiency	Increase deployment of water efficiency measures of existing buildings and new construction (MC-10)	<ul style="list-style-type: none"> <li>• Expand existing assistance programs (e.g., audits, financial incentives, etc.) (MC-10)</li> </ul>	<u>MC-10</u> 800	<u>MC-10</u> \$ 0	Pacific Power, Consumers Power, Energy Trust of OR, Take Charge Corvallis  City of Corvallis – Community Development
Building Preservation	Promote adaptive reuse of historic or older buildings and weatherize to code. (MC-11, MC-28)	<ul style="list-style-type: none"> <li>• Develop incentive programs (MC-11)</li> <li>• Develop carbon-based demolition fee (MC-28)</li> </ul>	<u>MC-11</u> 21 (per home)	<u>MC-11</u> \$ 0	Preservation WORKS, Oregon State Historic Preservation Office  City of Corvallis – Community Development

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	ANNUAL GHG REDUCTION POTENTIAL (MT CO <sub>2</sub> e)	COST OF CO <sub>2</sub> e REDUCTION (per metric tonne)	POTENTIAL PARTNERS
Energy Supply Efficiency	Improve energy efficiency in existing commercial building mechanical systems (MC-12)	<ul style="list-style-type: none"> <li>Pilot a retro-commissioning incentive program to provide financial and technical assistance (MC-12)</li> </ul>			Pacific Power, Consumers Power, Energy Trust of OR  City of Corvallis – Community Development and Public Works
Conservation and Efficiency	Support development and expansion of low-carbon district heating and cooling systems. (MC-14)	To be determined			To be determined
Shift to Renewable Energy	Focus economic development efforts on residential, commercial and industrial local renewable energy installations (based on economic benefits of import substitution) (MC-15)	To be determined			State Economic Development Department  City of Corvallis – Economic Development
Federal/State Policy Advocacy	Legislation to reduce greenhouse gas emissions. (MC-17)	<ul style="list-style-type: none"> <li>Support efforts of regional, statewide and national groups like 350.org and Citizen’s Climate Lobby</li> </ul>			350 Corvallis, Corvallis Sustainability Coalition, elected officials

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	ANNUAL GHG REDUCTION POTENTIAL (MT CO <sub>2</sub> e)	COST OF CO <sub>2</sub> e REDUCTION (per metric tonne)	POTENTIAL PARTNERS
Shift to Renewable Energy	Develop local smart grid technology and storage capacity of electricity (especially locally generated renewables) and natural gas. (MC-19)	<ul style="list-style-type: none"> <li>• Work with OSU and utility companies; develop franchise agreement and other mechanisms</li> </ul>			OSU, Pacific Power, Consumers Power  City of Corvallis – Public Works
Research	City-wide energy use study of residential and commercial structures. (MC-22)	To be determined			To be determined
New Technology	Capture heat from sanitary sewer for community use. (MC-23)	To be determined			Benton County Public Works  City of Corvallis – Public Works
Energy Conservation and Efficiency	Utility rate structures, requirements and practices intended to reduce consumption and maximize efficiency. (MC-26)	<ul style="list-style-type: none"> <li>• Evaluate franchise agreement mechanisms</li> <li>• Require highly efficient equipment</li> <li>• Require conservation voltage reduction</li> </ul>			Pacific Power, Consumers Power  City of Corvallis – Public Works
Promote Lower Carbon Fuels	Conversion to electric leaf blowers, lawnmowers, string trimmers, etc. (MC-27)	<ul style="list-style-type: none"> <li>• Public education and outreach programs (MC-1)</li> <li>• Incentive programs (MC-1)</li> </ul>			City of Corvallis – Public Works

STRATEGIES, ACTIONS, AND POTENTIAL IMPLEMENTATION MEASURES  
 BUILDINGS & ENERGY  
 COMMUNITY  
 ADAPTATION

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	POTENTIAL PARTNERS
Energy Conservation and Efficiency	Encourage passive daylight, shading, ventilation, insulated building envelopes, etc. (AC-1)	<ul style="list-style-type: none"> <li>• See implementation measures in MC-1 above</li> </ul>	City of Corvallis – Community Development
Water Conservation and Efficiency	Increase deployment of high efficiency toilets (AC-2)	<ul style="list-style-type: none"> <li>• Public education and outreach program</li> <li>• Incentive programs (AC-1)</li> <li>• Low income and rental property programs (AC-1)</li> </ul>	City of Corvallis – Public Works
Water Conservation and Efficiency	Increase appropriate use of grey water to off-set production of potable water (AC-3)	<ul style="list-style-type: none"> <li>• Public education and outreach program</li> <li>• Incentive programs</li> </ul>	City of Corvallis – Community Development and Public Works
Fire Prevention Efficiencies, Building Codes	Deploy residential sprinklers to reduce catastrophic fire risk, and reduce water and fuel used in firefighting. (AC-4)	<ul style="list-style-type: none"> <li>• Building Code changes (AC-4)</li> </ul>	Oregon Building Codes Division  City of Corvallis – Community Development and Fire
Resilience Planning/ Implementation	Water treatment process requirements to treat for new organisms and anticipated temperature changes. (AC-5)	<ul style="list-style-type: none"> <li>• Maintain state-of-the-industry knowledge, training and awareness</li> </ul>	Oregon Department of Environmental Quality  City of Corvallis – Public Works
Resiliency Planning/Implementation	Decrease power outages (AC-6)	<ul style="list-style-type: none"> <li>• Promote smart grids and metering</li> </ul>	Pacific Power, Consumers Power  City of Corvallis – Public Works

<b>STRATEGY</b>	<b>ACTION</b>	<b>POTENTIAL IMPLEMENTATION MEASURES</b>	<b>POTENTIAL PARTNERS</b>
Landscaping Codes	Increase vegetation and shading (AC-7)	<ul style="list-style-type: none"> <li>Evaluate Land Development Code Requirements and determine whether code changes would achieve objectives</li> </ul>	City of Corvallis – Community Development
Green Buildings	Increased use of basements in buildings for storing water, air cooling for heat pumps, thermoregulating, etc. (AC-8)	<ul style="list-style-type: none"> <li>Public education and outreach</li> </ul>	City of Corvallis – Community Development
Alternative Technology	Enable composting toilets in residences (AC-9)	<ul style="list-style-type: none"> <li>Develop enabling regulations</li> </ul>	State of Oregon Building Codes Division  City of Corvallis – Community Development

STRATEGIES, ACTIONS, AND POTENTIAL IMPLEMENTATION MEASURES  
 LAND USE AND TRANSPORTATION  
 COMMUNITY  
 MITIGATION

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	ANNUAL GHG REDUCTION POTENTIAL (MT CO <sub>2</sub> e)	COST OF CO <sub>2</sub> REDUCTION (per metric tonne)	POTENTIAL PARTNERS
Land Use/Development to reduce car dependency	Increase transit-oriented, walkable, node-oriented, mixed-use development that includes housing and services. (MC-1)	<ul style="list-style-type: none"> <li>Evaluate Land Development Code provisions (established in 2006) that enable these developments to improve effectiveness (MC-1)</li> <li>Evaluate market conditions to identify barriers and potential market incentives (MC-1)</li> <li>Evaluate possible new “clustered, complex residential” zoning characteristics and opportunities (new)</li> </ul>	<u>MC-1</u> Not scalable, but CAMPO Scenario Analysis estimates that land use plans already adopted will lead to a 5,000 MT CO <sub>2</sub> e reduction.	<u>MC-1</u> Not scalable	Development community  City of Corvallis – Community Development
Transportation Demand Management	Reduce vehicle miles traveled and single occupancy vehicle trips and ownership (MC-2, MC-6, MC-11, MC- 12, MC-27, MC-29)	<ul style="list-style-type: none"> <li>Develop parking management strategies including pricing and flexibility for developers to support parking near transit (MC-2)</li> <li>Expand park and ride facilities (MC-2)</li> <li>Promote employer-based ridesharing programs (MC-6)</li> <li>Recruit and facilitate car sharing businesses (MC-11) (lower priority)</li> <li>Expand 509J Safe Route to School Program to all middle and high schools. (MC-12)</li> </ul>	<u>MC-2</u> 5,500  <u>MC-6</u> 87,000	<u>MC-2</u> \$ 0 (self-funding)  <u>MC-6</u> \$ -1	Business associations, Major employers, OSU, Benton County, CAMPO, Cascade COG, 509J  City of Corvallis – Community Development and Public Works

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	ANNUAL GHG REDUCTION POTENTIAL (MT CO <sub>2</sub> e)	COST OF CO <sub>2</sub> REDUCTION (per metric tonne)	POTENTIAL PARTNERS
		<ul style="list-style-type: none"> <li>• Provide incentives for downtown customers to walk, bike or take transit (MC-27)</li> <li>• Expand programs to reduce SOV travel related to athletic events (MC-29)</li> </ul>			
Transportation System Management	Reduce idling and congestion (MC-3, MC-5, MC-14, MC-24)	<ul style="list-style-type: none"> <li>• Synchronize and recalibrate the timing of traffic signals (MC-3)</li> <li>• Evaluate opportunities for right and left turn lanes at intersections, roundabouts, and access management improvements (MC-5)</li> <li>• Include increased system efficiency projects in the Transportation System Plan (as long as they do not sacrifice access and mobility needs of pedestrians and bicyclists) (MC-14)</li> <li>• Improve Bridges and their access (MC-24)</li> </ul>	<u>MC-3 &amp; MC-5</u> 3,000 (total for both measures)	<u>MC-3 &amp; MC-5</u> Costs vary depending on number of traffic signals, turn lanes, roundabouts etc.	Oregon Department of Transportation, Benton County, OSU Transportation Services  City of Corvallis – Public Works
Facilitate Active Transportation	Expand network of bike and pedestrian corridors, and enhance visual and physical safety protection measures (MC-4, MC-22, MC-23)	<ul style="list-style-type: none"> <li>• Evaluate current bike/pedestrian system improvement plan and identify additional corridor improvements (MC-4)</li> <li>• Prioritize improvements based on “Walk and Transit Score.” (MC-4)</li> <li>• Evaluate and improve linkages with OSU (MC-4)</li> <li>• Develop separated multi-use paths between Corvallis and neighboring communities and areas such as</li> </ul>	<u>MC-4</u> 5,500	<u>MC-4</u> Costs vary depending on quantity of bike lane and multi-use path miles developed.	OSU Transportation Services, Oregon Department of Transportation, Benton County, CAMPO  City of Corvallis – Public Works

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	ANNUAL GHG REDUCTION POTENTIAL (MT CO <sub>2</sub> e)	COST OF CO <sub>2</sub> REDUCTION (per metric tonne)	POTENTIAL PARTNERS
		Albany, Lebanon, Adair and the airport (MC-22) <ul style="list-style-type: none"> <li>Support the bike share program (MC-23)</li> </ul>			
Carbon Pricing	Promote policies at the local, state and federal level that implement carbon-based fees or taxes (MC-7)	<ul style="list-style-type: none"> <li>Develop local GHG fees—apply to fuels or vehicle registration (MC-7)</li> <li>Lobby Oregon Legislature and Congress to implement carbon-based fees or taxes (Consider advocating for the US government Social Cost of Carbon as minimum price per metric ton of CO<sub>2</sub>e) (MC-7)</li> </ul>	<u>MC-7</u> 4,000, 6,000, or 8,000 depending on carbon price.	<u>MC-7</u> \$ 30 \$ 60 \$ 100	OSU, Benton County, League of Oregon Cities, Oregon Department of Energy, Citizens Climate Lobby-Corvallis Chapter, elected officials  City of Corvallis – City Manager’s Office
Electric and Lower-Carbon Fueled Vehicles	Accelerate transition to electric and other higher efficiency and low-carbon fueled vehicles (MC-8, MC-20, MC-21)	<ul style="list-style-type: none"> <li>Facilitate location and development of accessible fueling/charging stations and alternative low-carbon fuel options at gas stations (MC-8)</li> <li>Promote local production and access to biofuels such as renewable diesel and biogas (MC-20)</li> <li>Public education and outreach on the benefits and practicalities of electric vehicles (MC-21)</li> </ul>	<u>MC-8</u> 11,000	<u>MC-8</u> \$ 58	OSU Sustainability Office, Oregon Department of Energy, Oregon Economic Development  City of Corvallis – Public Works and Economic Development
Transportation Demand Management	Develop land use and transportation system alternatives that will reduce long-term GHG emission (MC-9)	<ul style="list-style-type: none"> <li>Support ODOT and DLCD “scenario planning” as part of the Comprehensive Plan and Transportation System Plan updates. (MC-9)</li> </ul>	<u>MC-9</u> Not scalable		CAMPO, Benton County Transportation Planning  City of Corvallis – Community

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	ANNUAL GHG REDUCTION POTENTIAL (MT CO2e)	COST OF CO2 REDUCTION (per metric tonne)	POTENTIAL PARTNERS
					Development and Public Works
Transit	Increase the Corvallis Transit level of service (MC-10, MC-18)	<ul style="list-style-type: none"> <li>Evaluate and expand routes, frequency, Dial-a-Bus, etc. to create more connections to other public transit modes and popular seasonal destinations. (MC-10)</li> <li>Evaluate routes with a focus on serving affordable housing developments and for faculty students/families, and staff of large institutions/businesses. (MC-18)</li> </ul>	MC-10 CAMPO Scenario Analysis estimates a GHG per capita reduction of 2,500 (2%), 4,000 (3.4%) and 7,000 (5.9%) MT CO2e.	MC-10 \$ 593	Albany Transit, OSU, Benton County Special Transportation Program, 509J, major employers  City of Corvallis – Public Works
Freight	Reduce GHG emissions related to freight movement (MC-13, MC-17)	<ul style="list-style-type: none"> <li>Work with local and regional freight advisory groups to evaluate opportunity and develop a plan (MC-13)</li> <li>Promote alternative fuels for commercial vehicle fleets (MC-13)</li> <li>Protect existing intermodal freight facilities and support centrally located and regionally significant industrial areas that may provide for future intermodal facilities and provide for efficient local deliveries. (MC-17)</li> </ul>			To be determined
Land Use / Development	Increase development of accessory dwellings	<ul style="list-style-type: none"> <li>Evaluate Land Development Code barriers to permitting and constructions (such as minimum lot</li> </ul>			City of Corvallis – Community Development

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	ANNUAL GHG REDUCTION POTENTIAL (MT CO <sub>2</sub> e)	COST OF CO <sub>2</sub> REDUCTION (per metric tonne)	POTENTIAL PARTNERS
	(increase urban density) (MC-15)	sizes, design constraints, and lot coverage and parking requirements) and determine whether changes are warranted. (MC-15)			
Transit	Increase transit system efficiency (MC-16)	<ul style="list-style-type: none"> <li>Evaluate routes for efficiency opportunities (e.g.’s eliminate stop signs and on-street parking spaces, improve signal timing, and create “queue-jumper lanes”) (MC-16)</li> </ul>			ODOT, Benton County  City of Corvallis – Public Works
Land Use and Transportation System Planning to reduce car dependency	Establish motor vehicle-free streets with exceptions for dedicated transit deliveries (possibly with time-of-day limitations), emergency vehicles and disability access) (MC-19)	<ul style="list-style-type: none"> <li>Evaluate opportunities and potential cooperation to establish a motor vehicle-free street project (potential examples—OSU bike-tram way concept, downtown) (MC-19)</li> </ul>			OSU, broader community input on potential locations, affected business owners  City of Corvallis – Community Development and Public Works
Transportation Accessibility	Address Alternative travel needs of people with disabilities. (MC-25)	<ul style="list-style-type: none"> <li>To be determined</li> </ul>			Benton County Special Transportation Program
Technology Improvements	Increase accessibility to high-performance broadband connectivity to business and residences for e-	<ul style="list-style-type: none"> <li>To be determined</li> </ul>			City of Corvallis – Public Works

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	ANNUAL GHG REDUCTION POTENTIAL (MT CO <sub>2</sub> e)	COST OF CO <sub>2</sub> REDUCTION (per metric tonne)	POTENTIAL PARTNERS
	commerce, telecommuting and improved emergency response (MC-26)				
Land Use/Development	Increase housing opportunities in commercial centers (MC-28)	<ul style="list-style-type: none"> <li>Evaluate Land Development Code for potential changes</li> </ul>			City of Corvallis – Community Development

STRATEGIES, ACTIONS, AND POTENTIAL IMPLEMENTATION MEASURES  
 LAND USE AND TRANSPORTATION  
 COMMUNITY  
 ADAPTATION

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	POTENTIAL PARTNERS
Flood Protection	Plan to maintain accessibility throughout Corvallis by all transportation modes (AC-1, AC-8)	<ul style="list-style-type: none"> <li>Evaluate flood impact mapping and identify potentially isolated areas (AC-1)</li> <li>Refine land use restrictions on building in floodplains (AC-8)</li> </ul>	City-Public Works and Fire Departments, Benton County
Pavement Reduction	Reduce street widths where appropriate and increase water absorption and urban greenspace (AC-2, AC-14)	<ul style="list-style-type: none"> <li>Evaluate opportunity streets for retrofitting during road improvement projects (AC-2)</li> <li>Evaluate street design standards (AC-2)</li> <li>Install rain gardens or other appropriate stormwater landscaping on new road improvement projects (AC-14)</li> </ul>	City-Community Development and Public Works Departments, Neighborhoods
Fire Prevention	Limit new development on high-risk areas (AC-3, AC-8)	<ul style="list-style-type: none"> <li>Review fire protection land use codes (AC-3)</li> <li>Prioritize new policies and incentives based on fire hazard (AC-3)</li> <li>Evaluate protections in the wildland / urban interface areas (AC-8)</li> </ul>	City Community Development and Fire Departments, Benton County Planning and Emergency Management
Urban Heat Reduction	Management public rights-of-way to reduce urban heat concentrations (AC-4, AC-6)	<ul style="list-style-type: none"> <li>Increase shade trees along active transportation corridors with attention given for underserved populations and neighborhoods. (AC-4)</li> <li>Change road surfaces to lighter, non-heat absorbing colors (AC-6)</li> </ul>	City-Public Works and Parks and Recreation Departments, OSU Landscape Shop and OSU Planning, Benton County Transportation
Land Use / Development	Contain the urban growth boundary (UGB) to protect farm land (outside UGB) and accommodate new population growth (inside UGB) (AC-5)	<ul style="list-style-type: none"> <li>Manage area inside UGB for multiple land uses and objectives including natural resources protection, recreation, food, residential and commerce (AC-5)</li> </ul>	City-Community Development Department, Benton County Planning

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	POTENTIAL PARTNERS
Land Use / Development	Increase applications of “low impact development” (LID) (AC-7)	<ul style="list-style-type: none"> <li>• Develop LID Land Development Code requirements related to on-site stormwater infiltration and water quality features (consistent with new stormwater discharge permit requirements (AC-7)</li> </ul>	City-Community Development and Public Works Departments
Land Use / Development	Increase connectivity of natural areas, residential areas and core commercial districts via paths / trails (AC-9)	<ul style="list-style-type: none"> <li>• Evaluate the Parks Master Plan</li> <li>• Develop Capital Improvement Projects</li> </ul>	City-Parks and Recreation and Public Works Departments, Benton County
Infrastructure Planning and Management	Mitigate drought impacts in areas served by wells (AC-10)	<ul style="list-style-type: none"> <li>• Develop facilities and capacity to store and transport water in drought sensitive areas</li> </ul>	City-Public Works Departments
Land Use / Development	Discourage development on lands where it would endanger life, property or infrastructure, or where important ecological functions or environmental quality would be adversely affected (AC-11)	<ul style="list-style-type: none"> <li>• Develop incentives such as transfer of development rights (TDR) (AC-11)</li> <li>• Evaluate Land Development Code for warranted changes (AC-11)</li> </ul>	City-Community Development Department
Land Use / Development	Protect watersheds, water ways and floodplains (AC-12)	<ul style="list-style-type: none"> <li>• Review setback protections in the Land Development Code for adequacy (AC-12)</li> </ul>	City-Community Development and Public Works Departments
Land Use / Development	Reduce impervious surface areas and replace them with pervious areas (such as urban forest, native prairie, xeriscaping or pervious alternatives to pavement) (AC-13)	<ul style="list-style-type: none"> <li>• Evaluate Land Development Code for possible changes (AC-13)</li> <li>• Develop incentive programs</li> </ul>	To be determined

STRATEGIES, ACTIONS, AND POTENTIAL IMPLEMENTATION MEASURES  
 CONSUMPTION & WASTE  
 COMMUNITY  
 MITIGATION

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	ANNUAL GHG REDUCTION POTENTIAL (MT CO2e)	COST OF CO2 REDUCTION (per metric tonne)	POTENTIAL PARTNERS
Waste Reduction-- Materials	Increase recycling. (MC-1, MC-6, MC-12, MC-17, MC-18, MC-19, MC-20, MC-23, MC-24, MC-27, MC-29, MC-30, MC-31)	<ul style="list-style-type: none"> <li>Sponsor city-wide programs: yard and wood waste drop-off centers, Spring cleanup events, Fall leaf drop-off or collection, green teams, student outreach projects, neighborhood composting projects, home composting education, existing residential and business programs for reuse and organics management (MC-6)</li> <li>Public education, outreach, waste audits, and incentives for community members and business owners to increase compost and recycling rates, with emphasis on multi-family residential buildings, student and cooperative housing (MC-1, MC-12, MC-17, MC-23)</li> <li>Develop programs (including sorting and recovery at the landfill) to require recycle construction and demolition materials (to the extent a recycling market is available): concrete &amp; mixed rubble, clean wood, carpet, drywall / gypsum,</li> </ul>	<p><u>MC-1</u> 12,900</p> <p><u>MC-6</u> EPA's WARM model indicates that this action does not provide mitigation potential.</p> <p><u>MC-18</u> 4,000</p>	<p><u>MC-1</u> \$ 20</p> <p><u>MC-18</u> \$ 50</p>	<p>OSU Extension Service, Recycling, and Sustainability, Benton County Solid Waste, Neighborhood Associations, Republic Services, Oregon DEQ, Corvallis Sustainability Coalition Waste and Economic Vitality Action Teams</p> <p>City of Corvallis – Public Works, Community Development, and Economic Development</p>

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	ANNUAL GHG REDUCTION POTENTIAL (MT CO2e)	COST OF CO2 REDUCTION (per metric tonne)	POTENTIAL PARTNERS
		<p>asphalt shingles, metals, bricks, and plastics (MC-18, MC-31)</p> <ul style="list-style-type: none"> <li>• Ban asphalt paving, concrete, bricks, asphalt shingles, plastic film, clean wood, residential food, and compostable paper from residential and commercial garbage pick up (MC-19)</li> <li>• Increase capacity to process more, and more types of, construction and demolition materials at local transfer stations (MC-20)</li> <li>• Provide more public recycling containers on commercial corridors and in parks and public places and create a system to limit contamination (MC-24)</li> <li>• Provide incentives for residential recycling, composting, and source reduction. Examples include: Life line rates for lower and moderate income citizens; increasing hauler license fees and/or tipping fees; and adopt a residential "Pay-As-You-Throw," volume-based garbage collection fee, increasing accessibility and convenience (MC-25, MC-29)</li> <li>• Make recycling mandatory at public events (MC-27)</li> </ul>			

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	ANNUAL GHG REDUCTION POTENTIAL (MT CO2e)	COST OF CO2 REDUCTION (per metric tonne)	POTENTIAL PARTNERS
		<ul style="list-style-type: none"> <li>Support local materials recycling to boost the City's manufacturing economy (MC-30)</li> </ul>			
Waste Reduction-- Food	Reduce the volume of food waste generated and sent to the landfill. (MC-2, MC-8, MC-14, MC-15, MC-21)	<ul style="list-style-type: none"> <li>Public education and outreach to households and businesses reduce food waste through better meal planning, purchasing, storage and preparation. (MC-2, MC-8)</li> <li>Support gleaning (MC-2)</li> <li>Develop programs to support the donation of unused and excess food (MC-2, MC-8)</li> <li>Support efforts to recycle food waste for fuel / energy including cooking oil and locally produced biodiesel/biofuels (MC-14)</li> <li>Facilitate sharing of best practices among restaurants, caterers and other commercial food preparation operations for minimizing and re-using / recycling food waste (MC-15)</li> <li>Identify funding sources and locations for neighborhood composting centers (MC-21)</li> </ul>	<u>MC-2</u> 2,500  <u>MC-8</u> 1,400	<u>MC-2</u> \$ 0  <u>MC-8</u> \$ -10	Benton County Solid Waste, local food banks, OSU Housing and Dining Services, Corvallis Sustainability Coalition Food Action Team, Republic Services  City of Corvallis – Public Works
Reuse and Repair	Promote reuse and repair. (MC-3, MC-7, MC-13, MC-22, MC-26)	<ul style="list-style-type: none"> <li>Public information and outreach regarding purchasing (local, durable goods, low-carbon), reuse, and collaborative consumption (MC-3)</li> </ul>	<u>MC-3</u> Not scalable without additional data on material		Oregon DEQ, OSU Purchasing, Recycling and Sustainability, Benton County Solid Waste, Corvallis

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	ANNUAL GHG REDUCTION POTENTIAL (MT CO2e)	COST OF CO2 REDUCTION (per metric tonne)	POTENTIAL PARTNERS
		<ul style="list-style-type: none"> <li>Encourage more vocational training so the community has people who can repair and refurbish (MC-3)</li> <li>Support and expand material exchanges and reuse programs (MC-7)</li> <li>Promote building with salvaged and reclaimed materials (MC-7)</li> <li>Support the co-location of salvaged and used house parts at waste receiving centers to encourage donation instead of landfilling (MC-13)</li> <li>Identify funding to establish a school district-wide collection system for food and yard waste (MC-22)</li> <li>Encourage the use of reusable bags at local retail locations (MC-26)</li> </ul>	<p>types and quantities.</p> <p><u>MC-7</u> 1,400</p>	<p><u>MC-7</u> \$ -20</p>	<p>Sustainability Coalition, Habitat for Humanity, 509J</p> <p>City of Corvallis – Public Works</p>
Procurement	<p>Increase purchasing of materials containing recycled material content, that have reduced packaging, and that can be returned to the manufacturer for remanufacturing /reuse/or full recycling. (MC-4, MC-9, MC-11, MC-16)</p>	<ul style="list-style-type: none"> <li>Develop or locate model purchasing policies to provide to businesses and institutions (MC-4)</li> <li>Identify high-carbon product categories (MC-9)</li> <li>Public education and outreach to consumers and retailers regarding purchasing decisions, including linkages between consumption habits and carbon footprints (MC-9, MC-11)</li> </ul>	<p><u>MC-4, MC-9, &amp; MC-11</u> Not scalable without additional data on material types and quantities.</p>		<p>Oregon DEQ, Benton County Solid Waste, OSU Procurement Office, Corvallis Sustainability Coalition Waste Action Team</p> <p>City of Corvallis – Procurement, all Divisions</p>

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	ANNUAL GHG REDUCTION POTENTIAL (MT CO2e)	COST OF CO2 REDUCTION (per metric tonne)	POTENTIAL PARTNERS
		<ul style="list-style-type: none"> <li>Encourage purchases of products produced using more sustainable agricultural practices (MC-16)</li> </ul>			
Federal / State Policy Advocacy	Increase product stewardship (MC-5)	<ul style="list-style-type: none"> <li>Support state or federal legislation that requires manufacturer take back of products (MC-5)</li> </ul>	<u>MC-5</u> Not scalable without additional data on material types and quantities.		Oregon DEQ, Benton County Solid Waste, elected officials  City of Corvallis – Public Works
Carbon Pricing—materials related	Promote policies at the local, state and federal level that implement carbon pricing related to product and materials life cycles (e.g., emissions cap or carbon tax), including imports (border adjustment mechanism / carbon tariff if necessary). (MC-10, MC-28)	<ul style="list-style-type: none"> <li>Lobby Oregon Legislature and Congress to implement carbon-based fees or taxes on materials and manufactured products (MC-10)</li> <li>Provide information to local manufacturers on reducing carbon footprint of items produced (MC-28)</li> </ul>	<u>MC-10</u> Depending on the price of carbon, industrial emissions would be reduced 4% - 18% by 2034 for goods produced within Oregon.	<u>MC-10</u> \$10 to \$100	Citizens Climate Lobby – Corvallis Chapter, OSU, Benton County, League of Oregon Cities, Oregon Department of Energy, Oregon DEQ, elected officials

STRATEGIES, ACTIONS, AND POTENTIAL IMPLEMENTATION MEASURES  
 CONSUMPTION & WASTE  
 COMMUNITY  
 ADAPTATION

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	POTENTIAL PARTNERS
Materials Management	Maintain and plan for infrastructure and service adequacy for materials management under warming conditions and extreme events (AC-1, AC-2, AC-4)	<ul style="list-style-type: none"> <li>Evaluate public facilities / storage and staging areas, and heavy equipment needs (AC-1)</li> <li>Support compost distribution system that supports local access and use of local compost in its highest use (AC-2, AC-4)</li> </ul>	Benton County Solid Waste, Republic Services, Coffin Butte Landfill  City of Corvallis – Public Works
Model Programs	Increase resource efficiency in schools and other organizations (AC-3)	<ul style="list-style-type: none"> <li>Establish a resource efficiency program in the schools that would serve both as a model program for the community as well as provide education / training for students (AC-3)</li> </ul>	509J
Materials Management	Reduce / minimize dangerous disposal practices (AC-5)	<ul style="list-style-type: none"> <li>Educate people not to burn garbage inside and why (AC-5)</li> </ul>	City of Corvallis – Fire
Waste Recovery	Increase recovery of recyclable materials (AC-6)	<ul style="list-style-type: none"> <li>Sort through landfill waste and pull out recyclables - especially metals, organics, or fats (AC-6)</li> </ul>	Republic Services
Product Reuse / Repair	Increase sharing of tools and materials (AC-7)	<ul style="list-style-type: none"> <li>Public education and outreach that promotes repair/refurbishment opportunities and materials sharing (AC-7)</li> </ul>	

STRATEGIES, ACTIONS, AND POTENTIAL IMPLEMENTATION MEASURES  
 FOOD & AGRICULTURE  
 COMMUNITY  
 MITIGATION

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	ANNUAL GHG REDUCTION POTENTIAL (MT CO2e)	COST OF CO2e REDUCTION (per metric tonne)	POTENTIAL PARTNERS
Food Purchasing	Increase purchasing of local, low carbon content food alternatives throughout the community (MC-1)	<ul style="list-style-type: none"> <li>Develop model purchasing policies (MC-1)</li> <li>Public education and outreach programs</li> </ul>	<u>MC-1</u> 1,500	<u>MC-1</u> \$ 0	OSU Extension, OSU College of Agricultural Sciences, OSU Housing and Dining Services, Oregon Tilth, 509J, Good Samaritan RMC, Linn Benton Community College
Food Production Methods	Reduce GHG intensive inputs and retain carbon and other nutrients on agricultural land (MC-2)	<ul style="list-style-type: none"> <li>Develop education, outreach, and incentive programs to encourage producers to transition to agro-ecological / conservation-oriented agricultural production (MC-2)</li> </ul>	<u>MC-2</u> Not scalable	<u>MC-2</u> Not scalable	Corvallis Albany Farmers' Market, Linn Benton Community College, OSU Housing and Dining Services, Good Samaritan RMC, Corvallis Sustainability Coalition Food Action Team, 509J, Corvallis Environmental Center Edible Corvallis Initiative
Food Awareness	Increase public knowledge and awareness of the impacts of food purchasing and dietary choices on climate. (MC-3, MC-4, MC-5, MC-6)	<ul style="list-style-type: none"> <li>Public education on local food growing, season extension, preparation, preservation, and eating seasonally skills (MC-3)</li> <li>Facilitate sharing of best practices among restaurants, caterers and other commercial food</li> </ul>	<u>MC-3</u> Not scalable  <u>MC-4</u> 2,500	<u>MC-3</u> Not scalable  <u>MC-4</u> \$ 2	Corvallis Sustainability Coalition Waste Prevention and Food Action Teams, Corvallis Environmental Center Edible Corvallis Initiative, Linus Pauling Institute Healthy Youth Program, OSU Extension - Master Gardeners, First Alternative Co-op, 509J, First United Methodist Church,

<b>STRATEGY</b>	<b>ACTION</b>	<b>POTENTIAL IMPLEMENTATION MEASURES</b>	<b>ANNUAL GHG REDUCTION POTENTIAL (MT CO2e)</b>	<b>COST OF CO2e REDUCTION (per metric tonne)</b>	<b>POTENTIAL PARTNERS</b>
		preparation operations for minimizing and reusing / recycling food waste (MC-4) <ul style="list-style-type: none"> <li>• Develop public education and outreach to promote plant-based foods, which are less carbon- intensive. (MC-5)</li> <li>• Establish quantitative metrics and a baseline for consumption of carbon-intensive foods. (MC-6)</li> </ul>			Unitarian-Universalist Fellowship, 350 Corvallis
Shift to Renewable Energy	Increase onsite production of renewable energy / biofuels for farm machinery (MC-7)	<ul style="list-style-type: none"> <li>• Develop information on potential opportunities and technologies.</li> <li>• Create voluntary program for interested farms</li> </ul>			OSU Extension, Wilco, Ten Rivers Food Web

STRATEGIES, ACTIONS, AND POTENTIAL IMPLEMENTATION MEASURES  
 FOOD & AGRICULTURE  
 COMMUNITY  
 ADAPTATION

<b>STRATEGY</b>	<b>ACTION</b>	<b>POTENTIAL IMPLEMENTATION MEASURES</b>	<b>POTENTIAL PARTNERS</b>
Local Food System	Increase participation in and accessibility to local food programs.	<ul style="list-style-type: none"> <li>• Development of the South Corvallis Neighborhood Food Center (AC-1)</li> <li>• Promote participation in community supported agriculture programs (AC-3)</li> </ul>	Benton County Food Security Work Group, Linn-Benton Food Share, Willamette Neighborhood Housing Services, First Alternative Co-op,

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	POTENTIAL PARTNERS
	(AC-1, AC-3, AC-4, AC-6, AC-7, AC-8, AC-9, AC-10, AC-11)	<ul style="list-style-type: none"> <li>• Identify food crops that will thrive in current and future conditions in the Willamette Valley (AC-4)</li> <li>• Increase accessibility of materials necessary for residential and neighborhood-scale food production (AC-6)</li> <li>• Expand community gardens where appropriate on public and private lands, including school campuses, City lands, and church properties. (AC-7)</li> <li>• Facilitate public / private partnerships to create decentralized “food hubs” for sales, processing, storage, and distribution (AC-8)</li> <li>• Provide public educational opportunities related to organic gardening, fruit production, food preservation and cooking and affordable, healthy eating (AC-9)</li> <li>• Promote re-establishment of local food infrastructure such as flour mills and canneries (AC-10)</li> <li>• Evaluate parks plans for opportunities to Incorporate food production and maintenance into neighborhood parks (AC-11)</li> </ul>	<p>Community Services Consortium, Corvallis Albany Farmers’ Market, Oregon Dept. of Agriculture, Oregon Tilth, OSU Extension, Southern Willamette Valley Bean and Grain Project, Ten Rivers Food Web, Corvallis Sustainability Coalition Food Action Team, Linus Pauling Healthy Youth Program, U.S. Dept. of Agriculture</p> <p>City of Corvallis – Community Development</p>
Edible Landscapes	Model and promote edible landscaping and greening (AC-2, AC-5)	<ul style="list-style-type: none"> <li>• Plant non-invasive food-bearing trees and shrubs on public and private lands (AC-2)</li> <li>• Provide new homeowners and property managers with resources about sustainable landscaping and permaculture practices (AC-5)</li> </ul>	Corvallis Sustainability Coalition Food Action Team, OSU Extension - Master Gardeners, local nurseries and garden centers

STRATEGIES, ACTIONS, AND POTENTIAL IMPLEMENTATION MEASURES  
 URBAN NATURAL RESOURCES  
 COMMUNITY  
 MITIGATION

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	ANNUAL GHG REDUCTION POTENTIAL (MT CO <sub>2</sub> e)	COST OF CO <sub>2</sub> e REDUCTION (per metric tonne)	POTENTIAL PARTNERS
Carbon Storage	Manage lands for carbon storage (MC-1, MC-2)	<ul style="list-style-type: none"> <li>Manage designated natural areas to increase both forest and natural prairies, which will increase carbon stores over time. (MC-1)</li> <li>Manage the City’s watershed forest for carbon storage over time and consistent with water quality and other ecosystem values. (MC-2)</li> </ul>	<p><u>MC-1</u> 200 – 600</p> <p><u>MC-2</u> Very small</p>	<p><u>MC-1</u> unscalable</p> <p><u>MC-2</u> unscalable</p>	<p>Green Belt Land Trust, Mary’s River Watershed Council, City-contracted forestry consultant</p> <p>City of Corvallis – Parks and Recreation and Public Works</p>

STRATEGIES, ACTIONS, AND POTENTIAL IMPLEMENTATION MEASURES  
 URBAN NATURAL RESOURCES  
 COMMUNITY  
 ADAPTATION

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	POTENTIAL PARTNERS
Funding	Establish a range of diverse, stable, long-term funding sources for the acquisition, maintenance, restoration, and	<ul style="list-style-type: none"> <li>Explore funding and land dedication opportunities, including: federal, state, and private foundation grants; corporate sponsorships and donations; as well as other methods such as land swaps or conservation easements, c) local grants and business sponsorships. (AC-1)</li> </ul>	Greenbelt Land Trust, Mary’s River Watershed Council, Corvallis Environmental Center

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	POTENTIAL PARTNERS
	<p>preservation of prime natural areas (AC-1, AC-17)</p>	<ul style="list-style-type: none"> <li>Support State efforts to develop ecosystem services credit and payment system. (AC-17)</li> </ul>	
<p>Urban Heat Reduction and Drought Tolerance</p>	<p>Protect existing trees and increase new tree planting and climate appropriate vegetation on private and public lands and rights-of-way. (AC-2, AC-3, AC-6, AC-14)</p>	<ul style="list-style-type: none"> <li>Expand use of climate-appropriate, drought tolerant vegetation and features in natural areas, parks, and restoration sites, street and street rights-of-way, and roofs as appropriate. (AC-2)</li> <li>Public education and outreach to promote tree preservation and protection, and planting of new trees and shrubs on private property and in the rights-of-way. (AC-3, AC-14)</li> <li>Finalize tree restitution ordinance (assessed value of tree removed with a permit) as a disincentive to cutting trees. (AC-6)</li> <li>Public Education and outreach to promote the increased use of native, drought tolerant, and pollinator-friendly plants and the decreased use of invasive species. (AC-18)</li> </ul>	<p>OSU, OSU Extension, Benton County Parks, Corvallis Environmental Center, elected officials</p> <p>City of Corvallis – Parks and Recreation and Public Works</p>
<p>Natural Assets and Habitat Connectivity, and Water Quality Protection</p>	<p>Develop more complex and broader floodplains that include wetlands and a diverse matrix of habitats (AC-4, AC-9, AC-10, AC-11, AC-12, AC-16)</p>	<ul style="list-style-type: none"> <li>Evaluate parks and natural resources plans to for opportunities to restore key natural assets and increase park and natural area connectivity comprehensively on a local and regional level. (AC-4, AC-9)</li> <li>Manage urban natural resources for multiple benefits, and review natural resource policies to prevent unintended secondary (negative) impacts. (AC-10)</li> <li>Build on the Healthy Streets / Healthy Streams Plan concept to encourage more integrated natural features (AC-11)</li> <li>Identify and implement projects that reduce instream barriers to fish passage and restore connectivity between waterways and their floodplain. (AC-12)</li> <li>Evaluate ecosystem market approaches (i.e. water quality trading) to enable the City of Corvallis to more efficiently and effectively meet water quality permit requirements by restoring ecosystems. (AC-16)</li> </ul>	<p>Marys River Watershed Council, Army Corps of Engineers, Dept. of State Lands, Benton County Parks, Greenbelt Land Trust, OSU, private landowners</p> <p>City of Corvallis – Parks and Recreation and Public Works</p>

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	POTENTIAL PARTNERS
Water Supply and Conservation	Increase focus on water conservation and options for appropriate alternatives to potable water usage. (AC-7, AC-8, AC-15, AC-16)	<ul style="list-style-type: none"> <li>• Promote the use of greywater systems for irrigation and other non-potable water needs through advocacy at the state level and public outreach and education. (AC-7)</li> <li>• Provide public information on water purification systems on available for individual properties. (AC-8)</li> <li>• Evaluate residential and institutional usage patterns of the three municipal water systems (tap, waste and storm). (AC-15)</li> <li>• Develop incentives to conserve water. (AC-15)</li> </ul>	<p>Oregon Department of Environmental Quality, Benton County</p> <p>City of Corvallis – Public Works and Community Development</p>
Educate Youth	Increase knowledge and awareness of future community members (AC-13)	<ul style="list-style-type: none"> <li>• Support outdoor education for school-age children (AC-13)</li> </ul>	<p>OSU Extension, Marys River Watershed Council, Corvallis Environmental Center</p> <p>City of Corvallis – Parks and Recreation</p>
Stormwater Management	Reduce or eliminate piped stormwater from draining directly into streams to reduce stormwater peaks and improve water quality. (AC-5, AC-19, AC-20)	<ul style="list-style-type: none"> <li>• Public education and outreach to promote rainwater collection, downspout disconnections, and rain gardens at residences, businesses, and institutions in order to reduce peak stormwater flows and to recharge aquifers. (AC-5)</li> <li>• Evaluate stormwater outfalls that drain directly into streams and evaluate potential alternatives to reduce impacts to streams. (AC-19)</li> <li>• Construct velocity-reducing wetlands and / or buffers between selected piped stormwater outfalls and stream channels. (AC-19)</li> <li>• Evaluate City stormwater regulations for adequacy to require on-site detention / retention of stormwater up to a 10-year storm event. (AC-20)</li> </ul>	<p>OSU Extension, Corvallis Environmental Center</p> <p>City of Corvallis – Public Works</p>

STRATEGIES, ACTIONS, AND POTENTIAL IMPLEMENTATION MEASURES  
 HEALTH, SOCIAL SERVICES, AND COMMUNITY WELL-BEING  
 COMMUNITY  
 ADAPTATION

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	POTENTIAL PARTNERS
Community Health-- Research and Planning	Address community health impacts of climate change and the capacity for treatment (AC-1, AC-10, AC-14, AC-15, AC-19, AC-30, AC-35)	<ul style="list-style-type: none"> <li>• Adjust local public health and social services programs to support research in expected areas such as respiratory problems, vector diseases, heat intolerance, increased allergens and pollutants, and increased mental health and anxiety disorders. (AC-1)</li> <li>• Increase collaboration among service providers to address chronic mental health needs and to identify expanded treatment capacity for drug and alcohol abuse. (AC-10)</li> <li>• Prepare for increased heat-related illness and stress by providing warnings to at-risk individuals, information on use of air conditioning and what to do in the event of extreme heat, and access to reduced-cost medications, and investigate options for publicly accessible cooling centers. (AC-14)</li> <li>• Identify businesses, non-profit organizations, educational institutions, faith communities, civic groups and neighborhood associations that can provide support to community members in need. (AC-15)</li> <li>• Support state and national efforts to encourage or mandate health care providers and insurers to provide preventive care. (AC-35)</li> </ul>	Benton County Health, Oregon Department of Health and Human Services, OSU College of Public Health and Human Sciences, United Way, Community Services Consortium, Good Samaritan RMC
Emergency Preparedness (Responders / Service Providers)	Address emergency response needs related to the impacts of climate change	<ul style="list-style-type: none"> <li>• Identify climate-related vulnerabilities, strengths and emergency preparedness and response needs for flood, fire, heat wave, landslides, water shortages, etc. (AC-2, AC-26, AC-27, AC-31)</li> </ul>	OSU Climate Change Research Institute, Benton County Sherriff, Fire, and Public Works, OSU Emergency Preparedness, South Corvallis Food Bank, Community Services Consortium, Linn-Benton

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	POTENTIAL PARTNERS
	<p>(AC-2, AC-3, AC-6, AC-7, AC-8, AC-11, AC-13, AC-16, AC-17, AC-18, AC-19, AC-21, AC-22, AC-23, AC-24, AC-25, AC-26, AC-27, AC-29, AC-31, AC-32, AC-33, AC-37)</p>	<ul style="list-style-type: none"> <li>• Establish radio communication systems to enable communication service across emergency response personnel during events. (AC-3)</li> <li>• Expand local food security, emergency food distribution plans, and strengthen hunger relief systems. (AC-6, AC-8, AC-11, AC-21, AC-24)</li> <li>• Develop, expand and maintain reciprocating agreements for sharing staff and/or equipment (e.g. Corvallis and Albany employees could report to either agency if commute is cut off by flood or other emergency). (AC-7)</li> <li>• Prepare emergency management plans for fuel shortages. Determine needs to address a "long emergency" lasting months or years. Ensure operability of back-up generators and other vital. (AC-13, AC-16)</li> <li>• Review local law enforcement capacity to manage increased civil unrest and the need to increase security at gasoline depots, service stations, and other facilities that could be targets of vandalism and other crime in an energy crisis. (AC-17, AC-32, AC-33)</li> <li>• Develop fuel allocation systems to ensure fuel availability for emergency responders and vital community services (AC-18)</li> <li>• Develop urban heat island maps and consider this information in setting priorities for projects and programs to help cool the urban environment or to create cool refuges for the community. (AC-19)</li> <li>• Expand Heartland Humane Society programs to help pets of dislocated, stressed or otherwise needy people (AC-22, AC-24)</li> <li>• Expand Benton County program to shelter livestock in floods or other severe weather events (AC-23, AC-24)</li> <li>• Develop / improve plans for evacuation and sheltering of citizens, especially vulnerable populations such as</li> </ul>	<p>Food Share, OSU Food Pantry, OSU Extension, State of Oregon, other cities in the area, local fuel providers, Heartland Humane Society, Red Cross, COOP, regional emergency managers, churches</p> <p>City of Corvallis – Fire, Police, Public Works and Community Development</p>

STRATEGY	ACTION	POTENTIAL IMPLEMENTATION MEASURES	POTENTIAL PARTNERS
		the elderly, disabled, low-income, and youth. (AC-25, AC-29)	
Community Awareness and Individual Preparedness	Increase community’s awareness of potential risks and adaptive actions they can take. (AC-4, AC-5, AC-19, AC-30, AC-37)	<ul style="list-style-type: none"> <li>• Community outreach regarding public health risks. (AC-4, AC-30)</li> <li>• Promote community organization and collaboration to encourage neighborhood-level problem solving, decision making and governance. (AC-5)</li> <li>• Public outreach to property owners / residents to take appropriate actions to protect against flooding, wildfire, and to manage heat waves and drought. (AC-19)</li> <li>• Community outreach regarding alternative systems (rainwater collection, solar energy, food storage etc.) at schools, businesses, and residences to empower people to be more self-sufficient in the event of infrastructure disruptions (AC-37)</li> </ul>	<p>Benton County Health and Emergency Management, Community Services Consortium,</p> <p>City of Corvallis – City Manager’s Office, Community Development, Public Works, and Fire</p>
Population Forecasting	Develop and understanding of likely population impacts related to climate refugees (AC-9)	<ul style="list-style-type: none"> <li>• Develop scenario plans (AC-9)</li> </ul>	<p>Oregon Department of Land Conservation and Development, PSU population center, CAMPO</p> <p>City of Corvallis – Community Development</p>
Community Economic Well-Being	Address financial implications from climate change impacts (AC-12, AC-34, AC-36)	<ul style="list-style-type: none"> <li>• Provide education on the increased insurance costs / deductibles (AC-12)</li> <li>• Develop strategies for coping with widespread unemployment: a) work with the state to evaluate potential changes to current unemployment system; and b) review rules such as assistance program eligibility requirements for adequacy to meet needs (AC-34)</li> <li>• Expand efforts and identify new ways to support lifting households out of poverty (AC-36)</li> </ul>	<p>Insurance companies, State of Oregon</p> <p>City of Corvallis – Risk Management and Public Works</p>

## Buildings & Energy

### Summary Table for Corvallis Climate Action Plan Strategies and Actions for Public Outreach Process

**Greenhouse Gas (GHG) Mitigation Potential:** For each of the following actions, GHG mitigation potential is calculated to show the scale of emissions reductions relative to Corvallis' 2012 community emissions. Many of these actions will take years or even decades to reach the maximum potential. The GHG mitigation values apply the maximum potential at the end of the time period for a specific action and show the effect that that potential would have relative to Corvallis' 2012 emissions.

Its important to note that there may be significant overlap between mitigation potential for multiple individual actions and therefore the mitigation potential for multiple actions is not always additive. For example, total cost-effective energy efficiency potential is estimated for B&E MC-1, but a portion of that same potential will also be represented in the estimate for development of a Home Performance Rating system (B&E MC-2). Research exists that quantifies energy savings realized after a Home Performance Rating system is implemented, but those savings will no doubt stem from home owners adopting cost effective energy efficiency measures. See the "Overlap with other Actions" column for occurrences of overlap.

**Cost Effectiveness:** Cost per metric ton of carbon dioxide equivalent reduced (\$ / -1 MT CO2e) is used here to allow the reader to compare the cost effectiveness between very different types of actions in mitigating GHGs. The cost and emissions values used to calculate cost effectiveness represent the cost and emissions difference between the Baseline and Alternative scenarios. Baseline emissions represent existing conditions (based Corvallis' 2012 Community GHG Inventory) and the Alternative scenario represents the effects of an action being implemented. Costs include (as much as data allows) capital equipment, operations, maintenance, as well as the value of any avoided costs (e.g. energy costs, landfill tip fees, etc.). Emissions include (as much as data allows) the lifecycle GHG impacts of each action.

Community - Mitigation

Action Number	Strategy	Action	Annual Greenhouse Gas Reduction Potential (in Metric Tonnes CO2 Equivalent)	Cost per Metric Tonne of CO2 Equivalent	Evaluation Criteria 1 = high, 3 = low					City Department Lead if Applicable	Potential Lead Community Partner
					GHG Mitigation Potential	Community Feasibility	Financial Feasibility	Social Equity	Benefits Local Environment		
MC-1	Efficiency and Renewables	Increase programs and partnerships, including incentives, to deliver passive strategies (such as weatherization, solar attic vents, daylighting, shading, insulation of foundations, etc.), energy and fuel efficiency, and onsite renewables for commercial and residential sectors. Programs need to address low income and rental property improvements.	80,000	-\$400 to \$0 (cost savings to cost neutral, depending on EE measure).	1.00	1.67	1.67	1.00	1.50	Community Development Dept	Energy Trust of OR, Take Charge Corvallis, Corvallis Sustainability Coalition Energy Action Team, Seeds for the Sol, Habitat for Humanity, Community Services Consortium

## Buildings & Energy

MC-1.1 / MC-18	HVAC Efficiency	Re-establish the "Green Shares" program, which provides education to builders/developers on energy efficient HVAC equipment, including life cycle cost analyses for their potential customers that demonstrate lower overall costs of energy saving equipment. Incentivize installation of heat pump water heaters, require consideration for replacements, require in new construction. Heating, Cooling and water heaters.	12,000	-\$40 to \$0 (cost savings to cost neutral, depending on EE measure).	1.00	2.00	1.00	1.00	1.50	Community Development Dept	Energy Trust of OR, Take Charge Corvallis, Corvallis Sustainability Coalition Energy Action Team, Seeds for the Sol, Habitat for Humanity, Community Services Consortium
MC-1.2 / MC-18	Hot Water Efficiency	Re-establish the "Green Shares" program, which provides education to builders/developers on energy efficient HVAC equipment, including life cycle cost analyses for their potential customers that demonstrate lower overall costs of energy saving equipment. Incentivize installation of heat pump water heaters, require consideration for replacements, require in new construction. Heating, Cooling and water heaters.	6,000	-\$40 to \$0 (cost savings to cost neutral, depending on EE measure).	1.00	1.83	1.00	1.33	1.25	Community Development Dept	Energy Trust of OR, Take Charge Corvallis, Corvallis Sustainability Coalition Energy Action Team, Seeds for the Sol, Habitat for Humanity, Community Services Consortium
MC-2	Conservation and Efficiency	Establish energy performance rating programs for homes. Goal is for owners, tenants and prospective buyers are informed before renting or purchasing.	20,000	Not scalable. Development and implementation costs for this type of program could be significant, but have not been estimated.	1.00	2.00	1.00	1.00	1.50	Community Development Dept	
MC-3	Promote Electric and Lower-Carbon Fueled Vehicles	Support the local utilities and building code changes as needed to accelerate transition to electric vehicles. (relates to providing plug-in ability in homes)	EV mitigation potential is estimated in T&LU M-8 at 9,000 MT CO2e per year. Building code changes will support and overlap with M-8 mitigation potential.		2.00	1.83	1.00	1.33	1.25	Community Development Dept	County Planning Dept., Pacific Corp., Consumers Power
MC-4	Federal/State Policy Advocacy	Advocate for state building code changes to incorporate energy performance targeted at net-zero energy consumption by 2030. Consider code requirements consistent with the parameters specified in the 2011 Oregon Energy Reach Code; Incorporate low carbon footprint concept from Architecture 2030, the Energy Trust of Oregon, or LEED.	10,000	\$100	1.00	1.67	1.33	1.00	1.50	Elected Officials with support from Community Development Dept.	County Planning Dept., League of OR Cities, OR Dept. of Consumer and Business Services-- Building Codes Div.

## Buildings & Energy

MC-4.1 / MC-16	Adopt Oregon Reach Code	Develop and adopt an energy code chapter into the Corvallis Municipal Code consistent with the parameters specified in the 2011 Oregon Energy Reach Code.	3,000 (2030) 8,000 (2050)	Legal and other implementation costs to fully adopt and implement the Oregon Reach Code have not been estimated.	1.00	1.50	1.33	1.33	1.50	Elected Officials with support from Community Development Dept.	County Planning Dept., League of OR Cities, OR Dept. of Consumer and Business Services-- Building Codes Div.
MC-5	Federal/State Policy Advocacy	Advocate for higher Renewable Energy Portfolio Standards for electric utilities.	95,000	\$10	1.00	1.50	1.33	1.33	1.50	Elected Officials, CMO	OR Governor's Office, Oregon Department of Energy
MC-6	Federal/State Policy Advocacy	Promote policies that implement carbon pricing. (Consider advocating for the US government Social Cost of Carbon as minimum price per metric ton of carbon/carbon equivalent.)	35,000; 80,000; 130,000; 180,000 (each corresponds to different carbon price)	\$10; \$30; \$60; \$90	1.00	1.83	1.33	1.33	1.50	Elected Officials, CMO	OR Governor's Office, Oregon Department of Energy, Citizens Climate Lobby-Corvallis Chapter
MC-7	Federal/State Policy Advocacy	Support distributed solar energy development through protection of net metering and support for other incentive or cost-saving mechanisms for utility customers.	160,000	-\$150 to \$0 (cost savings to cost neutral, depending on circumstance and assumptions)	1.00	1.67	1.33	1.33	1.25	Elected Officials, CMO	OR Governor's Office, Oregon Department of Energy, Pacific Power, Consumers Power
MC-8	Conservation and Efficiency	Provide "real time" energy use information to influence behavior. Could include indoor energy meters to provide readily accessible information.	1,400	\$300	1.00	2.33	1.33	1.33	1.50	Public Works Internal Services Division	Pacific Power, Consumers Power
MC-9	Conservation and Efficiency	Encourage smaller housing to reduce energy consumption, environmental impacts of construction and consumption of goods/materials.	4,000	-\$1,000	1.00	2.17	1.00	2.00	1.25	Community Development Dept	Local Builders
MC-10	Conservation and Efficiency	Expand existing assistance programs for water and energy efficiency measures in existing buildings and new construction (e.g., audits, financial incentives, etc.)	800	\$0	2.00	1.67	1.33	1.67	1.25	Community Development Dept	Pacific Power, Consumers Power, Energy Trust, Take Charge Corvallis
MC-11	Building Preservation	Promote adaptive reuse of historic or older buildings and weatherize to code.	Refurbished homes save 21 MT CO2e / home. Refurbished historic buildings save between 27 - 33 kg CO2e / square foot.	\$0	3.00	1.83	1.00	1.67	1.75	Community Development Dept	Preservation WORKS, Oregon State Historic Preservation Office

# Buildings & Energy

Operations - Mitigation

Action Number	Strategy	Action	Annual Greenhouse Gas Reduction Potential (in Metric Tonnes CO2 Equivalent)	Cost per Metric Tonne of CO2 Equivalent	Evaluation Criteria 1 = high, 3 = low					City Department Lead if Applicable	Potential Lead Community Partner
					GHG Mitigation Potential	Community Feasibility	Financial Feasibility	Social Equity	Benefits Local Environment		
MO-1	Conservation and Efficiency	Energy audits of City facilities and feasibility studies to determine passive to active systems to reduce energy and fuels in buildings.	1,000	Data need: City facility square footage	1.00	1.50	1.00	1.67	1.75	Public Works Department	Energy Trust of Oregon
MO-2	Purchasing	Shift towards 100% renewable and/or carbon free electricity. Purchase Blue Sky Power as an interim measure.	12,000	\$10	1.00	1.83	2.00	2.33	1.50	Finance Department	Energy Trust of Oregon; Pacific Power, Consumers Power
MO-3	Energy Management	Develop and implement utility performance management plan including performance tracking for all City-owned buildings and facilities.	400	-\$10	2.00	2.00	1.00	1.67	1.75	Public Works Department	Energy Trust of Oregon
MO-4	Conservation and Efficiency	Convert remaining applicable City facilities lights to LEDs , prioritized by cost-effectiveness	900	Costs are variable and not scalable without facility-specific information.	1.00	1.75	1.33	1.00	1.75	Public Works Department	Energy Trust of Oregon
MO-5	Conservation and Efficiency	Implement cost-effective building system upgrades and integrate energy efficiency improvements into all applicable capital improvement projects. Target efficiency improvements where the highest energy usage and losses are occurring.	1,000	-\$40 to \$0 (cost savings to cost neutral, depending on EE measure).	2.00	2.00	1.33	1.67	1.75	Public Works Department	Energy Trust of Oregon
MO-6	Energy Management	Evaluate natural gas and methane use and practices at Regional Wastewater Treatment Plant. Analyze and implement strategies to increase methane reuse for vehicle fuel, heating buildings or for other beneficial purposes.	90	\$1,000	2.00	1.83	1.67	1.67	1.50	Public Works Utilities Division	Oregon Department of Environmental Quality, Energy Trust of Oregon
MO-7	Funding	Identify internal and external funding sources to finance energy-efficiency upgrades in City facilities. Explore "climate bonds" as one funding mechanism.	Mitigation potential is similar to MC-1 and MO-5	Costs are equal to staff time (0.05 FTE - 2 hours per week - \$5,000 / year)	2.00	1.67	1.00	1.67	1.75	Public Works Department	Energy Trust of Oregon; DEQ State Revolving Fund
MO-8	Targeted Outreach	Share high priority, cost-effective operational actions with other large business and institutional entities, along with life-cycle cost analyses and GHG reduction information.	Not Scalable without additional information on practices being shared; effectiveness of those practices; and implementation rates for other entities.	Costs are equal the labor value of the meetings	2.00	1.92	1.33	1.67	1.75	Public Works Internal Services Division	
MO-9	Conservation and Efficiency	Identify and target water efficiency improvements where the highest water usage and losses are occurring.	500	Not scalable without additional information about existing infrastructure relative to irrigation demand.	1.00	2.00	1.67	2.00	1.75	Public Works Department, Parks and Recreation Department	

## Buildings & Energy

MO-10	Green Buildings	Design/construct all new City facilities to meet or exceed LEED Gold (Platinum) or better energy and water efficiency standards.	Not scalable without additional specific facilities information. Based on ACEEE research, LEED Gold or Platinum Certification will save about 8% energy savings beyond Oregon's existing commercial building codes.	Certification costs are about \$4,000 for a 50,000 square foot building (\$1,200 registration fee and \$0.055 / square foot).	1.00	1.50	2.00	1.83	1.75	Public Works Department	
-------	-----------------	--	---	---	------	------	------	------	------	-------------------------	--

### Community - Adaptation

Action Number	Strategy	Action	Annual Greenhouse Gas Reduction Potential (in Metric Tonnes CO2 Equivalent)	Cost per Metric Tonne of CO2 Equivalent	Evaluation Criteria 1 = high, 3 = low					City Department Lead if Applicable	Potential Lead Community Partner
					GHG Mitigation Potential	Community Feasibility	Financial Feasibility	Social Equity	Benefits Local Environment		
AC-1	Conservation and Efficiency	Encourage passive daylight, shading, ventilation, insulated building envelopes, etc.			1.00	2.17	1.33	1.00	1.50	Community Development Dept.	
AC-2	Conservation and Efficiency	Establish an incentive program for high efficiency toilets for all income levels and renter/owner status.			3.00	2.00	1.67	1.67	1.38	Public Works Utilities Division	
AC-3	Conservation and Efficiency, Building Codes	Establish a grey water program.			3.00	2.17	1.00	2.00	1.50	Community Development Dept. and Public Works Utilities Division	

### Operations - Adaptation

Action Number	Strategy	Action	Annual Greenhouse Gas Reduction Potential (in Metric Tonnes CO2 Equivalent)	Cost per Metric Tonne of CO2 Equivalent	Evaluation Criteria 1 = high, 3 = low					City Department Lead if Applicable	Potential Lead Community Partner
					GHG Mitigation Potential	Community Feasibility	Financial Feasibility	Social Equity	Benefits Local Environment		
AO-1	Asset Management	Consider climate change impacts in evaluating asset life / replacements and repairs (asset management)			2.00	1.33	1.67	1.33	1.00	Public Works Department	
AO-2	Wastewater Facilities Management	Consider new systems approach for the Wastewater Treatment Plant to increase its resiliency and avoid power outages in flood events. Evaluate potential to reduce demand for nutrient processing at the WWTP by employing Low Impact Development (LID) techniques and installing residential and commercial reuse systems.			2.00	1.50	1.33	1.33	1.25	Public Works Utilities Division	
AO-3	Resiliency	Complete a feasibility study and plan for onsite and rooftop solar electric and hot water for buildings.			2.00	1.50	1.33	1.33	1.50	Public Works Department	

## Land Use & Transportation

### Summary Table for Corvallis Climate Action Plan Strategies and Actions for Public Outreach Process

**Greenhouse Gas (GHG) Mitigation Potential:** For each of the following actions, GHG mitigation potential is calculated to show the scale of emissions reductions relative to Corvallis' 2012 community emissions. Many of these actions will take years or even decades to reach the maximum potential. The GHG mitigation values apply the maximum potential at the end of the time period for a specific action and show the effect that that potential would have relative to Corvallis' 2012 emissions. Its important to note that there may be significant overlap between mitigation potential individual actions and therefore the mitigation potential is not always additive. For example, total cost-effective energy efficiency potential is estimated for B&E MC-1, but a portion of that same potential will also be represented in the estimate for development of a Home Performance Rating system (B&E MC-2). Research exists that quantifies energy savings realized after a Home Performance Rating system is implemented, but those savings will no doubt stem from home owners adopting cost effective energy efficiency measures.

**Cost Effectiveness:** Cost per metric ton of carbon dioxide equivalent reduced (\$ / -1 MT CO<sub>2</sub>e) is used here to allow the reader to compare the cost effectiveness between very different types of actions. The cost and emissions values used to calculate cost effectiveness represent the cost and emissions difference between the Baseline and Alternative scenarios. Baseline emissions represent existing conditions (based Corvallis' 2012 Community GHG Inventory) and the Alternative scenario represents the effects of an action being implemented. Costs include (as much as data allows) capital equipment, operations, maintenance, as well as the value of any avoided costs (e.g. energy costs, landfill tip fees, etc.). Emissions include (as much as data allows) the lifecycle GHG impacts of each action.

#### Community - Mitigation

*\*Note: Implementation of adopted plans is expected to result in other important benefits for the region. Total fuel consumption per capita is expected to drop by 53 percent. This represents a reduction in GHG of ~70,000 MT CO<sub>2</sub>e*

*\*\* Note: Since many of these actions used GHG per capita, actions with small reductions (e.g., ITS) will not represent savings in 2035 based on population growth expectations*

Action Number	Strategy	Action	Annual Greenhouse Gas Reduction Potential (in Metric Tonnes CO <sub>2</sub> Equivalent)	Cost per Metric Tonne of CO <sub>2</sub> Equivalent	Evaluation Criteria					City Department Lead if Applicable	Potential Lead Community Partner
					GHG Mitigation Potential	Effectiveness & Feasibility	Financial	Social	Benefits Local Environment		
MC-1	Land Use	Zoning and Land Development Code provisions were established in 2006 to support transit, walkable and node-oriented, mixed-use development that includes housing and services, however, these types of developments have not occurred. This action will be to review the Code, zoning and market conditions to identify barriers to making it happen as well as market incentives.	unscalable; however CAMPO projects that previous plans and UGB designation will reduce emissions by 5,000 MT annually	unscalable	1.00	1.33	2.00	2.00	1.25	Community Development-- Planning Division	Developers

## Land Use & Transportation

MC-2	Transportation Demand Management	Use parking management strategies to reduce vehicle miles traveled, including pricing and flexibility for developers to support parking near transit, and park and ride facilities.	5,500	\$0 (self-funded through revenue generation)	1.00	2.08	1.00	1.83	1.50	Engineering and Transportation Division	Major employers: HP, Hospital, OSU, etc.
MC-3	Transportation System Efficiency	Synchronize and recalibrate the timing of traffic signals to reduce idling and congestion.	3,000 (note: MC-3 and MC-5 included same components in analysis)	\$10,000 per signal, 30 potential signals = \$300k for ITS	2.00	1.67	1.00	2.00	1.50	Engineering and Transportation Division	Oregon Department of Transportation
MC-4	Facilitate Active Transportation	The Corvallis network of bike and pedestrian corridors is being expanded and safety measures such as visual and physical protections between bike and vehicle lanes are being enhanced. This action would evaluate current program, identify additional bike and pedestrian corridor improvements, and prioritize based on "Walk and Transit Score." Ensure linkages with OSU corridors.	5,750	Bike lane \$130,000 and multi-use path \$210,000 per mile	1.00	1.50	1.00	1.33	1.50	Engineering and Transportation Division	OSU Transportation Services, Oregon Department of Transportation, Benton County
MC-5	Transportation System Management	Implement projects that reduce congestion and idling, such as right and left turn lanes at intersections, roundabouts, and access management improvements.	3,000 (note: MC-3 and MC-5 included same components in analysis)	Turn lane costs - \$100 per lane County traffic circle - \$1.2 million	2.00	1.92	1.00	1.67	1.50	Engineering and Transportation Division	Oregon Department of Transportation, Benton County
MC-6	Transportation Demand Management	Establish motor vehicle-free streets with exceptions for dedicated transit, deliveries (possibly with time-of-day limitations), emergency vehicles and disability access.	87,579	-\$1	1.00	2.08	1.00	1.33	1.63	Engineering and Transportation Division	OSU, Benton County, Cascade COG, CAMPO, and other community partners
MC-7	Federal/State Policy Advocacy	Promote policies that implement carbon pricing such as a "carbon tax" or a climate mitigation fee, which could be applied to fuels or vehicle registration. (Use U.S. government Social Cost of Carbon as minimum price per metric ton of carbon/carbon equivalent.)	4,000; 6,000; and 8,000	\$30, \$60 and \$100	1.00	2.08	1.33	1.00	1.50	Elected Officials with support from CMO and Public Works Internal Services Division	OSU, Benton County, League of OR Cities, OR Department of Energy, Citizens Climate Lobby--Corvallis Chapter
MC-8	Promote Electric and Lower-Carbon Fueled Vehicles	Promote local production and access to biofuels such as renewable diesel and biogas. Scale diesel consumption for Corvallis. A. Show waste grease biodiesel difference. B. Same for biogas and diesel displacement. C. Solar EV public charging versus gasoline.	11,000	\$58	1.00	1.83	1.50	1.67	1.50	Public Works Department	OSU Sustainability Office, State of Oregon
MC-9	Transportation Demand Management	Support ODOT/DLCD scenario planning and evaluate land use and transportation system alternatives as part of the Comprehensive Plan and Transportation System Plan (TSP) updates.	unscalable		1.00	1.50	1.33	1.67	1.50	Engineering and Transportation Division, Community Development--Planning Division	CAMPO, Benton County Transportation Planning

## Land Use & Transportation

MC-10	Transit	Expand the Corvallis Transit System and level of service-routes (more connections to other public transit modes and popular seasonal destinations), frequency, Dial-A-Bus, etc.; create better connections to Amtrack and BoltBus.	2,500; 4,000; and 7,000	\$593	1.00	2.08	1.83	1.67	1.50	Engineering and Transportation Division	Albany Transit, OSU, County Special Transportation Program
-------	---------	--	-------------------------	-------	------	------	------	------	------	---	--

### Community - Adaptation

Action Number	Strategy	Action	Annual Greenhouse Gas Reduction Potential (in Metric Tonnes CO2 Equivalent)	Cost per Metric Tonne of CO2 Equivalent	Evaluation Criteria					City Department Lead if Applicable	Potential Lead Community Partner
					GHG Mitigation Potential	Effectiveness & Feasibility	Financial	Social	Benefits Local Environment		
AC-1	Flood Protection	Evaluate flood impact mapping; identify potentially isolated areas (such as South Corvallis) to plan for accessibility by all transportation modes.			3.00	1.67	1.67	2.00	1.75	Public Works Department	Benton County
AC-2	Pavement Reduction and Water Quality	Evaluate opportunities to create reduced width neighborhood streets to calm traffic, increase water absorption through filtering swales and increase green space.			3.00	2.00	2.00	1.67	1.00	Engineering and Transportation Division, Community Development--Planning Division	Neighborhoods
AC-3	Fire Prevention	Review fire protection land use codes and prioritize new policies and incentives aimed at limiting new development on risky portions of the landscape.			3.00	2.00	1.00	2.00	1.50	Community Development Department, Fire Department, Parks and Recreation Department;	County Planning, County Emergency Management
AC-4	Urban Heat Reduction	Plant shade trees along active transportation corridors with attention given for underserved populations and neighborhoods.			3.00	1.50	1.83	1.33	1.00	Engineering and Transportation Division	OSU Landscape Shop and OSU Planning
AC-5	Land Use	Contain the Urban Growth Boundary (UGB) in order to protect farm land over time and accommodate new population growth. Manage UGB area for multiple land uses and objectives including natural resources protection, recreation, food, residential and commerce.			3.00	1.33	1.33	1.67	1.25	Community Development Department	County Planning
AC-6	Urban Heat Reduction	Change road surfaces to lighter, non-heat absorbing colors.			3.00	2.00	2.00	1.67	1.50	Engineering and Transportation Division	County Transportation
AC-7	Land Use-Stormwater Management	Promote/Require Low Impact Development (LID) techniques for all new developments. LID features include on-site stormwater infiltration and water quality features, which will also reduce stormwater flows treated at the water reclamation facility.			2.00	1.67	1.67	1.67	1.25	Community Development Department; Utilities Division	

## Land Use & Transportation

AC-8	Land Use--Flood Protection	Refine restrictions on building in floodplains and fire prone areas--focus on wildland urban interface areas.			3.00	1.67	1.00	2.00	1.25	Community Development	County
------	----------------------------	---	--	--	------	------	------	------	------	-----------------------	--------

### Operations - Mitigation

Action Number	Strategy	Action	Annual Greenhouse Gas Reduction Potential (in Metric Tonnes CO2 Equivalent)	Cost per Metric Tonne of CO2 Equivalent	Evaluation Criteria					City Department Lead if Applicable	Potential Lead Community Partner
					GHG Mitigation Potential	Effectiveness & Feasibility	Financial	Social	Benefits Local Environment		
MO-1	Purchasing and Specifications	Require carbon footprint (support from DEQ) when specifying concrete and/or asphalt in large quantities for projects)	Need quantities of asphalt and concrete in order to calculate	\$0	1.00	2.00	1.33	2.00	1.50	Transportation Engineering, Parks Engineering	
MO-2	Improve fleet Fuel Efficiency and GHG Emissions	Right size transit, heavy duty and light duty vehicles, increase fuel efficiency and use of low carbon fuels and electricity. Consider electric vehicles and hybrids where duty cycle allows - especially sedans.	1,000	-\$276	1.00	2.17	1.00	2.00	1.50	Fleet Managers	
MO-3	Transportation Demand Management	Allow telecommuting when and where appropriate. Promote employee use of alternate commute modes, including carpooling, transit system, walking and biking.	150	\$0	1.00	2.00	1.00	2.33	1.50	City Manager, City Council	
MO-4	Design Standards	Evaluate street design (skinny streets) to mitigate while maintaining access for emergency vehicles	unscalable	\$0	2.00	1.67	1.33	2.00	1.50	Engineering and Transport	
MO-5	Purchasing and Specifications	Incorporate contractor fuel efficiency/emissions standards into bids and contracts to ensure construction contractors working for the City use fuel efficient, low polluting vehicles and equipment.	unscalable		1.00	2.17	1.00	2.00	1.50	Public Works Department	

### Operations - Adaptation

Action Number	Strategy	Action	Annual Greenhouse Gas Reduction Potential (in Metric Tonnes CO2 Equivalent)	Cost per Metric Tonne of CO2 Equivalent	Evaluation Criteria					City Department Lead if Applicable	Potential Lead Community Partner
					GHG Mitigation Potential	Effectiveness & Feasibility	Financial	Social	Benefits Local Environment		
AO-1	Flood and Fire Protection	Prepare transportation system for long duration events (e.g., weather, outages, etc.)			3.00	1.92	2.00	1.67	1.75	Public Works Department	
AO-2	Flood Protection	Review standards (stormwater management) for anticipated climate change impacts (e.g., increased flooding)			3.00	1.83	1.00	2.00	1.75	Public Works Department, Community Development Planning Division	

## Land Use & Transportation

AO-3	Flood Protection	Evaluate flood potential for roads, bike paths and sidewalks.		3.00	2.08	1.33	1.67	1.75	Community Development Planning Division
------	------------------	---	--	------	------	------	------	------	---

## Consumption & Waste

### Summary Table for Corvallis Climate Action Plan Strategies and Actions for Public Outreach Process

**Greenhouse Gas (GHG) Mitigation Potential:** For each of the following actions, GHG mitigation potential is calculated to show the scale of emissions reductions relative to Corvallis' 2012 community emissions. Many of these actions will take years or even decades to reach the maximum potential. The GHG mitigation values apply the maximum potential at the end of the time period for a specific action and show the effect that that potential would have relative to Corvallis' 2012 emissions. Its important to note that there may be significant overlap between mitigation potential individual actions and therefore the mitigation potential is not always additive. For example, total cost-effective energy efficiency potential is estimated for B&E MC-1, but a portion of that same potential will also be represented in the estimate for development of a Home Performance Rating system (B&E MC-2). Research exists that quantifies energy savings realized after a Home Performance Rating system is implemented, but those savings will no doubt stem from home owners adopting cost effective energy efficiency measures.

**Cost Effectiveness:** Cost per metric ton of carbon dioxide equivalent reduced (\$ / -1 MT CO<sub>2</sub>e) is used here to allow the reader to compare the cost effectiveness between very different types of actions. The cost and emissions values used to calculate cost effectiveness represent the cost and emissions difference between the Baseline and Alternative scenarios. Baseline emissions represent existing conditions (based Corvallis' 2012 Community GHG Inventory) and the Alternative scenario represents the effects of an action being implemented. Costs include (as much as data allows) capital equipment, operations, maintenance, as well as the value of any avoided costs (e.g. energy costs, landfill tip fees, etc.). Emissions include (as much as data allows) the lifecycle GHG impacts of each action.

MC = Mitigation action (community)

MO = Mitigation action (operational)

AC = Adaptation action (community)

AO = Adaptation action (operational)

#### Community - Mitigation

Action Number	Strategy	Action	Annual Greenhouse Gas Reduction Potential (in Metric Tonnes CO <sub>2</sub> Equivalent)	Cost per Metric Tonne of CO <sub>2</sub> Equivalent	Evaluation Criteria 1 = high, 3 = low					City Department Lead if Applicable	Potential Lead Community Partner
					GHG Mitigation Potential	Community Feasibility	Financial Feasibility	Social Equity	Benefits Local Environment		
MC-1	Waste Reduction	Increase recycling (particularly plastics and construction debris recovery) through incentives, technical assistance, ordinances and market development.	-12,900	\$20	1.00	1.83	1.67	2.00	1.75	Public Works	Oregon DEQ, County Solid Waste Department, Republic Services
MC-2	Food Waste Reduction	Promote strategies that reduce the volume of food waste generated (e.g. proper food storage and meal planning), and that support gleaning and donation of unused and excess food.	2,500	\$0	1.00	1.67	1.00	1.67	1.50	Public Works	County Solid Waste Department, Local Food Bank, OSU University Housing and Dining Services
MC-3	Reuse and Repair	Promote reuse and repair businesses to both businesses and residents. Develop a campaign to connect residents to information regarding purchasing (local, durable goods, low-carbon), reuse, collaborative consumption, and encourage more vocational training so population can repair and refurbish.	Not scalable without additional data on material types and quantities	-\$300	1.00	2.00	1.00	1.67	1.75		Oregon DEQ, OSU Purchasing, Recycling and Sustainability offices, County Solid Waste Department, Corvallis Sustainability Coalition

## Consumption & Waste

MC-4	Procurement	Partner with local businesses, organizations, and governments to encourage purchasing policies that set minimum recycled material content requirements for purchases, reduce packaging, and give preference to goods that can be returned to the manufacturer for remanufacturing /reuse/or full recycling.	Not scalable without additional data on material types and quantities	\$0	1.00	2.17	1.00	1.67	1.75	Procurement, all Divisions	Oregon DEQ, County Solid Waste Department, OSU Procurement Office
MC-5	Federal / State Policy Advocacy	Promote development of local, state, and federal product stewardship legislation.	Not scalable without additional data on material types and quantities	\$0	1.00	2.33	1.67	1.67	2.00	City Elected Officials, Public Works	Oregon DEQ, County Solid Waste Department
MC-6	Waste Reduction	Sponsor city-wide waste reduction programs such as yard and wood waste drop-off centers, Spring cleanup events, Fall leaf drop-off or collection, green teams, student outreach projects, neighborhood composting projects, home composting education, existing residential and business programs for reuse and organics management to reach more residents and businesses.	EPA's WARM model indicates that this action does not provide mitigation potential.		2.00	2.00	1.00	2.00	1.25	Public Works	OSU Extension Service and Sustainability office, County Solid Waste Department, Neighborhood Associations and Republic Services
MC-7	Reuse and repair	Continue to support and expand material exchanges and reuse programs, and promote building with salvaged and reclaimed materials.	900	-\$20	1.00	2.00	1.00	1.33	1.50	Public Works	OSU Recycling/ Sustainability, Habitat for Humanity
MC-8	Waste Reduction	Develop programs to support food donation, help commercial kitchens reduce waste, and help households and businesses reduce food waste through better planning, purchasing, storage and preparation.	1,400	-\$10	1.00	2.00	1.00	1.00	1.50		Corvallis Sustainability Coalition Food Action Team, Food Bank
MC-9	Education and Outreach	Identify high-carbon product categories; develop outreach materials to aid consumers and retailers in making purchasing decisions.	Not scalable without additional program information and product categories and effect of outreach		1.00	1.67	1.00	2.00	1.50		Corvallis Sustainability Solid Waste Action Team
MC-10	Federal / State Policy Advocacy	Support State efforts to implement carbon pricing related to product and materials life cycles (e.g., emissions cap or carbon tax), including imports (border adjustment mechanism / carbon tariff if necessary).	Depending on the price of carbon, industrial emissions would be reduced between 4 - 18% by 2034 for goods produced within Oregon.	\$10 to \$100	1.00	2.33	1.33	1.67	2.00	Local Elected Officials	
MC-18	Waste Reduction	Implement best practices to encourage or require recycling of construction and demolition (C&D) materials: concrete & mixed rubble, clean wood, carpet, drywall / gypsum, asphalt shingles, metals, bricks, and plastics.	4,000	\$50	1.00	1.83	1.67	2.00	1.75	Public Works	Oregon DEQ, County Solid Waste Department, Republic Services

# Consumption & Waste

## Operations - Mitigation

Action Number	Strategy	Action	Annual Greenhouse Gas Reduction Potential (in Metric Tonnes CO2 Equivalent)	Cost per Metric Tonne of CO2 Equivalent	Evaluation Criteria 1 = high, 3 = low					City Department Lead if Applicable	Potential Lead Community Partner
					GHG Mitigation Potential	Community Feasibility	Financial Feasibility	Social Equity	Benefits Local Environment		
MO-1	Purchasing	Review major and recurring purchases, research lower carbon alternatives based on life-cycle use and specify these products when cost competitive.	3,600	\$0	1.00	1.83	1.17	2.00	1.50	Procurement Office, All Divisions	
MO-2	Purchasing	Procure major purchases based on total ownership / lifecycle cost, with priority given to low carbon content throughout the supply chain. Include maintenance / operations personnel in setting procurement guidance.	Not scalable without additional program information and data		1.00	1.83	1.50	2.00	1.50	Procurement Office, All Divisions	
MO-3	Purchasing	Specify and request lower carbon paving including cement replacements and regrind of asphalt.	-0.1 MT CO2e / short ton of asphalt with 30% RAP	-\$80 to \$0 (depending on market prices and local conditions)	1.00	1.83	1.33	2.00	1.50	Public Works Engineering	
MO-4	Purchasing	Seek joint procurements with other agencies to increase buying power and lower prices for environmentally preferred products.	Not scalable without additional program information and data on material types and quantities		1.00	2.08	1.00	2.00	1.50	Procurement Office, All Divisions	Oregon Department of Administrative Services, Oregon Department of Transportation, Oregon Department of Environmental Quality
MO-5	Purchasing	Get low carbon purchasing toolkit for local government from DEQ (available late 2016).	Not scalable without additional program information and data on material types; quantities; and program implementation plans	\$0	2.00	1.58	1.33	2.00	1.50	Procurement Office	Oregon Department of Environmental Quality
MO-6	Purchasing	Establish a local forum for sharing best low carbon purchasing practices (include purchasing experts from major institutions like hospital, schools, and county).	Not scalable without additional program information and data on material types and quantities		2.00	1.83	1.00	2.00	1.75	Procurement Office, All Divisions	Oregon State University, Oregon Department of Administrative Services, Oregon Department of Transportation, Oregon Department of
MO-7	Federal / State Policy Advocacy	Support state efforts to develop a consumption-based GHG inventory methodology and to adopt standards, incentives, and / or mandates for carbon foot-printing and labeling of products.	Not scalable without additional program information and data on material types and quantities	\$0	2.00	2.00	1.67	2.00	1.75		

## Consumption & Waste

MO-8	Federal / State Policy Advocacy	Participate actively in the process to develop state and federal product stewardship programs and legislation. Support opportunities for producers to develop responsible manufacturing, product and package design and reuse of recovered materials.	Not scalable without additional program information and data on material types and quantities	1.00	2.50	2.00	1.67	2.25
------	---------------------------------	---	---	------	------	------	------	------

# Consumption & Waste

## Community - Adaptation

Action Number	Strategy	Action	Annual Greenhouse Gas Reduction Potential (in Metric Tonnes CO2 Equivalent)	Cost per Metric Tonne of CO2 Equivalent	Evaluation Criteria 1 = high, 3 = low					City Department Lead if Applicable	Potential Lead Community Partner
					GHG Mitigation Potential	Community Feasibility	Financial Feasibility	Social Equity	Benefits Local Environment		
AC-1	Materials management	Evaluate infrastructure and service adequacy for materials management under warming conditions and extreme events.			3.00	1.67	2.00	1.67	1.50	Public Works	County Solid Waste Department, Republic Services, Coffin Butte
AC-2	Materials management	Support compost distribution system that supports local (home) access and use of local compost.			2.00	2.00	2.00	1.67	1.50	Public Works	Republic Services
AC-3	Education and Outreach	Establish a resource efficiency program in the schools that would serve both as a model program for the community as well as provide education / training for students.			2.00	1.83	1.67	2.00	1.75		509J

## Operations - Adaptation

Action Number	Strategy	Action	Annual Greenhouse Gas Reduction Potential (in Metric Tonnes CO2 Equivalent)	Cost per Metric Tonne of CO2 Equivalent	Evaluation Criteria 1 = high, 3 = low					City Department Lead if Applicable	Potential Lead Community Partner
					GHG Mitigation Potential	Community Feasibility	Financial Feasibility	Social Equity	Benefits Local Environment		
AO-1	Procurement	Review Urban Sustainability Director's Network Toolkit for new procurement actions.			2.00	1.67	1.00	2.00	1.50		

## Food & Agriculture

### Summary Table for Corvallis Climate Action Plan Strategies and Actions for Public Outreach Process

**Greenhouse Gas (GHG) Mitigation Potential:** For each of the following actions, GHG mitigation potential is calculated to show the scale of emissions reductions relative to Corvallis' 2012 community emissions. Many of these actions will take years or even decades to reach the maximum potential. The GHG mitigation values apply the maximum potential at the end of the time period for a specific action and show the effect that that potential would have relative to Corvallis' 2012 emissions. Its important to note that there may be significant overlap between mitigation potential individual actions and therefore the mitigation potential is not always additive. For example, total cost-effective energy efficiency potential is estimated for B&E MC-1, but a portion of that same potential will also be represented in the estimate for development of a Home Performance Rating system (B&E MC-2). Research exists that quantifies energy savings realized after a Home Performance Rating system is implemented, but those savings will no doubt stem from home owners adopting cost effective energy efficiency measures.

**Cost Effectiveness:** Cost per metric ton of carbon dioxide equivalent reduced (\$ / -1 MT CO<sub>2</sub>e) is used here to allow the reader to compare the cost effectiveness between very different types of actions. The cost and emissions values used to calculate cost effectiveness represent the cost and emissions difference between the Baseline and Alternative scenarios. Baseline emissions represent existing conditions (based Corvallis' 2012 Community GHG Inventory) and the Alternative scenario represents the effects of an action being implemented. Costs include (as much as data allows) capital equipment, operations, maintenance, as well as the value of any avoided costs (e.g. energy costs, landfill tip fees, etc.). Emissions include (as much as data allows) the lifecycle GHG impacts of each action.

#### Community - Mitigation

Action Number	Strategy	Action	Annual Greenhouse Gas Reduction Potential (in Metric Tonnes CO <sub>2</sub> )	Cost per Metric Tonne of CO <sub>2</sub> Equivalent	Evaluation Criteria 1 = high, 3 = low					City Department Lead if Applicable	Potential Lead Community Partner
					GHG Mitigation Potential	Community Feasibility	Financial Feasibility	Social Equity	Benefits Local Environment		
MC-1	Purchasing	Encourage food purchasing policies that favor local and climate friendly alternatives (e.g. school system, LBCC, OSU, hospital).	1,500	\$0	1.00	1.92	1.67	1.67	1.25		OSU Extension, OSU College of Agricultural Sciences, Oregon Tilth

## Food & Agriculture

MC-2	Food Production Methods	Encourage producers to transition to agro-ecological / conservation-oriented agricultural production methods to reduce GHG intensive inputs and practices and retain carbon and other nutrients onsite.	not scalable		2.00	2.08	2.00	1.00	1.75	Corvallis Albany Farmers' Market, Linn Benton Community College, Oregon State University Housing and Dining Services, Good Samaritan Regional Medical Center, Corvallis Sustainability Coalition Food Action Team, 509J, Corvallis Environmental Center's Edible Corvallis Initiative
MC-3	Education	Provide educational opportunities for residents and school children to reduce home food waste, learn local food growing, season extension, preparation, preservation and eating seasonally skills.	not scalable		2.50	1.83	1.67	1.67	1.75	Corvallis Sustainability Coalition Waste Prevention Action Team, Corvallis Environmental Center Edible Corvallis Initiative, Linus Pauling Institute Healthy Youth Program, OSU Extension - Master Gardeners, First Alternative Co-op, 509J
MC-4	Public Outreach and Education	Facilitate sharing of best practices among restaurants, caterers and other commercial food preparation operations for minimizing and reusing/recycling food waste.	2,500	\$2	2.00	2.17	1.33	1.83	1.63	Sustainability Coalition Food Action Team, Corvallis Sustainability Coalition Waste Prevention Action Team, Chamber of Commerce; Corvallis Independent Business Alliance

## Community - Adaptation

Action Number	Strategy	Action	Annual Greenhouse Gas Reduction Potential (in Metric Tonnes CO2)	Cost per Metric Tonne of CO2 Equivalent	Evaluation Criteria 1 = high, 3 = low					City Department Lead if Applicable	Potential Lead Community Partner
					GHG Mitigation Potential	Community Feasibility	Financial Feasibility	Social Equity	Benefits Local Environment		
AC-1	Local Food System Support	Support the development of the South Corvallis Neighborhood Food Center which can facilitate education, community gardens, gleaning, food preservation, and emergency response.			3.00	2.00	2.00	1.33	1.63		Benton County Food Security Work Group, Linn-Benton Food Share, Willamette Neighborhood Housing Services, First Alternative Co-op, Community Services Consortium

## Food & Agriculture

AC-2	Edible Landscapes	Model and promote edible landscaping and gleaning. Plant non-invasive food-bearing trees and shrubs on public and private lands.		3.00	2.00	1.00	1.17	1.63		Corvallis Sustainability Coalition Food Action Team, Oregon State Extension Master Gardeners, local nurseries and garden centers
AC-3	Local Food System	Support community supported agriculture programs (e.g. CSAs). Promote increased participation and accessibility.		3.00	2.00	1.67	1.33	1.63		Oregon Dept of Agriculture, Oregon Tilth, Oregon State University Extension Service, and the Southern Willamette Valley Bean and Grain Project, Ten Rivers Food Web
AC-4	Research and Policy Development	Support OSU Extension in identifying food crops that will thrive in current and future conditions in the Willamette Valley.		3.00	1.00	1.00	1.33	1.38		Corvallis Sustainability Coalition Food Action Team, Oregon State Extension Master Gardeners, local nurseries and garden centers
AC-5	Public Outreach and Education	Provide new homeowners and property managers with resources about sustainable landscaping and permaculture practices.		0.00	2.00	1.67	1.67	1.38	City Community Development Department	County Planning Department, OSU Horticulture Department, OSU Extension

# Urban Natural Resources

## Summary Table for Corvallis Climate Action Plan Strategies and Actions for Public Outreach Process

**Greenhouse Gas (GHG) Mitigation Potential:** For each of the following actions, GHG mitigation potential is calculated to show the scale of emissions reductions relative to Corvallis' 2012 community emissions. Many of these actions will take years or even decades to reach the maximum potential. The GHG mitigation values apply the maximum potential at the end of the time period for a specific action and show the effect that that potential would have relative to Corvallis' 2012 emissions. Its important to note that there may be significant overlap between mitigation potential individual actions and therefore the mitigation potential is not always additive. For example, total cost-effective energy efficiency potential is estimated for B&E MC-1, but a portion of that same potential will also be represented in the estimate for development of a Home Performance Rating system (B&E MC-2). Research exists that quantifies energy savings realized after a Home Performance Rating system is implemented, but those savings will no doubt stem from home owners adopting cost effective energy efficiency measures.

**Cost Effectiveness:** Cost per metric ton of carbon dioxide equivalent reduced (\$ / -1 MT CO2e) is used here to allow the reader to compare the cost effectiveness between very different types of actions. The cost and emissions values used to calculate cost effectiveness represent the cost and emissions difference between the Baseline and Alternative scenarios. Baseline emissions represent existing conditions (based Corvallis' 2012 Community GHG Inventory) and the Alternative scenario represents the effects of an action being implemented. Costs include (as much as data allows) capital equipment, operations, maintenance, as well as the value of any avoided costs (e.g. energy costs, landfill tip fees, etc.). Emissions include (as much as data allows) the lifecycle GHG impacts of each action.

MC = Mitigation action (community)      MO = Mitigation action (operational)  
 AC = Adaptation action (community)      AO = Adaptation action (operational)

Community - Mitigation

Action Number	Strategy	Action	Annual Greenhouse Gas Reduction Potential (in Metric Tonnes CO2 Equivalent)	Cost per Metric Tonne of CO2 Equivalent	Evaluation Criteria 1 = high, 3 = low					City Department Lead if Applicable	Potential Lead Community Partner
					GHG Mitigation Potential	Community Feasibility	Financial Feasibility	Social Equity	Benefits Local Environment		
MC-1	Land Management	Manage designated natural areas to increase both forest and natural prairies which will increase carbon stores over time.	not scalable; CO2e sequestration potential for 10,000 trees planted over 50 years: cedar (255 MT) and hemlock (255 MT) alder (557MT)	\$122 per tree and \$38 in annual maintenance	2	1.92	1.67	2.33	1.25	City Parks and Recreation Department	

# Urban Natural Resources

Community - Adaptation

Action Number	Strategy	Action	Annual Greenhouse Gas Reduction Potential (in Metric Tonnes CO2 Equivalent)	Cost per Metric Tonne of CO2 Equivalent	Evaluation Criteria 1 = high, 3 = low					City Department Lead if Applicable	Potential Lead Community Partner
					GHG Mitigation Potential	Community Feasibility	Financial Feasibility	Social Equity	Benefits Local Environment		
AC-1	Funding	Identify and establish a range of diverse, stable, long-term funding sources for the acquisition, maintenance, restoration, and preservation of prime natural areas. Consider, for example: a) traditional funding sources, such as federal, state, and private foundation grants, corporate sponsorships and donations, b) methods such as land swaps or purchase of conservation easements, c) local grants and business sponsorships.			2.00	2.00	2.00	1.33	1.00		
AC-2	Urban Heat Reduction	Expand the placement of climate appropriate vegetation and features (e.g. natural areas, parks, restoration sites, street and park trees, green streets, eco-roofs, etc.) to withstand drought conditions.			2.00	1.83	1.33	1.83	1.00	City Parks and Recreation Department, Public Works	OSU, County Parks
AC-3	Urban Heat Reduction	Encourage tree preservation and protection on private property and in the rights-of-way with a focus on tree-deficient areas.			2.00	2.00	1.67	1.17	1.00	City Parks and Recreation Department, Public Works	
AC-4	Water and Habitat Connectivity	Develop park and natural area connectivity to improve habitat and migration corridors on a local and regional level. The broader, more complex floodplains improve water quality and serve as flood buffers.			3.00	1.83	1.33	1.33	1.25	City Parks and Recreation Department, Public Works	OSU, County Parks
AC-5	Watershed Planning	Do BLANK to develop more complex and broader floodplains that include wetlands and a diverse matrix of habitats. Encourage rainwater collection, downspout disconnections, and rain gardens at residences, businesses, and institutions in order to reduce peak stormwater flows and to recharge aquifers.			3.00	2.17	1.67	2.00	1.38	Mary's River Watershed Council, City Parks and Recreation Department, Public Works, Army Corps of Engineers, Department of State Lands, County Parks Department, Greenbelt Land Trust	
AC-6	Urban Heat Reduction	Finalize tree restitution ordinance (assessed value of tree removed with a permit) as a disincentive to cutting trees.			2.00	2.00	1.83	1.33	1.50	City Council	

# Urban Natural Resources

## Operations - Mitigation

Action Number	Strategy	Action	Annual Greenhouse Gas Reduction Potential (in Metric Tonnes CO2 Equivalent)	Cost per Metric Tonne of CO2 Equivalent	Evaluation Criteria 1 = high, 3 = low					City Department Lead if Applicable	Potential Lead Community Partner
					GHG Mitigation Potential	Community Feasibility	Financial Feasibility	Social Equity	Benefits Local Environment		
MO-1	Integrated Pest Management	Improve Landscaping Manual and Integrated Pest Management Policy and Plan for all city facilities and train staff. Consider need for inputs such as water and manage towards zero.	500	Not scalable without additional information about existing infrastructure and customers	2.00	1.83	1.67	2.00	1.25	Parks and Recreation, Public Works	
MO-2	Equipment and fuels	Create policy for electric lawn mowers, chain saws, leaf blowers and weed eaters.	814	-\$1,729	2.00	1.83	1.50	2.00	1.63	Procurement, Parks and Recreation, Public Works	
MO-3	Forest Management	Ensure that the City's watershed forest is managed for carbon storage over time, consistent with water quality and other ecosystem values.	not scalable; CO2e sequestration potential for 10,000 trees planted over 50 years: cedar (255 MT) and hemlock (255 MT) alder (557MT)	\$122 per tree and \$38 in annual maintenance	2.00	1.83	1.67	2.00	1.13	City Parks and Recreation Department	City-contracted forestry consultant
MO-4	Forest Management	Expand opportunities to maintain carbon in wood by using wood from urban forest management for products with long lives.	nominal; 15-20 trees removed	Scalable if deemed worthwhile for further study	2.00	1.83	1.50	2.67	1.75	Urban Forester	

## Operations - Adaptation

Action Number	Strategy	Action	Annual Greenhouse Gas Reduction Potential (in Metric Tonnes CO2 Equivalent)	Cost per Metric Tonne of CO2 Equivalent	Evaluation Criteria 1 = high, 3 = low					City Department Lead if Applicable	Potential Lead Community Partner
					GHG Mitigation Potential	Community Feasibility	Financial Feasibility	Social Equity	Benefits Local Environment		
AO-1	Urban Forest Management / Fire Prevention	Evaluate urban forest management policies and practices to address susceptibility to increase risk of wildfires, such as reducing fuel loads in understory of fire prone habitats.			2.00	1.83	1.00	2.00	1.50	Parks and Recreation, Public Works, Fire	
AO-2	Natural Resources Asset Management	Update / maintain natural features inventories to support monitoring and management of climate-sensitive and other significant natural resources.			3.00	1.67	1.50	2.00	1.25	Parks and Recreation, Public Works	
AO-3	Stormwater Management	Reduce piped stormwater flows and peaks by incorporating public stormwater assets that infiltrate, store and slow peak stormwater flows.			2.00	1.83	1.67	1.67	1.25	Parks and Recreation, Public Works	Marys River Watershed Council
AO-4	Infrastructure Planning and Management	Update water, stormwater and wastewater master plans to address climate change. Context should include framing stormwater and wastewater as resources including planning to expand the use of reclaimed water for irrigation and other non-potable uses.			3.00	1.50	1.67	2.00	1.38	Parks and Recreation, Public Works	
AO-5	Urban Heat Reduction	Modify design standards and specifications to ensure field coordination and field change approvals do not preclude trees in the right-of-way.			3.00	1.67	1.33	2.00	1.38	City Planning and Permitting	County Planning and Permitting

## Urban Natural Resources

AO-6	Codes and Design	Evaluate codes (both City and County) for conflicting regulations with regard to adaptation projects. Improve consistency across jurisdictional boundaries.		3.00	2.00	1.33	2.00	1.38	City Planning and Permitting	County Planning and Permitting
AO-7	Public Comfort and Wellbeing	Update Parks Master Plan to include planned access throughout community to Parks and Recreation facilities as cooling areas.		3.00	2.17	2.33	1.33	1.25	Parks and Recreation	
AO-8	Watershed Planning	Partner with local, regional, and state agencies to encourage water conservation and efficiency and expand and diversify the water supply.		3.00	1.67	1.33	1.67	1.38	Parks and Recreation, Public Works	
AO-9	Natural Resources Asset Management	Evaluate and monitor street trees and vegetation, modify species selections as appropriate to address climate change.		2.00	1.67	1.33	1.67	1.38	Parks and Recreation, Public Works	

# Health, Social Services, & Community Well-being

## Summary Table for Corvallis Climate Action Plan Strategies and Actions for Public Outreach Process

MC = Mitigation action (community)  
AC = Adaptation action (community)

MO = Mitigation action (operational)  
AO = Adaptation action (operational)

### Community - Mitigation

Action Number	Strategy	Action	Annual Greenhouse Gas Reduction Potential (in Metric Tonnes CO2 Equivalent)	Cost per Metric Tonne of CO2 Equivalent	Evaluation Criteria 1 = high, 3 = low					City Department Lead if Applicable	Potential Lead Community Partner
					GHG Mitigation Potential	Community Feasibility	Financial Feasibility	Social Equity	Benefits Local Environment		
AC-1	Research and Planning	Adjust local public health and social services programs to support research and to address the health impacts of climate change and the capacity for treatment (e.g., respiratory problems, vector diseases, heat intolerance, increased allergens and pollutants, and increased mental health and anxiety disorders).			3.00	2.17	1.33	1.00	1.75		County Health Department, Oregon Department of Health and Human Services, OSU College of PHHS, United Way
AC-2	Intergovernmental Cooperation	Identify climate-related vulnerabilities, strengths and emergency preparedness needs for flood, fire, heat wave, landslides etc.			3.00	1.50	1.67	1.33	1.75	Fire, Police, Public Works and Community Deveopment Departments	OSU Climate Change Research Institute, County Sherriff and County Fire Department, OSU Emergency Preparedness (Mike Bamberger)
AC-3	Communications Infrastructure	Establish radio communication systems to enable communication service across emergency response personnel during events.			3.00	1.50	1.33	1.33	1.75	Fire, Police and Public Works Departments	OSU Emergency Preparedness (Mike Bamberger), County Sherriff, County Public Works and County Fire Department
AC-4	Education and Outreach	Conduct community outreach regarding emergency preparedness education and public health risks associated with climate change.			3.00	2.17	1.67	1.33	1.75	Fire Department	County Health Department, Community Services Consortium, OSU OCCRI, OSU Extension, Corvallis PIO
AC-5	Community Involvement and Organizing	Promote community organization and collaboration to encourage neighborhood-level problem solving, decision making and governance.			3.00	2.00	1.33	1.33	1.75	Community Development Department	

## Health, Social Services, & Community Well-being

AC-6	Emergency Preparedness	Expand local food security and emergency distribution plans.		3.00	1.83	2.00	1.33	1.75		South Corvallis Community Food Bank, Community Services Consortium, Linn-Benton Food Share, OSU Food Pantry, Benton County Extension (Amy Garrett)
AC-7	Emergency Preparedness	Develop, expand and maintain reciprocating agreements for sharing staff and/or equipment (e.g. Corvallis and Albany employees could report to either agency if commute is cut off by flood or other emergency).		3.00	1.83	1.00	1.67	1.75	Public Works, Fire and Police Departments	County, State and other cities in the area.
AC-8	Emergency Preparedness	Strengthen hunger relief systems / networks. Develop plans to prepare for increased local population requiring food assistance.		3.00	2.17	2.00	1.33	1.75		Food Bank, Community Services Consortium

## Operations - Adaptation

Action Number	Strategy	Action	Annual Greenhouse Gas Reduction Potential (in Metric Tonnes CO2 Equivalent)	Cost per Metric Tonne of CO2 Equivalent	Evaluation Criteria 1 = high, 3 = low					City Department Lead if Applicable	Potential Lead Community Partner
					GHG Mitigation Potential	Community Feasibility	Financial Feasibility	Social Equity	Benefits Local Environment		
AO-1	Education/ Emergency Preparedness	Educate City staff on CAP and identify what role departments play in addressing health and social service needs.			3.00	1.67	1.67	1.33	1.75	CMO, Public Works Sustainability Program	
AO-2	Prepare for Fuel Shortages	In case of power outages, ensure operability of backup generators and other vital systems; investigate transition to non-fossil fuel alternatives.			2.00	1.83	2.00	1.67	1.50	Public Works, Emergency Services	

**MASTER LIST OF STRATEGIES AND ACTIONS, WITH COMMENTS**  
**CORVALLIS CLIMATE ACTION PLAN**  
**BUILDINGS AND ENERGY--COMMUNITY**

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
MC-1	Efficiency and Renewables	Increase programs and partnerships, including incentives, to deliver passive strategies (such as weatherization, solar attic vents, daylighting, shading, insulation of foundations, etc.), energy and fuel efficiency, and onsite renewables for commercial and residential sectors. Programs need to address low income and rental property improvements.	Community Development	Energy Trust of OR, Take Charge Corvallis, Corvallis Sustainability Coalition Energy Action Team, Seeds for the Sol, Habitat for Humanity, Community Services Consortium	Would work best if it could be streamlined and built into plan review process. Need to develop menu of options and associated incentives; need to identify funding source	<ul style="list-style-type: none"> <li>- Include OSU, Good Sam, Oregon Renewable Energy Cooperative</li> <li>- High priority</li> <li>- Highest priority because will be most effective.</li> <li>- Important and high effectiveness, must do this.</li> </ul>
MC-2	Home Performance Ratings	Implement energy performance rating programs for homes. Goal is for owners, tenants and prospective buyers are informed before renting or purchasing.	Community Development	Home Energy Rating Index	Start with an optional program and advertise benefits of participation; elevate to mandatory if voluntary program not successful. Etrust: See Energy Trust of Oregon Energy Performance Score <a href="https://energytrust.org/residential/eps/">https://energytrust.org/residential/eps/</a>	<ul style="list-style-type: none"> <li>- Add realtors, Multiple Listing Service - ratings</li> <li>- Low priority</li> <li>- Highest priority because will be most effective.</li> <li>- Medium priority</li> </ul>
MC-3	Electric and Lower-Carbon Fueled Vehicles	Support the local utilities and building code changes as needed to accelerate transition to electric vehicles. (relates to providing plug-in ability in homes).	Community Development	County Planning Dept., Pacific Corp., Consumers Power		<ul style="list-style-type: none"> <li>- Medium priority</li> <li>- Highest priority because will be most effective.</li> <li>- Won't help quickly - power still required for too many vehicles and would not necessarily be from renewables to produce the electricity. If it would get power mostly from renewables, that's fine, but probably half the population can't afford such right now (perhaps by 2040 tho).</li> </ul>
MC-4	Building Codes	Advocate for state building code changes to incorporate energy performance targeted at net-zero energy consumption by 2030. Consider code requirements consistent with the parameters specified in the 2011 Oregon Energy Reach Code; Incorporate low carbon footprint concept from Architecture 2030, the Energy Trust of Oregon, or LEED.	Elected Officials and Community Development	County Planning Dept., League of OR Cities, OR Dept. of Consumer and Business Services--Building Codes Div.	Reflects a combination of recommended standards/approaches the City should work with partners and State to increase building energy efficiency and renewables.	<ul style="list-style-type: none"> <li>- Need a stronger statement about legislative change. Add local incentives</li> <li>- High priority</li> <li>- Highest priority because will be most effective.</li> <li>- Medium effectiveness - this has strong teeth, but should be implemented by 2020!</li> <li>- See related comments in MC-16.</li> </ul>
MC-5	Renewable Portfolio Standards	Advocate for higher Renewable Energy Portfolio Standards for electric utilities.	Elected Officials and City Manager's Office	OR Governor's Office, Oregon Department of Energy		<ul style="list-style-type: none"> <li>- Low priority</li> <li>- Very important but needs teeth</li> <li>- Effectiveness depends on the strength of the advocacy, greatly.</li> </ul>
MC-6	Carbon Pricing	Promote policies that implement carbon pricing.	Elected Officials and City Manager's Office	OR Governor's Office, Oregon Department of Energy, Citizens Climate Lobby-Corvallis Chapter		<ul style="list-style-type: none"> <li>- Medium priority</li> <li>- Highest priority because will be most effective.</li> <li>- Absolutely critical! This is the most important thing! Without this, it is hopeless. High effectiveness.</li> </ul>
MC-7	Solar Net Metering	Support distributed solar energy development through protection of net metering and support for other incentive or cost-saving mechanisms for utility customers.	Elected Officials and City Manager's Office	OR Governor's Office, Oregon Department of Energy, Pacific Power, Consumers Power		<ul style="list-style-type: none"> <li>- Yes!</li> <li>- High priority</li> <li>- High priority - we must do it</li> </ul>
MC-8	Real Time Energy Use Info	Provide "real time" energy use information to influence behavior. Could include indoor energy meters to provide readily accessible information.		Pacific Power, Consumers Power	B Trelstad: "This could be done without support from the utility companies with additional (downstream) metering. E Trust: "Local library is a source for Kilowatt Meters (from Energy Trust)"	<ul style="list-style-type: none"> <li>- Low priority</li> <li>- Could be dropped</li> <li>- Low priority, too little benefit and most people will ignore.</li> </ul>

**CORVALLIS CLIMATE ACTION PLAN  
BUILDINGS AND ENERGY--COMMUNITY**

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
MC-9	Smaller Housing Footprints	Encourage smaller housing to reduce energy consumption, environmental impacts of construction and consumption of goods/materials.	Community Development	Local Builders	<p>Aligns well with the City's existing affordable housing strategies, and the affordable housing development plan will continue to develop mechanisms to develop a variety of small footprint housing options. 35Corvallis: "It would be useful to let people see how much energy they are using compared to their neighbors. This type of program has been successful in other areas." See <a href="http://e360.yale.edu/feature/how_data_and_social_pressure_can_reduce_home_energy_use/2597/">http://e360.yale.edu/feature/how_data_and_social_pressure_can_reduce_home_energy_use/2597/</a></p> <p>M Stevens: "Code changes, incentives"</p> <p>The City could play a key role here - both elected officials and whatever office is responsible for zoning/development.</p>	<ul style="list-style-type: none"> <li>- "green" builders</li> <li>- Medium priority</li> <li>- Change from "small houses" to multi-family housing, which is far more efficient (smaller houses lose more heat because of higher surface area to volume ratio.)</li> <li>- Low priority - must use building codes to have any effect. Smaller houses mean more heat loss per square foot. Instead, promote and reward multifamily housing.</li> </ul>
MC-10	Water Efficiency	Expand existing assistance programs for water and energy efficiency measures in existing buildings and new construction (e.g., audits, financial incentives etc.).	Community Development	Pacific Power, Consumers Power, Energy Trust, Take Charge Corvallis		<ul style="list-style-type: none"> <li>- Add Public Works</li> <li>- Low priority</li> <li>- Could be dropped</li> <li>- This is good but don't forget the F&amp;A section of this plan is more important when it comes to water and GHGs. It takes 2,500 gallons of water to produce one pound of beef and 1,000 gallons to produce one gallon of milk.</li> </ul>
MC-11	Adaptive Reuse	Promote adaptive reuse of historic or older buildings and weatherize to code.	Community Development	Preservation WORKS, Oregon State Historic Preservation Office	Aligns well with current historic preservation program; this action would be to add the weatherization piece, which has regulatory difficulties	<ul style="list-style-type: none"> <li>- GHG mitigation potential should be higher - BA Bierley and Greenlab. Labor intensive, not materials intensive, ergo jobs are created, place specific</li> <li>- Medium priority</li> <li>- Could be dropped</li> <li>- Low effectiveness. Measuring (alone) will not help unless paired with upgrades.</li> </ul>
MC-12	Energy Supply Efficiency	Pilot a retro-commissioning incentive program to provide financial and technical assistance to tune up energy systems in existing commercial buildings.	Community Development and Public Works	Pacific Power, Consumers Power, Energy Trust	<p>B Trelstad: "Energy Trust is doing something like this already." E Trust: "Energy Trust has done something like this: <a href="http://insider.energytrust.org/limited-time-retrocommissioning-incentives-existing-buildings-customers/">http://insider.energytrust.org/limited-time-retrocommissioning-incentives-existing-buildings-customers/</a></p>	<ul style="list-style-type: none"> <li>- Low effectiveness. Not many of these buildings and would be expensive or impossible.</li> </ul>
MC-13	Promote Lower Carbon Fuels	Develop a program to install vehicle plug in stations (home first, work second and other locations third).	Public Works		These are needed to support transition to Evs. B Trelstad: "I think this should be focused on installing in public areas only."	
MC-14	Conservation and Efficiency	Support development and expansion of low-carbon district heating and cooling systems.				
MC-15	Shift to Renewable Energy	Focus Economic Development efforts on residential, commercial and industrial local renewable energy installations (economic benefits of import substitution).	Economic Development	State of Oregon Economic Development		
MC-16	Shift to Renewable Energy Conservation and Efficiency	Develop and adopt an energy code chapter into the Corvallis Municipal Code consistent with the parameters specified in the 2011 Oregon Energy Reach Code.	Community Development	Oregon State Building Codes		<ul style="list-style-type: none"> <li>- The City should adopt its own local Energy Code (MC-16) for mandatory solar energy and energy conservation, a draft of which has been provided to the CATF by 350Corvallis. This is feasible and low-cost to implement because the State Building Official has the authority to approve such a code. Lancaster, CA, and other CA municipalities have such local codes as supplements to the state codes. The Energy Code should be incorporated into this Mitigation Action MC-4 or preferably included separately as an additional action as described in MC-16. Many other related actions, such as MC-13, MC-18 and MC-29, could be or are already incorporated into MC-16, which is another reason to include MC-16 as a separate selected action. MC-16 is inaccurately presorted with a 3, when it should be a 1 because it would reduce creation of additional GHG emissions from new home construction immediately and for the long-term.</li> </ul>
MC-17	Federal/State Policy Advocacy	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.	Elected Officials and Public Works	350Corvallis, Sustainability Coalition		

**CORVALLIS CLIMATE ACTION PLAN  
BUILDINGS AND ENERGY--COMMUNITY**

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
MC-18	Conservation and Efficiency	Re-establish the "Green Shares" program, which provides education to builders/developers on energy efficient HVAC equipment, including life cycle cost analyses for their potential customers that demonstrate lower overall costs of energy saving equipment.		Corvallis Environmental Center, Sustainability Coalition Energy Action Team		
MC-19	Shift to Renewable Energy	Work with OSU and utility companies to develop local smart grid technology and storage capacity of electricity (especially locally generated renewables)and natural gas through franchise agreements or other mechanisms.	Public Works	OSU, Pacific Power, Consumers Power		
MC-20	Conservation and Efficiency	Minimum Performance--Establish minimum energy performance targets for new construction and major renovations.	Community Development	State of Oregon Building Codes		
MC-21	Federal/State Policy Advocacy	Explore opportunities for the energy code to focus on total energy performance instead of prescriptive requirements.	Elected Officials and Public Works	State of Oregon Building Codes		
MC-22	Research	City-wide energy use study of residential and commercial structures.		OSU?		
MC-23	New Technology	Capture heat from sanitary sewer for community use.	Public Works	Benton County Public Works		
MC-24	Federal/State Policy Advocacy	Work on eliminating tax disincentives to installing solar on homes (property taxes go up from increased value)		Benton County A&T?	M Stevens: "might not be true"	- Should be included as a selected strategy but critically modified to include a local/state PACE (Property Assessed Clean Energy) program for residential and commercial properties. PACE lowers the cost of installing solar and renewable energy systems. PACE recently received support in the federal Renewable Energy Program.
MC-25	Building Codes	Strengthen Regulations. Create local requirement for green building standards for all new and retrofit construction (local City green building requirement).	Community Development	State of Oregon Building Codes		
MC-26	Conservation and Efficiency	Work with utility companies via franchise agreements to structure rates to incentivize reduced use, require equipment with maximized efficiency, and require conservation voltage reduction from Pacific Power.	Public Works	Pacific Power, Consumers Power	Cannot be implemented at the local level.	
MC-27	Promote Lower Carbon Fuels	Promote conversion to electric leaf blowers, lawnmowers, string trimmers, etc.	Public Works	?	M Stevens--should include solar electricity	
MC-28	Building Preservation	Impose a GHG fee as part of issuance of demolition permits for residential, commercial or industrial buildings that are still in occupiable condition.	Community Development			
MC-29	Conservation and Efficiency	Incentivize installation of heat pump water heaters, require consideration for replacements, require in new construction	Community Development	Energy Trust of OR.		
AC-1	Conservation and Efficiency	Encourage passive daylight, shading, ventilation, insulated building envelopes, etc.	Community Development			- It seems that the more community partners are involved, the higher the effectiveness and feasibility of this action will be. If that goes up, then this would be appealing across the board. - Should also be considered mitigation. - Low priority - Would help with adaptation. - Medium effectiveness. Why not include this under mitigation as well? It would save energy.
AC-2	Conservation and Efficiency	Establish an incentive program for high efficiency toilets for all income levels and renter/owner status.	Public Works			- The fact that the social score on this action leads me to wonder how small the incentives are. If they were substantial, wouldn't that do a good deal to increase social equity? - Very high priority - Would save water, which is important since water is likely to become more scarce in the future here. - Important. To save energy involved in pumping water? To preserve water?
AC-3	Conservation and Efficiency, Building Codes	Establish a grey water program.	Community Development and Public Works			- Low priority - Important
AC-4	Fire Prevention Efficiencies, Building Codes	Develop residential fire sprinkler code to reduce catastrophic fire risk, and reduce water and fuel used in fire fighting.	Community Development and Fire	State of Oregon Building Codes		

**CORVALLIS CLIMATE ACTION PLAN  
BUILDINGS AND ENERGY--COMMUNITY**

<b>ACTION CODE</b>	<b>STRATEGY</b>	<b>ACTION</b>	<b>CITY STAFF LEAD(S)</b>	<b>POTENTIAL PARTNER(S)</b>	<b>STAFF COMMENTS</b>	<b>PUBLIC COMMENTS</b>
AC-5	Resiliency Planning/Implementation	Stay informed about potential water treatment process changes needed to anticipate temperature changes and need for treating new organisms.	Public Works	Oregon Department of Environmental Quality		
AC-6	Resiliency Planning/Implementation	Promote smart grids and metering for electricity to decrease power outages.	Public Works	Pacific Power, Consumers Power		
AC-7	Landscaping Codes	Vegetation/shading	Community Development			
AC-8	Green Buildings	Promote basements for storing water, air cooling for heat pumps, thermoregulating, etc.	Community Development			
AC-9	Building Codes	Develop program/regulations to allow composting toilets in residences	Community Development	State of Oregon Building Codes		

**MASTER LIST OF STRATEGIES AND ACTIONS, WITH COMMENTS**  
**CORVALLIS CLIMATE ACTION PLAN**  
**BUILDINGS AND ENERGY--OPERATIONS**

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
MO-1	Conservation and Efficiency	Energy audits of City facilities and feasibility studies to determine passive to active systems to reduce energy and fuels in buildings.	Public Works	Energy Trust of Oregon	Some work on this has been done, including previous energy studies; work needs to be updated and expanded.	- Medium priority - Low priority. Don't study it, learn from others and just do it or not!
MO-2	Purchasing	Shift towards 100% renewable and/or carbon free electricity. Purchase Blue Sky Power as an interim measure.	Finance	Energy Trust of Oregon, Pacific Power, Consumers Power		- How much Blue Sky now? Should be 100%. - Very important - Low priority - keep it local - High priority. Is there enough Blue Sky power? If so, do it!
MO-3	Energy Management	Develop and implement utility performance management plan including performance tracking for all City-owned buildings and facilities.	Public Works	Energy Trust of Oregon		- Low priority - Medium priority - just knowing is not improving - Once performance is known, will there be improvement?
MO-4	Conservation and Efficiency	Convert remaining applicable City facilities lights to LEDs , prioritized by cost-effectiveness.	Public Works	Energy Trust of Oregon		- High priority - Very important - Medium priority - should already have done this - cheap and effective.
MO-5	Conservation and Efficiency	Implement cost-effective building system upgrades and integrate energy efficiency improvements into all applicable capital improvement projects. Target efficiency improvements where the highest energy usage and losses are occurring.	Public Works	Energy Trust of Oregon		- High priority - Very important - High priority - makes sense to do - apparently cheap and effective.
MO-6	Energy Management	Evaluate natural gas and methane use and practices at Regional Wastewater Treatment Plant. Analyze and implement strategies to increase methane reuse for vehicle fuel, heating buildings or for other beneficial purposes.	Public Works	Oregon Department of Environmental Quality, Energy Trust of Oregon		- I think that upgrading and minor changes at the WWTP, though this could be spendy overall, it could reduce a lot of energy and CO2 emissions. - High priority - Very important - High priority - certainly better to burn methane than release into air (is super strong climate active gas!)
MO-7	Funding	Identify internal and external funding sources to finance energy-efficiency upgrades in City facilities. Explore "climate bonds" as one funding mechanism.	Public Works	Energy Trust of Oregon, DEQ State Revolving Fund		- Low priority
MO-8	Targeted Outreach	Share high priority, cost-effective operational actions with other large business and institutional entities, along with life-cycle cost analyses and GHG reduction information.	Public Works			- Low priority
MO-9	Conservation and Efficiency	Identify and target water efficiency improvements where the highest water usage and losses are occurring.	Parks and Recreation and Public Works			- Low priority now - we have enough water
MO-10	Green Buildings	Design/construct all new City facilities to meet or exceed LEED Gold (Platinum) or better energy and water efficiency standards.	Public Works			- Medium priority
MO-11	Fugitive Emissions	As refrigerants are replaced, use lower greenhouse gas intense chemicals.	Public Works			

MO-12	Fugitive Emissions	Identify fugitive emission sources in the Wastewater Treatment Collection System at points of storage, uphill pumping or vents.	Public Works			
MO-13	Energy Management	Evaluate feasibility for solar installation and collecting heat from spill water at aquatic center.	Parks and Recreation and Public Works			
AO-1	Asset Management	Consider climate change impacts in evaluating asset life / replacements and repairs.	Public Works			- Low priority - Medium priority - should already be doing this.
AO-2	Wastewater Facilities Management	Consider new systems approach for the Wastewater Treatment Plant to increase its resiliency and avoid power outages in flood events. Evaluate potential to reduce demand for	Public Works			- Low priority - Two different actions - one is operational, one is community - High priority - seems wise
AO-3	Resiliency	Complete a feasibility study and plan for onsite and rooftop solar electric and hot water for City buildings.	Public Works			- High priority - High priority - solar should be installed wherever it is most feasible and productive as funds are made available.
AO-4	Conservation and Efficiency	Study City buildings to improve readiness for increased temperatures and to reduce the need for air conditioning.	Public Works			
AO-5	Wastewater Facilities Management	Wastewater treatment plant -- look at elevating electrical system to avoid power outages	Public Works			

**MASTER LIST OF STRATEGIES AND ACTIONS, WITH COMMENTS**  
**CORVALLIS CLIMATE ACTION PLAN**  
**LAND USE AND TRANSPORTATION--COMMUNITY**

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
MC-1	Land Use	Zoning and Land Development Code provisions were established in 2006 to support transit, walkable and node-oriented, mixed-use development that includes housing and services, however, these types of developments have not occurred. This action will be to review the Code, zoning and market conditions to identify barriers to making it happen as well as market incentives.	Community Development	Developers	ODOT: "Multi-unit Property Tax Exemption to stimulate the construction of housing in activity centers." "Adopt a Vertical Housing Development Zone to provide property tax exemptions for mixed-use projects to encourage development within activity centers"	- Medium importance - Very important. Educating community is important so there will be support for establishing market incentives and for establishing disincentives for continuing on the current path. - Low priority - this is too late and too long-term to save us now. Mass transit will always be needed. - Makes sense to review it and incentivize developers to make changes that benefit the community.
MC-2	Transportation Demand Management	Use parking management strategies to reduce vehicle miles traveled, including pricing and flexibility for developers to support parking near transit, and park and ride facilities.	Public Works	Major employers	M Stevens: "no free parking downtown except for car share vehicles" ODOT: "Implement and expand parking fee and permit areas" KY: Parking districts failed a public vote, so this may be challenging to implement	- Low importance - Low priority. Very low payoff in CO2 savings - invest this money in mass transit! - Good idea - charge more for parking. I went to a 2016 conference and two different researchers found that if you want people to walk / bike / bus it doesn't work to tell them it's good or healthy, you have to charge for parking and make driving a hassle. That's why people don't drive in Boston, New York etc.
MC-3	Transportation System Efficiency	Synchronize and recalibrate the timing of traffic signals to reduce idling and congestion.	Public Works	Oregon Department of Transportation		- High importance - Medium priority - small payoff doesn't make sense to me, but can't be very expensive to do. - If this costs money, don't do it. If driving is faster and there's less congestion, then people will drive more.
MC-4	Facilitate Active Transportation	The Corvallis network of bike and pedestrian corridors is being expanded and safety measures such as visual and physical protections between bike and vehicle lanes are being enhanced. This action would evaluate current program, identify additional bike and pedestrian corridor improvements, and prioritize based on "Walk and Transit Score." Ensure linkages with OSU corridors.	Public Works	OSU Transportation Services, Oregon Department of Transportation, Benton County	350 Corvallis suggests that some existing roadways can be converted to bike and ped only. ODOT: "Work with ODOT to perform a Bike Level of Traffic Stress Analysis to identify connectivity issues in the region's bike network, to prioritize investments that serve critical connections; and other opportunities as noted in the ODOT Bike/Ped plan."	- High priority - Low priority - too few people will use to make further investment a priority. - Physical separation from cars is a good idea. Many people don't bike because it's too dangerous.
MC-5	Transportation System Management	Implement projects that reduce congestion and idling, such as right and left turn lanes at intersections, roundabouts, and access management improvements.	Public Works	OSU Transportation Services, Oregon Department of Transportation, Benton County	M Stevens: "covered corridors w/ solar panels for roofing" ODOT: "Implement ITS to improve roadway speed smoothing (e.g. access management, incident management)" KY: this can be expensive, take a long time and R-O-W is not always available.	- Medium importance - Low priority - do this only where there is an identified need. - This makes intersections more dangerous for bikes and walkers. Reducing congestion will encourage more people to drive.
MC-6	Transportation Demand Management	Increase the use of ridesharing and support single-occupancy trip reduction through employer-based programs.	Public Works	OSU, Benton County, Cascade COG, CAMPO, and major employers	M Stevens: "No free on-street parking, except for car share vehicles" ODOT: Reduce off-street parking requirements in downtown and activity centers"	- Medium importance - Medium priority - easy to do and low cost. - Big employers can do a lot to encourage their employees to rideshare / bike / walk / bus. But they need public recognition and appreciation and aren't getting it. Incentivize them.
MC-7	Federal / State Policy Advocacy	Promote policies that implement carbon pricing such as a carbon tax or a climate mitigation fee, which could be applied to fuels or vehicle registration.	Elected officials with support from City Manager's Office and Public Works	OSU, Benton County, League of OR Cities, OR Department of Energy, Citizens Climate Lobby--Corvallis Chapter	M Stevens: "use revenues to support mitigation projects, incentives for low income folks" ODOT: "Support state-led pricing policies" KY: most effective action	- Medium importance - Very important. Educating community is important so there will be support for establishing market incentives and for establishing disincentives for continuing on the current path. - High priority for state - how much of a tax? Tax and dividend? What's the \$30-100? - Good idea.
MC-8	Electric and Lower-Carbon Fueled Vehicles	Support community transition to electric and other higher efficiency and low carbon-fueled vehicles (through accessible fueling/charging stations, alternative low-carbon fuel options at gas stations, and carbon pricing).	Public Works	OSU Sustainability Office, State of Oregon	B Trelstad: "OSU has done a lot of this already. Link programs." 350 Corvallis sees evs as a "last resort" strategy, primarily for those who are unable to use alternate modes. M Stevens: "Charging from solar pannels" ODOT: "Subsidize and/or promote federal programs that provide assistance to low-income families and small businesses to acquire low-emission vehicles (e.g. EVs)	- Medium importance - "Alternative low-carbon fuel at the gas station" must mean biofuels? If so, they are not viable if made from corn; GlobalResearch.ca shows how biofuels are fuelling world hunger, and creating massive destruction, inequality and poverty. <a href="http://www.globalresearch.ca/fuelling-world-hunger-how-the-global-biofuel-industry-is-creating-massive-destruction/28434">http://www.globalresearch.ca/fuelling-world-hunger-how-the-global-biofuel-industry-is-creating-massive-destruction/28434</a> - should include mandatory pre-wiring conduit installation and breakers in new residential construction for EV charging, as part of a local Energy Code (MC-16, Buildings & Energy). - Low priority - Carbon pricing is a high priority! Using electric vehicles that depend on charging from fossil fuel plants is useless. - Choose carefully. Don't use ethanol, which is corn-based and defeats the purpose. Palm oil destroys tropical rain forest habitat.
MC-9	Transportation Demand Management	Support Oregon Departments of Transportation and Land Conservation and Development scenario planning and evaluate land use and transportation system alternatives as part of the Comprehensive Plan and Transportation System Plan updates.	Community Development and Public Works	CAMPO, Benton County Transportation Planning	KY and GG: Comp Plan update scheduled for FY17-18 thru FY19-20; TSP update anticipated by end of 2017, so opportunities for incorporating different land use designations/scenarios in the current TSP update are limited.	- Too much fluff, low priority - Low priority - of course this should be done, but low priority for City plan. - Good idea.

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
MC-10	Transit	Expand the Corvallis Transit System's level of service (routes, frequency, Dial-A-Bus etc.) with more connections to other public transit modes and popular seasonal destinations.	Public Works	Albany Transit, OSU, Benton County Special Transportation Program	M Stevens: "Wheel, spoke, hub design" for increased efficiency. ODOT: "Increase frequency of all existing routes to 15 min peak period headways"	<ul style="list-style-type: none"> <li>- High priority</li> <li>- should not just be specific to other modes and seasonal destinations outside of the city, as worded. Needed is more frequency, ideally every 15 minutes on many of the routes, later hours, and Sunday service. Increased service could be partially financed through a local gas-tax (if eventually allowed by state law/constitution). Alternatively, a local transit district could be formed. Also, a local gas tax could be used for funding road maintenance that would free-up the funds generated by the Street Maintenance Fee, which funds would then be used for transit improvements instead. Also, perhaps a flat-rate Refueling Service Fee could be created as an alternative to a per-gallon gas tax and used for transit improvements. Privately owned, commercial district parking spaces could be taxed and the funds used for transit improvements.</li> <li>- High priority - combine with making parking more expensive and supply rewards for people transitioning to transit from cars. This will reduce car use and CO2 emissions. With more convenient transit and more expensive parking, people will use their cars much less.</li> <li>- Good idea. The bus doesn't run often enough or go enough places to make drivers give up driving.</li> </ul>
MC-11	Single Occupancy Vehicle Ownership Reduction	Establish a city-wide car sharing program by recruiting and facilitating an existing car-sharing business in establishing a presence in Corvallis (such as GetAround, Zip Car, or Enterprise).	Community Development and Public Works	Benton County Planning, OSU		
MC-12	Vehicle Miles Traveled Reduction	Expand school transport management program such as a Safe Routes to School Program that encourages parents, students, and staff to reduce vehicle trips and use alternative modes for travel to and from school. Expand current 509J program to all middle and high schools.	Public Works	509J		
MC-13	Freight	Work with local and regional freight advisory groups to develop a plan for reducing greenhouse gas emission related to freight movement. Promote alternative fuels for commercial vehicle fleets.			ODOT: "Policies to shift last 50 miles of goods movement to electric trucks" Staff comment: not clear what role city would play, and seems like an action for larger city like Portland or regional freight hub	
MC-14	Transportation System Management	Make increasing efficiency of transportation infrastructure without sacrificing access and mobility needs, and prioritizing the needs of bicycles and pedestrians priorities in the TSP update.	Public Works	ODOT, Benton County, OSU		
MC-15	Land Use	The city has removed barriers to permitting/construction of accessory dwelling units (such as minimum lot sizes, design constraints, and lot coverage and parking requirements), however, the market for developing them has not responded. This action would review current requirements to determine whether additional code changes are warranted.	Community Development			
MC-16	Transit	Evaluate transit routes for opportunities to create efficiencies in bus flow by removing certain stop signs and on-street parking spaces, by timing signals, and by creating "queu-jumper" lanes where delay occurs regularly.	Public Works	ODOT, Benton County	M Stevens: "More frequent runs"	
MC-17	Freight	Protect existing intermodal freight facilities and support centrally located and regionally significant industrial areas that may provide for future intermodal facilities and provide for efficient local deliveries.			KY: This is not the current trend--market demand is not there.	
MC-18	Transit Planning	Evaluate transit routes with a focus on serving affordable housing developments and for faculty students/families, and staff of large institutions/businesses.	Public Works	OSU, 509J, major employers	GG and KY: You would not site housing developments to match transit routes, you would modify transit routes to serve housing--it was rewritten accordingly.	
MC-19	Single Occupancy Vehicle Ownership and VMT Reduction	Establish motor vehicle-free streets with exceptions for dedicated transit, deliveries (possibly with time-of-day limitations), emergency vehicles and disability access. (Pilot projects could include OSU bike-tram way concept and downtown.)	Community Development and Public Works	OSU, broader community input, affected business owners	GG and KY: This action would require a significant community conversation	- A possible action that was not selected, but should be, is MC-19 as a lower cost alternative to bus purchases for additional frequency and for use in the city core areas. This would additionally reduce SOV trips.

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
MC-20	Promote Electric and Low-Carbon Fueled Vehicles	Promote local production and access to biofuels such as renewable diesel and biogas.	Public Works and Economic Development	OSU	M Stevens: "Use 'waste' products for fuel!" ODOT: "Promote alternative fuels for local agency vehicle fleets"	
MC-21	Promote Electric and Low-Carbon Fueled Vehicles	Develop education programs and materials for the public on benefits and practicalities of electric vehicles.			ODOT: "Promote driving efficiency programs for household commercial vehicle users (e.g., eco-driving practices and low roll resistance tires)"	
MC-22	Facilitate Active Transportation	Develop separated multi-use paths between Corvallis and neighboring communities and areas such as Albany, Lebanon, Adair and the airport.	Public Works	CAMPO, Benton County Transportation Planning		
MC-23	Facilitate Active Transportation	Support the bike share program.	Public Works		This will be happening starting in June 2016	
MC-24	Infrastructure Improvements for Fuel-Efficient Travel	Improve bridges to decrease idling.	Public Works	ODOT, Benton County	B Trelstad says no. "Easier paths in and out of Corvallis mean more traffic and SOV use." M Stevens: "Park and ride on other sides of bridges"	
MC-25	Increase Alternate Travel Mode Opportunities	Address alternative travel needs of people with disabilities.	Special Transportation Program			
MC-26	Single Occupancy Vehicle Reduction	Support investments to provide high-performance broadband connectivity to every business and residence to enable widespread e-commerce, telecommuting and improved emergency response.	Public Works	Telecom Industry		
MC-27	Single Occupancy Vehicle Reduction	Provide incentives for downtown customers to use alternative transportation options (walk, bike, bus).	Public Works			
MC-28	Land Use	Require all new commercial buildings to contain housing, and retrofit existing commercial buildings.	Community Development			
MC-29	Single Occupancy Vehicle Reduction	Reduce SOV travel related to athletic events (fans, athletes, etc.)	Public Works	OSU		
AC-1	Flood Protection	Evaluate flood impact mapping; identify potentially isolated areas (such as South Corvallis) to plan for accessibility by all transportation modes.	Public Works, Fire	Benton County		- Low priority
AC-2	Pavement Reduction and Water Quality	Evaluate opportunities to create reduced width neighborhood streets to calm traffic, increase water absorption through filtering swales and increase green space.	Community Development and Public Works	Neighborhoods		- Low priority - Require water permeable materials for driveways - Not as important as multi-family housing.
AC-3	Fire Prevention	Review fire protection land use codes and prioritize new policies and incentives aimed at limiting new development on risky portions of the landscape.	Community Development and Fire	Benton County Planning and Emergency Management		- Medium priority - High priority
AC-4	Urban Heat Reduction	Plant shade trees along active transportation corridors with attention given for under served populations and neighborhoods.	Parks and Recreation and Public Works	OSU Landscape Shop and OSU Planning		- High priority - High priority
AC-5	Land Use	Contain the Urban Growth Boundary (UGB) in order to protect farm land over time and accommodate new population growth. Manage UGB area for multiple land uses and objectives including natural resources protection, recreation, food, residential and commerce.	Community Development	Benton County Planning		- High priority - less SF homes - High priority - especially important to protect farmland.
AC-6	Urban Heat Reduction	Change road surfaces to lighter, non-heat absorbing colors.	Community Development and Public Works	Benton County Transportation		- Fine if you want to use concrete - Determine if water permeable materials are appropriate for parking lots, not just driveways. - Medium priority - only when roads need upgrades - the energy to lay a new road down may out cost the climate savings.
AC-7	Land Use-Stormwater Management	Promote / require Low Impact Development (LID) techniques for all new developments. LID features include on-site stormwater infiltration and water quality features, which will also reduce stormwater flows treated at the water reclamation facility.	Community Development and Public Works			- Medium priority - High priority

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
AC-8	Land Use--Flood Protection	Refine restrictions on building in floodplains and fire prone areas with a focus on wildland / urban interface areas.	Community Development	Benton County		- No replacement buildings that are for occupancy in 100 year floodplain. - We have to get serious here -- as building in the flood plain is happening right now. - High priority
AC-9	Land Use	Develop a network of trails/paths to connect natural areas, residential areas and core commercial districts.	Parks and Recreation and Public Works	Benton County		
AC-10	Infrastructure Planning and Management	Mitigate drought impacts in regions with storage and transport of water for areas served off of wells.	Public Works			
AC-11	Land Use--Growth Management	Implement incentives, such as transfer of development rights (TDR) and code changes as needed to discourage development on lands where it would endanger life, property or infrastructure, or where important ecological functions or environmental quality would be adversely affected.	Community Development			
AC-12	Land Use	Review protected waterway setbacks for adequacy in protecting watershed, floodplain, etc., with allowances for non-motorized transportation and limited recreational uses.	Community Development			
AC-13	Land Management	Implement changes in applicable codes to require and incentivize practices that reduce impervious surface areas and replace them with pervious options (which could include urban forest, prairie, or pervious alternatives to pavement).				
AC-14	Infrastructure Asset Management	On all road upgrade projects, install rain gardens like on Beca.	Public Works	Benton County, ODOT		

**MASTER LIST OF STRATEGIES AND ACTIONS, WITH COMMENTS**  
**CORVALLIS CLIMATE ACTION PLAN**  
**LAND USE AND TRANSPORTATION-OPERATIONS**

<b>ACTION CODE</b>	<b>STRATEGY</b>	<b>ACTION</b>	<b>CITY STAFF LEAD(S)</b>	<b>POTENTIAL PARTNER(S)</b>	<b>STAFF COMMENTS</b>	<b>PUBLIC COMMENTS</b>
MO-1	Purchasing and Specifications	Require carbon footprint when specifying concrete and/or asphalt in large quantities for projects.	Public Works			- Seems excessive, low importance - Medium priority
MO-2	Fleet Fuel Efficiency	Right size transit, heavy duty and light duty vehicles, increase fuel efficiency and use of low carbon fuels and electricity. Consider electric vehicles and hybrids where duty cycle allows - especially sedans.	Fleet Managers			- Easy change, high importance - High priority - low percentage of total vehicles
MO-3	Transportation Demand Management	Allow telecommuting when and where appropriate. Promote employee use of alternate commute modes, including carpooling, transit system, walking and biking.	City Manager's Office and City Council			- High importance - Medium priority
MO-4	Design Standards	Evaluate street design to encourage alternate modes while maintaining access for emergency vehicles.	Public Works			- Low importance - Low priority - most streets already good for this.
MO-5	Purchasing and Specifications	Incorporate contractor fuel efficiency / emissions standards into bids and contracts to ensure construction contractors working for the City use fuel efficient, low polluting vehicles and equipment.	Public Works, Finance			- Medium importance - Medium priority
MO-6	Conservation and Efficiency	Implement vehicle tracking system to monitor excessive traveling, idling and vehicle performance to reduce fuel consumption and extend life of City's fleet	Public Works			
AO-1	Flood and Fire Protection	Prepare transportation system for long duration events (e.g., weather, outages etc.).	Public Works			- Low importance to me - High priority
AO-2	Flood Protection	Review standards for stormwater management for anticipated climate change impacts (e.g., increased flooding).	Public Works			- Low importance - flood plane regulations already in place - High priority
AO-3	Flood Protection	Evaluate flood potential for roads, bike paths and sidewalks.	Public Works			- Low importance - High priority
AO-4	Infrastructure Management	Plan for increased impacts of waterline breaks	Public Works			

**MASTER LIST OF STRATEGIES AND ACTIONS, WITH COMMENTS**  
**CORVALLIS CLIMATE ACTION PLAN**  
**CONSUMPTION & WASTE--COMMUNITY**

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
MC-1	Waste Reduction	Increase recycling (particularly plastics and construction debris recovery) through incentives, technical assistance, ordinances and market development.	Public Works	Oregon DEQ, County Solid Waste Department, Republic Services	Mills/Devine: The City should structure its franchise agreement so that it is more profitable for the hauler to reduce, rather than to increase, the volume of landfill-bound waste disposed per capita. K. Brewer: Benchmarking with other cities on pricing strategies would be useful. K. Paul & L. Weymouth: Ways to reduce consumption should be foremost here, recycling comes second.	- Where does the CO2 savings come from and when?
MC-2	Food Waste Reduction	Promote strategies that reduce the volume of food waste generated (e.g. proper food storage and meal planning), and that support gleaning and donation of unused and excess food.	Public Works	County Solid Waste Department, Local Food Bank, OSU University Housing and Dining Services	Mills/Devine: Replace the action with "Mandate recycling of food waste." A separate action should be "Promote strategies that support gleaning and donation of unused and excess food."	
MC-3	Reuse and Repair	Promote reuse and repair businesses to both businesses and residents. Develop a campaign to connect residents to information regarding purchasing (local, durable goods, low-carbon), reuse, collaborative consumption, and encourage more vocational training so population can repair and refurbish.		Oregon DEQ, OSU Purchasing, Recycling and Sustainability offices, County Solid Waste Department, Corvallis Sustainability Coalition	K. Paul & L. Weymouth: The Sustainability Coalition is doing most of this already.	
MC-4	Procurement	Partner with local businesses, organizations, and governments to encourage purchasing policies that set minimum recycled material content requirements for purchases, reduce packaging, and give preference to goods that can be returned to the manufacturer for remanufacturing /reuse/or full recycling.	Procurement, all Divisions	Oregon DEQ, County Solid Waste Department, OSU Procurement Office	K. Brewer: Energy efficiency and overall life cycle carbon footprint are also important procurement considerations.	
MC-5	Federal / State Policy Advocacy	Promote development of local, state, and federal product stewardship legislation.	City Elected Officials, Public Works	Oregon DEQ, County Solid Waste Department	K. Brewer: Companies cannot effectively respond to local requirements - cost prohibitive. Best to focus at state level.	
MC-6	Waste Reduction	Sponsor city-wide waste reduction programs such as yard and wood waste drop-off centers, Spring cleanup events, Fall leaf drop-off or collection, green teams, student outreach projects, neighborhood composting projects, home composting education, existing residential and business programs for reuse and organics management to reach more residents and businesses.	Public Works	OSU Extension Service and Sustainability office, County Solid Waste Department, Neighborhood Associations and Republic Services		- So not part of a climate mitigation plan.
MC-7	Reuse and repair	Continue to support and expand material exchanges and reuse programs, and promote building with salvaged and reclaimed materials.	Public Works	OSU Recycling/ Sustainability, Habitat for Humanity		- These things are better under adaptation.
MC-8	Waste Reduction	Develop programs to support food donation, help commercial kitchens reduce waste, and help households and businesses reduce food waste through better planning, purchasing, storage and preparation.		Corvallis Sustainability Coalition Food Action Team, Food Bank		
MC-9	Education and Outreach	Identify high-carbon product categories; develop outreach materials to aid consumers and retailers in making purchasing decisions.		Corvallis Sustainability Solid Waste Action Team		- Minor effect
MC-10	Federal / State Policy Advocacy	Support State efforts to implement carbon pricing related to product and materials life cycles (e.g., emissions cap or carbon tax), including imports (border adjustment mechanism / carbon tariff if necessary).	Local Elected Officials		Mills/Devine: Under "Mitigation Action" add: "Use U.S. government Social Cost of Carbon as minimum price per metric ton of carbon/carbon equivalent."	- We need to listen to Citizens Climate Lobby and re-consider whether state level efforts are worth pursuing for carbon pricing and dividend. Their recent speaker said it's only feasible when it's attached to a specific economy - and he said our economy is a regional one, not a state-wide one; so implementing a statewide carbon tax might be a nightmare. - High priority - stronger likelihood of big effect in near future.

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
MC-11	Education and Outreach	Provide outreach that demonstrates linkages between consumption habits and carbon footprints, as well as less carbon-intensive economies.		Corvallis Sustainability Coalition Waste Action Team, OSU Extension		
MC-12	Waste Reduction	Increase awareness of and participation in targeted waste-prevention practices; research and encourage strategies for reducing use of paper, plastics and other materials.	Public Works	OSU Recycling/ Sustainability, Corvallis Sustainability Coalition		
MC-13	Waste Reduction	Support the co-location of salvaged and used house parts at waste receiving centers to encourage donation instead of landfilling usable goods.	Public Works	Benton County Solid Waste, Republic Services, OSU Recycling, Habitat for Humanity ReStore	K. Paul & L. Weymouth: Discourage unnecessary remodels and buildings to reduce the need for this.	
MC-14	Waste Reduction	Support efforts to recycle food waste for fuel/energy including cooking oil and locally produced biodiesel/biofuels.				
MC-15	Waste Reduction	Facilitate the sharing of best practices among restaurants, caterers and other commercial food preparation operations for minimizing and re-using/recycling food waste.		Corvallis Sustainability Coalition Waste Action Team, Economic Vitality Action Team	K. Brewer: These types of peer learning groups can be very effective and can be repeated in different sectors.	
MC-16	Procurement	Encourage consumer purchases of products produced using more sustainable agricultural practices.		Corvallis Sustainability Coalition Waste Action Team	Mills/Devine: Is this a more appropriate action for the Food & Agriculture section of the plan?	
MC-17	Education and Outreach	Provide education, waste audits, and incentives for community members and business owners to increase compost and recycling rates.		Corvallis Sustainability Coalition Waste Action Team, Economic Vitality Action Team		
MC-18	Waste Reduction	Implement best practices to encourage or require recycling of demolition and construction materials or consider bans from transfer stations on the following: recyclable metal, cardboard, plastic film, carpet, clean gypsum, clean wood, and asphalt shingles.	Community Development	Oregon DEQ	Has come up before, didn't gain traction with Council during demolition permit process (2014) (BA Beirle). DEQ has authority for hazardous material demolition and did not want to transfer those rights. Hard to force someone to recycle something that isn't recyclable.	
MC-19	Waste Reduction	Ban asphalt paving, concrete, bricks, asphalt shingles, plastic film, clean wood, residential food, and compostable paper from residential and commercial garbage pick up to encourage proper recycling.	Public Works	Republic Services		
MC-20	Waste Reduction	Increase capacity to process more, and more types of, construction and demolition materials at local transfer stations.		Republic Services		
MC-21	Waste Reduction	Identify funding sources and locations for neighborhood composting centers.	Public Works	Benton County Solid Waste Department and Republic Services		
MC-22	Education and Outreach	Establish school grants to establish system-wide collection for food and yard waste.		509J, Oregon DEQ		
MC-23	Education and Outreach	Target expanded recycling outreach and services to commercial and multi-family residential buildings, including local businesses, apartment buildings, student and cooperative housing.		Corvallis Sustainability Coalition Waste Action Team		
MC-24	Waste Reduction	Provide more public recycling containers on commercial corridors and in parks and public places and create a system to limit contamination and for the collection of these recyclables.		OSU Campus Recycling, Sustainability Coalition Waste Action Team	Mills/Devine: Research has shown that public place recycling is not effective unless collection areas are staffed. It is more effective to remove trash cans from parks and to have signage instructing park users to take their trash with them.	
MC-25	Waste Reduction	Provide incentives for residential recycling, composting, and source reduction. Examples include: Life line rates for lower and moderate income citizens; increasing hauler license fees and/or tipping fees; and adopt a residential "Pay-As-You-Throw," volume-based garbage collection fee, increasing accessibility and convenience.	Public Works	Republic Services	Mills/Devine: Add to "Mitigation Action": Increase outreach regarding the current volume-based trash collection options and fees (i.e., on-request, rather than weekly, trash collection is currently offered).  Tie to M-1.	

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
MC-26	Waste Reduction	Encourage the use of reusable bags at local retail locations.	Public Works	Corvallis Sustainability Coalition Waste Action Team	Brandon: Maybe increase the bag fee?	
MC-27	Waste Reduction	Make recycling mandatory at public events and provide more public recycling containers.	Public Works	Republic Services	Staffed by Republic Services, paid by fees	
MC-28	Education and Outreach	Provide information to local manufacturers on reducing carbon footprint of items produced.		Oregon DEQ		
MC-29	Waste Reduction	Evaluate alternate solid waste rate structures to provide greater incentive to increase recycling and reduce waste.	Public Works	Republic Services	Garbage is the smallest component of the solid waste collection bill.	
MC-30	Waste Reduction	Support local materials recycling to boost the City's manufacturing economy.	Economic Development			
MC-31	Waste Reduction	Develop requirements for materials sorting recovery at landfill.		Oregon DEQ		
AC-1	Materials management	Evaluate infrastructure and service adequacy for materials management under warming conditions and extreme events.	Public Works	Benton County Solid Waste Department, Republic Services, Coffin Butte	Mills/Devine: Under "Adaptation Action" add: "Provide guidance to residents on how to deal with waste materials in the event of service disruptions."	- High priority
AC-2	Materials management	Support compost distribution system that supports local (home) access and use of local compost.	Public Works	Republic Services		- Medium priority - will help home gardens.
AC-3	Education and Outreach	Establish a resource efficiency program in the schools that would serve both as a model program for the community as well as provide education / training for students.		509J	New suggestion by K. Brewer, in order to build our future community capabilities and an opportunity for students to contribute to problem solving in the community through project-based learning around these topics	- Too focused on children / youth - adults must shoulder the responsibility - the climate crisis is happening now.
AC-4	Materials management	Use locally generated compost in its highest use.				
AC-5	Education and Outreach	Educate people not to burn garbage inside and why.	Fire			
AC-6	Waste Recovery	Hire personnel to sort through landfill waste and pull out recyclables - especially metals, organics, or fats.		Republic Services	Reviewer comment suggestion	
AC-7	Reduced Consumption	Prepare for large-scale economic impacts of climate change: (1) people will have less money, (2) we need to create ways that people can buy less, (3) actions that support repair/refurbishment, tool and materials sharing, limits accumulation of stuff.				

**MASTER LIST OF STRATEGIES AND ACTIONS, WITH COMMENTS  
CORVALLIS CLIMATE ACTION PLAN  
CONSUMPTION & WASTE--OPERATIONS**

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
MO-1	Purchasing	Review major and recurring purchases, research lower carbon alternatives based on life-cycle use and specify these products when cost competitive.	Procurement Office, All Divisions			- "Cost competitive" when considering costs of climate change? (meaning cost of lives lost as well as survival)
MO-2	Purchasing	Procure major purchases based on total ownership / lifecycle cost, with priority given to low carbon content throughout the supply chain. Include maintenance / operations personnel in setting procurement guidance.	Procurement Office, All Divisions			- Too long-term for this plan to be a high priority.
MO-3	Purchasing	Specify and request lower carbon paving including cement replacements and regrind of asphalt.	Public Works			- Too long-term for this plan to be a high priority.
MO-4	Purchasing	Seek joint procurements with other agencies to increase buying power and lower prices for environmentally preferred products.	Procurement Office, All Divisions	Oregon Department of Administrative Services, Oregon Department of Transportation, Oregon Department of Environmental Quality		- Good idea and low cost
MO-5	Purchasing	Get low carbon purchasing toolkit for local government from DEQ (available late 2016).	Procurement Office	Oregon Department of Environmental Quality		- Cheap
MO-6	Purchasing	Establish a local forum for sharing best low carbon purchasing practices (include purchasing experts from major institutions like hospital, schools, and county).	Procurement Office, All Divisions	Oregon State University, Oregon Department of Administrative Services, Oregon Department of Transportation, Oregon Department of Environmental Quality		- Why not make this state-wide? Only if you mean less carbon is burned in its manufacturing.
MO-7	Federal / State Policy Advocacy	Support state efforts to develop a consumption-based GHG inventory methodology and to adopt standards, incentives, and / or mandates for carbon foot-printing and labeling of products.				- High priority - good idea, low cost
MO-8	Federal / State Policy Advocacy	Participate actively in the process to develop state and federal product stewardship programs and legislation. Support opportunities for producers to develop responsible manufacturing, product and package design and reuse of recovered materials.				- Drop this unless you are talking about the burning of carbon compounds in the manufacturing process.
MO-9	Waste Reduction	Track common waste materials to determine if more is being purchased than is needed and whether they can be diverted from the waste stream.	Public Works			
MO-10	Waste Reduction	Evaluate the need for paving at City owned facilities and reduce the impacts of paving by using environmentally friendly alternatives where possible.	Public Works			
MO-11	Recycling and Composting	Review recycling stations in all buildings for proper signage and convenience.	Public Works			
MO-12	Federal/State Policy Advocacy	Support and collaborate on ongoing state, regional, and national programs and policies to encourage product stewardship of electronics and other materials.	Intergovernmental Affairs			
MO-13	Recycling and Composting	Evaluate alternate handling of snails from Wastewater Reclamation Plant	Public Works		Chicken feed?	

MO-14	Purchasing	Cut paper use 10% each year, ultimately reducing paper use by 25%.	Procurement Office, All Divisions		25% of the City's annual copier paper purchases (est. 2,600 reams) use a minimum of 30% recycled content.	
MO-15	Purchasing	Evaluate elements of supply chain that have highest impact to carbon footprint - prioritize efforts accordingly				
MO-16 (formerly AO-1)	Procurement	Review Urban Sustainability Director's Network Toolkit for new procurement actions.				

**MASTER LIST OF STRATEGIES AND ACTIONS, WITH COMMENTS**  
**CORVALLIS CLIMATE ACTION PLAN**  
**FOOD & AGRICULTURE--COMMUNITY**

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
MC-1	Purchasing	Encourage food purchasing policies that favor local and climate friendly alternatives (e.g. school system, LBCC, OSU, hospital).		OSU Extension, OSU College of Agricultural Sciences, Oregon Tilth		- Choosing low carbon foods (that is - non-animal based foods) is the highest priority. I encourage this Action Plan to take on educating the community about our food choices and the high carbon embedded in the current diet of animal based foods. Please educate about the ability of plant based foods to provide not only protein and calcium but all other nutrients. - Medium priority - Needs more of a business community partner. - Weak with little outcome unless you use incentives for key changes, best practics.
MC-2	Food Production Methods	Encourage producers to transition to agro-ecological / conservation-oriented agricultural production methods to reduce GHG intensive inputs and practices and retain carbon and other nutrients on site.		Corvallis Albany Farmers' Market, Linn Benton Community College, Oregon State University Housing and Dining Services, Good Samaritan Regional Medical Center, Corvallis Sustainability Coalition Food Action Team, 509J, Corvallis Environmental Center's Edible Corvallis Initiative	Provide incentives for OSU College of Agricultural Sciences to transition from teaching concentrated animal feeding operations (CAFOs) to less ghg intensive methods.	- This strategy is highly important - you could use the term "Permaculture methods" to include the full scope of this Strategy. - Low priority
MC-3	Education	Provide educational opportunities for residents and school children to reduce home food waste, learn local food growing, season extension, preparation, preservation and eating seasonally skills.		Corvallis Sustainability Coalition Waste Prevention Action Team, Corvallis Environmental Center Edible Corvallis Initiative, Linus Pauling Institute Healthy Youth Program, OSU Extension - Master Gardeners, First Alternative Co-op, 509J		- this could be strengthened by including within the educational opportunities, information on the carbon footprint of various foods. People want to know what they can do about climate change. Knowing the carbon footprint of what they eat daily gives them an opportunity to alter it. Not knowing allows our ignorance on this to continue. - Medium priority
MC-4	Public Outreach and Education	Facilitate sharing of best practices among restaurants, caterers and other commercial food preparation operations for minimizing and reusing / recycling food waste.		Sustainability Coalition Food Action Team, Corvallis Sustainability Coalition Waste Prevention Action Team, Chamber of Commerce; Corvallis Independent Business Alliance		- Could go much further and request that food preparers learn how to lower the total carbon footprint of their food system, by listing the carbon footprint of the food choices they offer, and by knowing and honoring that as a good citizen. - Medium priority - Weak
MC-5	Public Outreach and Education	Encourage the public to choose less carbon- intensive foods as part of a climate-friendly lifestyle. Specifically encourage consumption of alternatives to beef and dairy products, which are especially carbon-intensive.		Sustainability Coalition Food Action Team, First United Methodist Church, Unitarian-Universalist Fellowship, 350 Corvallis, First Alternative Co-op	Encourage local restaurants to increase availability of vegan options.	
MC-6	Analysis	Establish quantitative metrics and a baseline for consumption of carbon-intensive foods.		OSU Extension	Not well understood, needs better definition.	
MC-7	Shift to Renewable Energy	Encourage/aid onsite production of renewable energy/biofuels for farm machinery.		OSU Extension, Wilco, Ten Rivers Food Web	Need to be careful about using food or other useful crops for fuel production. Canola is a potential problem.  Outside scope since it's outside UGB.	
AC-1	Local Food System Support	Support the development of the South Corvallis Neighborhood Food Center, which can facilitate education, community gardens, gleaning, food preservation, and emergency response.	Community Development	Benton County Food Security Work Group, Linn-Benton Food Share, Willamette Neighborhood Housing Services, First Alternative Co-op, Community Services Consortium		- Low priority - why South Corvallis only? - The more general action of AC-8 should replace this (or combine). - High priority - as weather changes and crops suffer, and food prices increase, we will need lots of help from community gardens and sharing.
AC-2	Edible Landscapes	Model and promote edible landscaping and gleaning. Plant non-invasive food-bearing trees and shrubs on public and private lands.		Corvallis Sustainability Coalition Food Action Team, Oregon State Extension Master Gardeners, local nurseries and garden centers		- High priority - High priority
AC-3	Local Food System	Support community supported agriculture programs. Promote increased participation and accessibility.		Corvallis Albany Farmers' Market, ?	Anywhere that people gather - the HP campus, churches, the Aquatic Center, local grocery stores.	- Support OSU's Permaculture Program, encourage more folks to enroll in Permaculture classes, and educate about its ability to foster an organic whole eco-systems approach, sequester carbon and provide local food within a person's backyard. - Medium priority - High priority

AC-4	Research and Policy Development	Support OSU Extension in identifying food crops that will thrive in current and future conditions in the Willamette Valley.		Oregon Dept of Agriculture, Oregon Tilth, Oregon State University Extension Service, and the Southern Willamette Valley Bean and Grain Project, Ten Rivers Food Web		- Also coordinate this with the studies done by Permaculturists who are fostering and teaching crop resilience. - High priority - good synergy with OSU. - Looks very costly
AC-5	Public Outreach and Education	Provide new homeowners and property managers with resources about sustainable landscaping and permaculture practices.	Community Development	County Planning Department, OSU Horticulture Department, OSU Extension		- Medium priority - Low effectiveness without incentives
AC-6	Local Food System	Increase accessibility of materials necessary for residential and neighborhood-scale food production.		OSU Extension, Corvallis Sustainability Coalition Food Action Team, Corvallis Albany Farmers' Market, First Alternative Co-op, nurseries and garden centers		
AC-7	Local Food System	Expand and promote community gardens on public and private lands including school campuses, City lands, and church properties.	Parks and Recreation	Corvallis Environmental Center Edible Corvallis Initiative, Linus Pauling Institute Healthy Youth Program, OSU Extension Master Gardeners		
AC-8	Local Food System	Facilitate public/private partnerships to create decentralized "food hubs" for sales, processing, storage, and distribution.	Economic Development	?		
AC-9	Public Outreach and Education	Equitably promote educational opportunities for residents to gain skills in organic gardening, fruit production, food preservation and cooking and affordable, healthy eating.		Sustainability Coalition Food Action Team, OSU Extension, Corvallis Environmental Center Edible Corvallis Initiative, Linus Pauling Healthy Youth Program		
AC-10	Local Food System	Support efforts to rebuild local food infrastructure such as flour mills and canneries.	Economic Development	Ten Rivers Food Web, U.S. Dept. of Agriculture		

**CORVALLIS CLIMATE ACTION PLAN  
URBAN NATURAL RESOURCES--COMMUNITY**

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
MC-1	Land Management	Manage designated natural areas to increase both forest and natural prairies which will increase carbon stores over time.	Parks and Recreation			<ul style="list-style-type: none"> <li>- Medium priority</li> <li>- High priority</li> <li>- I strongly support this along with educating the public as this proceeds.</li> </ul>
MC-2	Forest Management	Ensure that the City's watershed forest is managed for carbon storage over time, consistent with water quality and other ecosystem values.	Public Works	City-contracted forestry consultant		
AC-1	Funding	Identify and establish a range of diverse, stable, long-term funding sources for the acquisition, maintenance, restoration, and preservation of prime natural areas. Consider, for example: a) traditional funding sources, such as federal, state, and private foundation grants, corporate sponsorships and donations, b) methods such as land swaps or purchase of conservation easements, c) local grants and business sponsorships.				<ul style="list-style-type: none"> <li>- Sounds like this one is about mitigation but it doesn't ID a goal.</li> <li>- Yes! High priority. If things in this plan are left to non-profits they will need help with funding. So thank you for including this - my hope is that City / County can assist.</li> <li>- Medium priority</li> <li>- I strongly support this action.</li> </ul>
AC-2	Urban Heat Reduction	Expand the placement of climate appropriate vegetation and features (e.g. natural areas, parks, restoration sites, street and park trees, green streets, eco-roofs, etc.) to withstand drought conditions.	Parks and Recreation and Public Works	OSU, Benton County Parks		<ul style="list-style-type: none"> <li>- Medium priority - better if combined with mitigation.</li> <li>- Low priority</li> <li>- I strongly support this. Plus educate the public using that phrase "climate appropriate vegetation", and begin speaking of parks/ natural areas as climate friendly, and climate adaptive. Raise awareness by having a volunteer keep track in each neighborhood, of the trees that are dying, and the importance of planting climate friendly replacements, leaning on the considerable local knowledge about trees as a guide. Make sure all neighborhoods have a neighborhood association, so this can become a community action.</li> </ul>
AC-3	Urban Heat Reduction	Encourage tree preservation and protection on private property and in the rights-of-way with a focus on tree-deficient areas.	Parks and Recreation and Public Works		Local problems with expansive, clay soils. Dry wells help. Benton Soils maps. Currently, if expansive soils then require geotech.	<ul style="list-style-type: none"> <li>- Low priority - is mitigation as well but doesn't seem like will be very effective.</li> <li>- It's free to encourage people on the City's water bills to plant shade trees and to remove ivy that is strangling trees.</li> <li>- Very high priority</li> <li>- Tree Preservation is very important. Try to find assistance for home owners in assessing the health of particularly worrisome trees which are sometimes cut out of fear they are diseased and will fall soon.</li> </ul>
AC-4	Water and Habitat Connectivity	Develop park and natural area connectivity to improve habitat and migration corridors on a local and regional level. The broader, more complex floodplains improve water quality and serve as flood buffers.	Parks and Recreation and Public Works	OSU, Benton County Parks	Equipment is expensive. Unified Plumbing Code (UPC) seal makes equipment more palatable.	<ul style="list-style-type: none"> <li>- High priority - should combine AC-4, AC-5, and AC-6</li> <li>- Medium priority</li> <li>- Encourage backyard wildlife habitats and incorporate them into connectivity plans. Promote wildlife friendly certified yards.</li> </ul>
AC-5	Watershed Planning	Do BLANK to develop more complex and broader floodplains that include wetlands and a diverse matrix of habitats. Encourage rainwater collection, downspout disconnections, and rain gardens at residences, businesses, and institutions in order to reduce peak stormwater flows and to recharge aquifers.	Public Works	Mary's River Watershed Council, Army Corps of Engineers, Dept of State Lands, Benton County Parks, Greenbelt Land Trust		<ul style="list-style-type: none"> <li>- Encourage homeowners on the water bill - it's free.</li> <li>- Stormwater management is a high priority because in addition to its GHG reduction potential, it has the additional benefit of not overwhelming the wastewater treatment plant's capacities, which allows them to treat the water more thoroughly.</li> <li>- Low priority</li> <li>- I strongly support this Action</li> </ul>
AC-6	Urban Heat Reduction	Finalize tree restitution ordinance (assessed value of tree removed with a permit) as a disincentive to cutting trees.	Elected officials			<ul style="list-style-type: none"> <li>- Low priority</li> <li>- I strongly support this action. I would add education of the public to this action.</li> </ul>
AC-7	Water Supply and Conservation	Encourage the use of greywater systems for irrigation and other non-potable water needs.	Public Works and Community Development			

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
AC-8	Water Supply and Conservation	Encourage the use of 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.	Public Works and Community Development	Benton County		
AC-9	Accelerate natural assets improvements	Develop a comprehensive plan for system-wide restoration and natural asset connectivity projects in a timely manner - avoid piecemeal, fragmented developments.	Parks and Recreation and Public Works	Private landowners	About to be implemented.	
AC-10	Land Management	Manage urban natural resources for multiple benefits (total ecosystem function). Conduct "Life-Cycle Analyses" of natural resource policies to prevent unintended secondary [negative] impacts and to maximize carbon sequestration.	Public Works and Community Development			
AC-11	Infrastructure Management	Build on the Healthy Streets / Healthy Streams Plan concept to encourage more bicyclists and pedestrians and integrated natural features.	Public Works	Property owners (maintenance)		
AC-12	Accelerate natural assets improvements	Implement a program to reduce instream barriers [to fish passage] and restore connectivity between waterways and their floodplain.	Public Works			
AC-13	Public Outreach and Education	Support outdoor education for school-age children.	Parks and Recreation	OSU Extension, Marys River Watershed Council, Corvallis Environmental Center	There is an adopted goal in the Parks Master Plan to increase this. A requirement for stormwater permit is education and outreach to schools	
AC-14	Public Outreach and Education	Expand public and private programs and partnerships to raise awareness and encourage planting, preserving and maintaining urban trees and shrubs.	Parks and Recreation and Public Works	OSU Extension	NeighborWoods Program	
AC-15	Water Supply and Conservation	Evaluate residential and institutional usage patterns of the three municipal water systems (tap, waste and storm) and current water use reduction programs. Recommend new programs that include incentives for reduced usage.	Public Works			
AC-16	Ecosystem Management	Evaluate ecosystem market approaches to enable the City of Corvallis to more efficiently and effectively meet water quality permit requirements by restoring ecosystems (i.e. water quality trading).				
AC-17	Federal/ State Policy Advocacy	Support State efforts to develop ecosystem services credit and payment system.				
AC-18	Public Outreach and Education	Increase use of native, drought tolerant, and pollinator-friendly plants and decrease use of invasive species throughout the community by: a) targeted public outreach, and b) development of incentives.	Parks and Recreation		Outreach already underway includes tours and signage.	
AC-19	Stormwater Management	Reduce or eliminate piped stormwater from draining directly into streams. a) Open and set back piped stormwater outfalls that drain directly into streams. b) Construct velocity-reducing wetlands and/or buffers between selected piped stormwater outfalls and stream channels.	Public Works		Eckert: Add "without mitigation" immediately after "...draining directly into streams."	
AC-20	Stormwater Management	Evaluate City stormwater regulations for adequacy to require on-site detention/ retention of stormwater up to a 10-year storm event, in order to reduce stormwater peaks and improve water quality.	Public Works		Currently required for new developments over 20,000 sq. ft.	

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
AC-21	Organizational Structure	Identify areas in the current administration of natural resource management/programs within the City where it may be possible to consolidate positions/ resources to create a more collaborative, holistic, and consistent approach to natural resource management.				

**CORVALLIS CLIMATE ACTION PLAN  
URBAN NATURAL RESOURCES--OPERATIONS**

<b>ACTION CODE</b>	<b>STRATEGY</b>	<b>ACTION</b>	<b>CITY STAFF LEAD(S)</b>	<b>POTENTIAL PARTNER(S)</b>	<b>STAFF COMMENTS</b>	<b>PUBLIC COMMENTS</b>
MO-1	Integrated Pest Management	Improve Landscaping Manual and Integrated Pest Management Policy and Plan for all city facilities and train staff. Consider need for inputs such as water and manage towards zero.	Parks and Recreation, Public Works			- Low priority
MO-2	Equipment and Fuels	Create policy for electric lawn mowers, chain saws, leaf blowers and weed eaters.	Parks and Recreation, Public Works			- Rather than better lawn maintenance, reduction in lawn area? Alternative landscaping that needs less energy to maintain? What if the City replaced some lawns with edibles? Mosses? Bark? - Low priority
MO-3	Forest Management	Ensure that the City's watershed forest is managed for carbon storage over time, consistent with water quality and other ecosystem values.	Public Works	City-contracted forestry consultant		- Medium priority
MO-4	Forest Management	Expand opportunities to maintain carbon in wood by using wood from urban forest management for products with long lives.	Parks and Recreation			- Low priority
AO-1	Urban Forest Management / Fire Prevention	Evaluate urban forest management policies and practices to address susceptibility to increase risk of wildfires, such as reducing fuel loads in understory of fire prone habitats.	Parks and Recreation, Public Works			- Since this action is one of the few that provides a substantial benefit in all of the five categories, it seems like a safe bet for a high priority action. The fact that it is so cost effective lowers the risk further, increasing its appeal. - This action is beneficial to urban habitats and maintaining our natural areas. Though social and community interest isn't soaring, I think it is beneficial in maintaining, preventing and reducing wildfires. - Medium priority
AO-2	Natural Resources Asset Management	Update / maintain natural features inventories to support monitoring and management of climate-sensitive and other significant natural resources.	Parks and Recreation, Public Works			- Though this action has low GHG reduction, maintaining natural resources is good for the community and cost effective according to the criteria. - Medium priority
AO-3	Stormwater Management	Reduce piped stormwater flows and peaks by incorporating public stormwater assets that infiltrate, store and slow peak stormwater flows.	Public Works	Marys River Watershed Council		- Good priority. When it comes to water sources and wastewater, the process / maintenance can be spendy but I think there can be ways to be efficient and possibly reduce GHGs. - Charge more for impervious surfaces and give credits to people do bioswales etc. in their yards. Have bioswale info on Bldg. Dept. website so people see it at the beginning of planning their homes. - This stands out as an action that both lowers GHG emissions and is cost effective. It seems that since one of the large, overarching goals of the CAP is to substantially reduce GHG emissions, actions that do something in that realm should be prioritized over actions that have zero impact on GHGs. - I think this is a good action, especially when it comes to the community. When it comes to wastewater and stormwater there can be things to do to slow peaks and also store and infiltrate stormwater flows. Though this is spendy, it can be effective. - Surprised to see this is evaluated lowly...seems high priority to me. - Medium priority
AO-4	Infrastructure Planning and Management	Update water, stormwater and wastewater master plans to address climate change. Context should include framing stormwater and wastewater as resources including planning to expand the use of reclaimed water for irrigation and other non-potable uses.	Public Works			- This action should be high on the list because it involves a lot of money. When it comes to waste, storm and regular water it is overall expensive and can be hard to work around when it comes to reducing GHGs and management. - Reclaimed water would be great if it were more accessible / easy for public to understand. Plans to split downtown storm / wastewater seem so expensive. Possible to capture water pre-sewer? Fewer paved areas -> more capacity for rainwater capture? - Medium priority
AO-5	Urban Heat Reduction	Modify design standards and specifications to ensure field coordination and field change approvals do not preclude trees in the right-of-way.	Community Development	Benton County Planning and Permitting		- A wording change here would be helpful. To a lay person such as myself this action is a little confusing. - High priority
AO-6	Codes and Design	Evaluate codes (both City and County) for conflicting regulations with regard to adaptation projects. Improve consistency across jurisdictional boundaries.	Community Development	Benton County Planning and Permitting		- Low priority

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
AO-7	Public Well-being	Update Parks Master Plan to include planned access throughout community to Parks and Recreation facilities as cooling areas.	Parks and Recreation			- Though this undoubtedly would be helpful in terms of community involvement, I question whether it should be especially high priority given its relatively low cost efficiency and low GHG reduction potential. - This action would spark much interest in the community as well as support the local environment. When it comes to social and community interest this action would be appealing. - High priority
AO-8	Watershed Planning	Partner with local, regional, and state agencies to encourage water conservation and efficiency and expand and diversify the water supply.	Public Works			- Encourage / require waterwise and / or native plants on landscape plans for new buildings. - This is a good action to not only help with funding but to get backing and possibly help expand and improve efforts. - Diversifying water supply seems very important to resiliency. - Low priority
AO-9	Natural Resources Asset Management	Evaluate and monitor street trees and vegetation, modify species selections as appropriate to address climate change.	Parks and Recreation			- It would be helpful to specify whether this was targeted at publicly owned land or whether it is an outreach effort to encourage private landowners to modify species selection. - Will not have as much of an impact as others. - Are carbon sequestration / drought resistance / pest management needs taken into account? - High priority
AO-10	Urban Forest Mangement/ Resiliency	Maintain Urban Forest Plan implementation and funding to monitor and improve the health and resilience of street trees, including species selection, planning for mitigating urban heat areas and by increasing pruning cycle to industry-standard of 5 to 7 years, and increasing tree/shade coverage on public properties.	Parks and Recreation			
AO-11	Watershed Planning	Consider the expansion of ongoing maintenance in conjunction with increased implementation of existing natural resources.	City Manager's Office and City Council			
AO-12	Education and Outreach	Expand educational outreach and public stewardship programs regarding natural resources restoration/management, tree stewardship, on-site vegetation and stormwater management for resiliency, etc.	Parks and Recreation, Public Works, Community Development			
AO-13	Watershed Planning	Expand senior capstone project concept with OSU to identify larger projects that address this issue (need to get professors on board and needs to be guided)	Public Works	OSU		
AO-14	Infrastructure Planning and Management	Retrofit city facilities with Green Infrastructure.	Public Works		need to define 'green infrastructure'	
AO-15	Natural Resources Asset Management	Create a landscaping policy for our facilities that considers options for using native vegetation, firewise/waterwise landscaping and rain gardens.	Parks and Recreation, Public Works			
AO-16	Education and Outreach	Convene Community Involvement and Diversity Advisory Board (CIDAB) twice a year for listening sessions with City on UNR issues	City Manager's Office			
AO-17	Natural Resources Asset Management	Leverage local, state, and federal partners for a more comprehensive approach to natural resource management in the City.	Parks and Recreation, Public Works	Oregon Water Resources Board		
AO-18	Funding	Development fee directed to protecting natural areas.	Public Works and Parks and Recreation	Oregon Department of Parks and Recreation, Mary's River Watershed Council, Oregon Watershed Enhancement Board, Oregon Department of Environmental Quality, Oregon Department of State Lands		
AO-19	Natural Resources Asset Management	Include OSU lands in natural resource planning.	Parks and Recreation	OSU		

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
AO-20	Natural Resources Asset Management	Create both large and small networks of natural areas with diverse functions and habitats.	Community Development	Benton County Planning and Permitting		
AO-21	Infrastructure Planning and Management	Train staff to maintain green infrastructure (which have different skills and methods than traditional infrastructure maintenance) and provide adequate tools.	Public Works and Parks and Recreation			
AO-22	Natural Resources Asset Management	Implement a trial "Park Pesticide Free" designation for select parks.	Parks and Recreation			
AO-23	Natural Resources Asset Management	More community gardens in natural areas	Parks and Recreation			
AO-24	Natural Resources Asset Management	Require use of native species in all public projects.	Public Works and Parks and Recreation			

**MASTER LIST OF STRATEGIES AND ACTIONS, WITH COMMENTS  
CORVALLIS CLIMATE ACTION PLAN  
HEALTH, SOCIAL SERVICES & COMMUNITY WELL BEING--COMMUNITY**

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
AC-1	Research and Planning	Adjust local public health and social services programs to support research and to address the health impacts of climate change and the capacity for treatment (e.g., respiratory problems, vector diseases, heat intolerance, increased allergens and pollutants, and increased mental health and anxiety disorders).		Benton County Health, Oregon Department of Health and Human Services, OSU College of Public Health and Human Sciences, United Way	B Trelstad: "OSU College of PHHS may be a resource, or even a collaborative funding partner if they are the entity conducting the research."	- Low priority - tough for a City to do, but should encourage the county.
AC-2	Intergovernmental Cooperation	Identify climate-related vulnerabilities, strengths and emergency preparedness needs for flood, fire, heat wave, landslides etc.	Fire, Police, Public Works and Community Deveopment	OSU Climate Change Research Institute, County Sherriff and County Fire Department, OSU Emergency Preparedness (Mike Bamberger)		- High priority
AC-3	Communications Infrastructure	Establish radio communication systems to enable communication service across emergency response personnel during events.	Fire, Police and Public Works	OSU Emergency Preparedness, Benton County Sheriff, Fire, and Public Works		- Important - tough for the City to do on own.
AC-4	Education and Outreach	Conduct community outreach regarding emergency preparedness education and public health risks associated with climate change.	City Manager's Office and Fire	Benton County Health, Community Services Consortium, OSU Climate Change Research Institute, OSU Extension		- Good idea again - is this different from the previous two strategies?
AC-5	Community Involvement and Organizing	Promote community organization and collaboration to encourage neighborhood-level problem solving, decision making and governance.	Community Development			- High priority - is this regarding emergencies and governance? Sounds like for armageddon.
AC-6	Emergency Preparedness	Expand local food security and emergency distribution plans.		South Corvallis Food Bank, Community Services Consortium, Linn-Benton Food Share, OSU Food Pantry, OSU Extension	B Trelstad: "OSU Food Pantry falls within the Office of Student Life: <a href="http://studentlife.oregonstate.edu/">http://studentlife.oregonstate.edu/</a> ."	- High priority - should have this for big earthquake already - then revise for long-term climate emergencies.
AC-7	Emergency Preparedness	Develop, expand and maintain reciprocating agreements for sharing staff and/or equipment (e.g. Corvallis and Albany employees could report to either agency if commute is cut off by flood or other emergency).	Public Works, Fire and Police	Benton County, State of Oregon and other cities in the area.		- Medium priority - sensible
AC-8	Emergency Preparedness	Strengthen hunger relief systems / networks. Develop plans to prepare for increased local population requiring food assistance.		South Corvallis Food Bank, Community Services Consortium		- High priority - again, strongly related to previous strategies.
AC-9	Address Local Population Trends	Develop scenario plans to respond to accelerated local population growth as related to potential "climate refugee" population growth.	Community Development	Oregon Department of Land Conservation and Development, PSU population center, CAMPO	Current Buildable Lands Inventory project is going to include population scenarios related to climate refugees.	
AC-10	Social Services Coordination	Increase collaboration between Good Samaritan, County and City to address chronic mental health needs, and to identify expanded treatment capacity for drug and alcohol abuse.		Good Samaritan Health Services, County Health Department		
AC-11	Food Security	Work with Benton County and OSU Extension Service to promote emergy food preparedness.		Benton County and OSU Extension		
AC-12	Financial Security	Plan for and educate the community on increased insurance costs/deductibles associated with events that result from climate change impacts.	Risk Manager, Public Works	Insurance Companies		
AC-13	Prepare for Fuel Shortages	In case of power outages, ensure operability of back-up generators and other vital systems in case of loss of fuel supplies; investigate transition to non-fossil fuel alternatives.	Public Works, Fire and Police	County and State emergency service providers, OSU, Good Samaritan Health Services	B Trelstad: "This could be linked to the smart grid work in the B and E section."	
AC-14	Address Health Impacts	Prepare for increased heat-related illness and stress by providing warnings to at-risk individuals, information on use of air conditioning and what to do in the event of extreme heat, and access to reduced-cost medications, and investigate options for publically accessible cooling centers.		Fire Department, County Health Department, Good Samaritan Health Services, OSU Emergency Preparedness (Mike Bamberger)		
AC-15	Community Cohesion	Identify businesses, non-profit organizations, educational institutions, faith communities, civic groups and neighborhood associations that can provide support to community members in need.			B Trelstad: "This doesn't seem like its own action, but rather something that needs to be done to achieve other actions."	
AC-16	Address Chronic Energy Insecurity	Prepare emergency management plans for fuel shortages. Determine needs to address a "long emergency" brought about by oil supply constraints lasting months or years.	Public Works and ?	Community services providers		

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
AC-17	Risk Management	Prepare to increase the security of gasoline depots, service stations, and other facilities that could be targets of vandalism and other crime in an energy crisis.	Police	Community services providers, local fuel providers		
AC-18	Address Chronic Energy Insecurity	Develop fuel allocation systems to ensure fuel availability for emergency responders and vital community services. Also consider transportation needs of food, medicine and other essential freight.		Emergency services providers, freight industry, Good Samaritan Health Services, 509J, OSU Emergency Preparedness (Mike Bamberger)	B Trelstad: Consult with Mike Bamberger at OSU to see if he has considered this for OSU.	
AC-19	Education and Outreach	Encourage property owners to take appropriate actions to protect against flooding, wildfire, and to manage heat waves and drought.	City Manager's Office	County, OSU Extension	B Trelstad: "OSU Extension has some info on fire already, and perhaps other aspects listed."	
AC-20	Urban Cooling	Develop urban heat island maps and consider this information in setting priorities for projects and programs to help cool the urban environment or to create cool refugia for the community.				
AC-21	Food Access	Locate food share facilities in order to ensure accessibility by areas that would otherwise be cut off by floods.		Food Banks, Community Services Consortium, N. Corvallis __, St. Vincent at St Marys		
AC-22	Address Social Service Needs	Expand Heartland Humane Society programs to help pets of dislocated, stressed or otherwise needy people.	Animal Control Officer	Humane Society, Others?		
AC-23	Address Social Service Needs	Expand Benton County Program to take livestock in floods or other severe weather events.		County, OSU Animal and Rangeland Sciences, OSU College of Veterinary Medicine	B Trelstad: The OSU departments listed should be involved and may already have some capacity to help.	
AC-24	Address Social Service Needs	Identify and expand programs that support/assist vulnerable populations such as elderly, low income, pets, people with disabilities, etc.	Community Development	Neighborhood Associations, Meals on Wheels, Churches	M Stevens: "Churches--Love Inc, Vina Moses, We Care, Pastoral Counseling Center"	
AC-25	Emergency Preparedness	Develop/improve plans for evacuation and sheltering of citizens (COOP, Red Cross)		Red Cross, COOP, regional emergency managers, churches		
AC-26	Emergency Preparedness	Develop a program for emergency water delivery.	Public Works	Neighborhood Associations		
AC-27	Emergency Preparedness	Address newly identified potential landslide area (Witham Hill).		County Planning		
AC-28	Emergency Preparedness	Liquid fuel transport for generators; reserve tank capacity for longer duration events.			B Trelstad: "Smart grid..."	
AC-29	Address Social Service Needs	Expand services like Jackson St. Youth Shelter.				
AC-30	Public Health Services	Foster health provider involvement in educating and preparing employees and the public on climate change health risks.		Good Samaritan Health Services, County Health Department		
AC-31	Emergency Preparedness	Use existing resources (e.g., Oregon Public Health Association) to develop at least one pilot project in each sector to identify response needs in climate-related emergencies such as flooding, extreme heat, and wildfires. For example, a neighborhood association pilot project could demonstrate readiness in case of food and water shortages, including identifying its most vulnerable members who would require assistance.		OSU College of PHHS, OSU Extension	B Trelstad: "Sounds like a good joint venture with OSU College of PHHS and/or OSU Extension."	
AC-32	Civil Protection	Review local law enforcement capacity to manage increased civil unrest.	City Council, Police	County Sherriff		
AC-33	Emergency Services	Implement a "colored badge" system for clearance of personnel to access varying event sites.	City Emergency Responders			
AC-34	Community Economic Well Being	Develop strategies for coping with widespread unemployment: a) work with the state to evaluate potential changes to current unemployment system; and b) review rules such as assistance program eligibility requirements for adequacy to meet needs.				
AC-35	Federal/State Policy Advocacy	Support state and national efforts to encourage or mandate health care providers and insurers to provide preventive care.				
AC-36	Social Services	Expand efforts and identify new ways to support lifting households out of poverty.				

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
AC-37	Empowerment	Support the installation of alternative systems (rainwater collection, solar energy, food storage, etc.) at schools, businesses, and residences to mitigate climate change and empower people to be more self-sufficient in the event of infrastructure disruptions.	Public Works	Benton County Health Department, Corvallis Sustainability Coalition	A Mills: "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."	

**MASTER LIST OF STRATEGIES AND ACTIONS, WITH COMMENTS  
CORVALLIS CLIMATE ACTION PLAN  
HEALTH, SOCIAL SERVICES & COMMUNITY WELL BEING--OPERATIONS**

ACTION CODE	STRATEGY	ACTION	CITY STAFF LEAD(S)	POTENTIAL PARTNER(S)	STAFF COMMENTS	PUBLIC COMMENTS
AO-1	Education/ Emergency Preparedness	Educate City staff on Climate Action Plan and identify what role departments play in addressing health and social service needs.	City Manager's Office and Public Works			- Of course!
AO-2	Prepare for Fuel Shortages	In case of power outages, ensure operability of backup generators and other vital systems; investigate transition to non-fossil fuel alternatives.	Public Works			- High priority for particular areas - emergency services, hospitals, communications, fewer households have radios. Also emergency related.
AO-3	Health Care	Emphasize preventive health care in City's health and wellness programs and insurance programs.	Human Resources			
AO-4	Risk Management	Develop fuel allocation systems to ensure availability for police, fire, wastewater collection/treatment, water treatment, and emergency medical response.				