Appendix 4

City of Eugene Internal Climate Action Plan

City of Eugene

Internal Climate Action Plan for City Operations

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CITY OF EUGENE – INTERNAL CLIMATE ACTION PLAN*

Executive Summary

Climate change poses present and growing risks to Eugene. These fundamental changes to the climate have the potential to impact all facets of life in our community. Action to reduce operational emissions will reduce the future impact on our community, our local economy and the natural beauty of Eugene.

Upon the recommendation of the City of Eugene Sustainability Commission, the City Council directed that all City-owned facilities and City operations be "carbon neutral". This Action Plan presents steps which can be taken to help reach that goal the course of the next 10 years and prepare the organization to seize opportunities. This plan is intended to be the first in a series of action plans as we continually adjust to the changing realities of economics, technology, government policies and our ecosystems.

The City of Eugene completed an inventory of operational greenhouse gas emissions (GHG) in January 2009 and found that there has already been a decrease in operational GHG emissions between 2000 and 2005. This plan builds on those early successes.

Figure 1 outlines projected emissions reductions from 2005 levels. Operational emissions are projected to reach pre-1990 levels, in keeping with the Kyoto Protocol just after 2016. Total forecasted reductions of the plan are 55% of 2005 emissions by 2020.

Percent Reduction from 2005 Emissions Scope 1 and 2 Operational Emissions		
	By Timeframe	Cumulative
before 2012	8%	8%
by 2012	12%	20%
by 2016	14%	34%
by 2020	21%	**55%**

Figure 1

Climate change is already affecting our lives in Eugene. In addition to reducing our emissions to prevent more dire consequences in the future, it is necessary to adapt to those changes that are happening now.

There is another concern with the use of fossil fuel—that of future supply. Fossil fuel extraction may be at or near its peak and could soon begin to slow, causing higher prices and economic disruption. Included in this plan are fossil fuel use reductions that could be expected to result from full implementation.

In order to form this plan, GHG reductions concepts were gathered from staff, departments and the ICAP (Internal Climate Action Plan) team. Estimates for ongoing savings (or costs) were calculated for 32 specific actions and prioritized into three timeframes; present to 2012, 2012 to 2016 and 2016 to 2020 based on availability of technology and funding. High level assumptions concerning the factors

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outside our control were incorporated into the prioritization of actions. These actions form the basis for this Internal Climate Action Plan.

The actions in the plan have been also categorized into three strategies; conservation, efficiency and renewables, to address different facets of emissions reduction. Underlying all three strategies is the need for comprehensive effort to shift the culture of the organization toward a common understanding of the issues, goals and strategies to achieve them.

The vast majority of the actions identified in this plan would be expected to return operational savings to the organization. The exceptions are some of those actions which depend on renewable energy. Several of the actions for the near-term (2012) of the plan are co-funded by EECBG, City CIP and utility incentives. It is recommended that the organization consider financing for later term efforts (2016 and 2020), if other options are not available. Financing could allow immediate emissions reductions and eventual cost savings which may not occur without the initial investment.

The purchase of GHG offsets will be needed to reach the final carbon neutral goal. The ICAP team determined that the purchase of offsets would be used only in the end-term (2020) of the Action Plan. The cost of offsets can be reduced by expanding our emissions reduction efforts.

Expected 2020 Emissions after Operational Emissions Reductions	Annual Cost from 2020 forward to offset remaining Emissions
4,005 metric tonnes CO2	$122,000

Successful implementation of the plan will require ongoing oversight. It is recommended that a staff member be assigned to coordinate overall progress on the Action Plan. Regular progress reviews are recommended in the form of updates to the inventory and review of progress on individual actions.

The community looks to municipal leadership to show commitment and demonstrate workable strategies in GHG emissions reduction. Without significant action, the well-being of our community, in economic, personal and ecological terms, are all at risk.

This Action Plan is the roadmap, an interactive and ongoing commitment to move toward the maximum possible emissions reductions, rather than a fixed set of instructions. Energy use and the resultant emissions are a part of almost every facet of modern life, and so changes will need to be made on every front. While there can be no guarantee that all of our assumptions will continue to hold true and thus any one specific action will come to pass, we can commit to pursuing continued and expanded emission reduction action.

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CITY OF EUGENE – INTERNAL CLIMATE ACTION PLAN*

Introduction

a. Climate Change and a Plan for Action

The Intergovernmental Panel on Climate Change (IPCC) was established in 1989 by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO). In 2007 the IPCC published a report pointing to human activities as the primary contributor to climate change. Climate change poses present and growing risks to Eugene and the world from increasingly extreme weather events, changing precipitation patterns, shifts in plant and animal populations and, especially here in the hydro-dependent Northwest, increasing energy prices. These fundamental changes have the potential to impact all facets of life in our community, but there are many options to mitigate their effects. Planning to adapt to the impacts of existing climate change effects can help reduce near-term consequences. Action to reduce our emissions will reduce the future impact on our community, our local economy and the natural beauty of Eugene.

Upon the recommendation of the City of Eugene Sustainability Commission, the City Council directed that all City-owned facilities and City operations be "carbon neutral" (i.e., reduce net carbon emissions to zero or, if that is not possible, cancel all remaining emissions through the funding of approved local offset mechanisms or the purchase of approved offsets) by 2020.

This Action Plan presents steps which can be taken to help reach that goal. An inventory was completed in order to understand the source and quantity of our operational emissions and guide development of this plan. Based on the completed inventory, the Internal Climate Action Plan team worked over the course of eight months to gather, quantify and prioritize actions to reduce greenhouse gas emissions resulting from the daily operations of the City of Eugene.

This plan outlines actions suggested for implementation over the course of the next 10 years. These actions are prioritized into three timeframes: near-term, (present to 2012), mid-term (2012 to 2016) and far-term (2016 to 2020) based primarily on our assumptions about the availability of technology and funding. The interim emissions reductions goals for each timeframe are based on the expected emissions reductions for that set of actions and the best assumptions we can make about other factors that may affect our progress.

This plan is intended to guide continued climate action to reduce GHG emissions and fossil fuel use in our internal operations. It is also intended to help prepare the organization to seize opportunities, whether in funding or advancing technology, when they arise.

Since no plan can foresee all eventualities in a rapidly changing world, the recommended actions included are not set in stone. This plan is intended to be the first in a series of action plans as we continually update and adjust to the changing realities of economics, technology, government policies and our ecosystems.

This Internal Climate Action Plan outlines a set of workable strategies and demonstrates the commitment to climate action within city operations. Robust climate action at the operational level can

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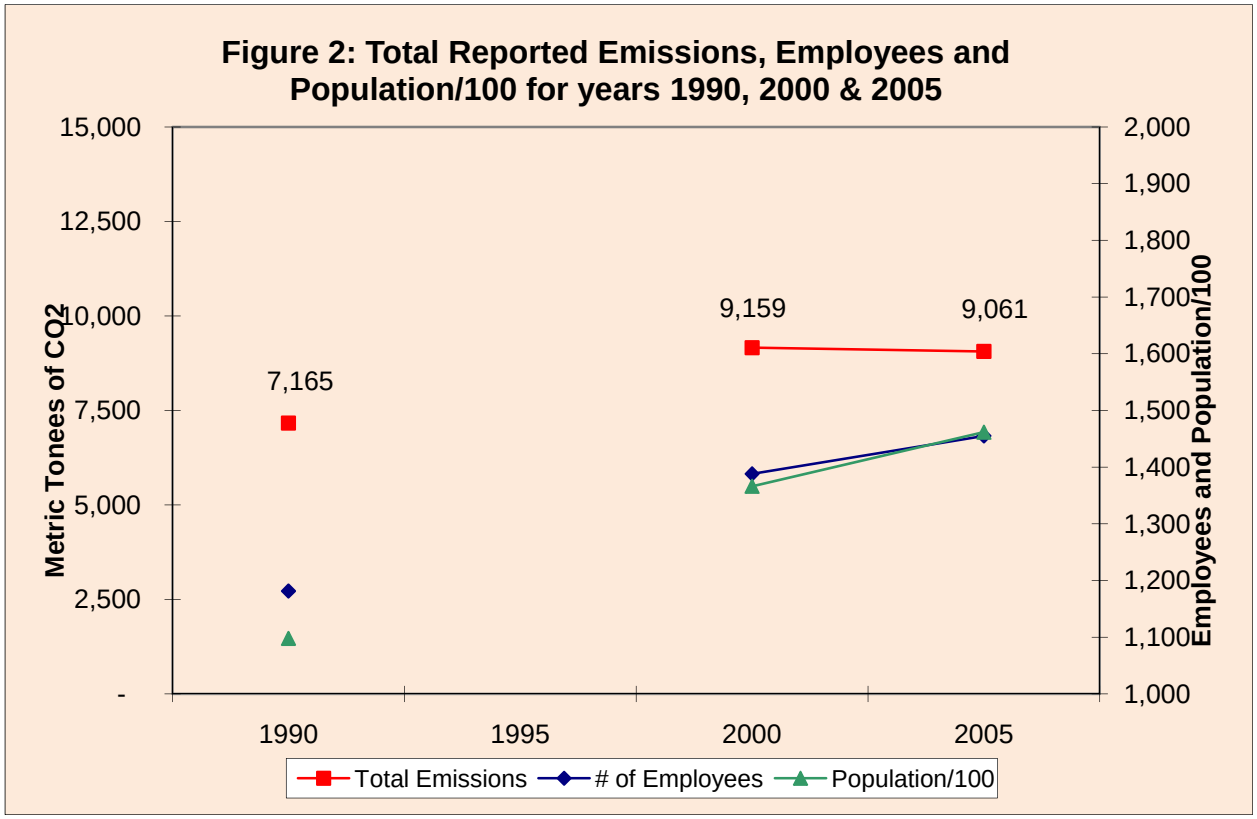
help the organization and the community, not simply cope with climate change but thrive in a changing world.

b. Summary of the 2005 Internal GHG Emissions Inventory

The City of Eugene completed an inventory of operational greenhouse gas emissions (GHG) in January 2009. The inventory gathered data for the years 2000 and 2005, and estimated emissions totals for 1990 (Figure 2).

The most striking finding of the analysis is that there has already been a decrease in operational GHG emissions[1] between 2000 and 2005. This comes after GHG emissions increased about one-third between 1990 and 2000. By 2005, City operations had successfully arrested and reversed growth of GHG emissions. This is significant due to the continued growth of City staff and services—that is, the amount of GHG emissions *per City employee* decreased by 5.5% between 2000 and 2005. This result has been achieved primarily with substantial investment in energy efficiency and conservation upgrades, use of hybrid vehicles, and the use of bio-based fuels. There are three methods that were used in the inventory to analyze the impacts of GHG emissions; activity sector, energy source and scope.



[1] *All GHG emissions in this plan are "equivalent CO2" units in metric tonnes. This plan will refer to them as simply CO2*

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The analysis addressed GHG emissions by activity sectors within City operations (Figure 3).[2] For both the 2000 and 2005 years, the activity sector with the largest emissions impact has been building use (51% of emissions in 2005, down from 52% in 2000). The City's vehicle fleet sector had the second largest impact on GHG emissions, accounting for 38% of internal City emissions in 2005 and 37% in 2000. Combined, these two activities accounted for about 90% of reportable City emissions in both years.

GHG emissions can also be considered in terms of the underlying energy source (Figure 4). The energy source with the largest footprint in 2000 was gasoline used by the City's vehicle fleet, which amounted to 23% of reportable emissions, increasing slightly to 24% of emissions in 2005. However, the City's use of natural gas was the largest source of reportable GHG emissions in 2005, increasing to 28% of reportable emissions since 2000. During the same period, GHG emissions from the City's use of steam decreased from 19% of reportable emissions in 2000 to 14% in 2005. GHG emissions related to the City's use of electricity also decreased, from 17% of reportable emissions in 2000 to 15% in 2005.

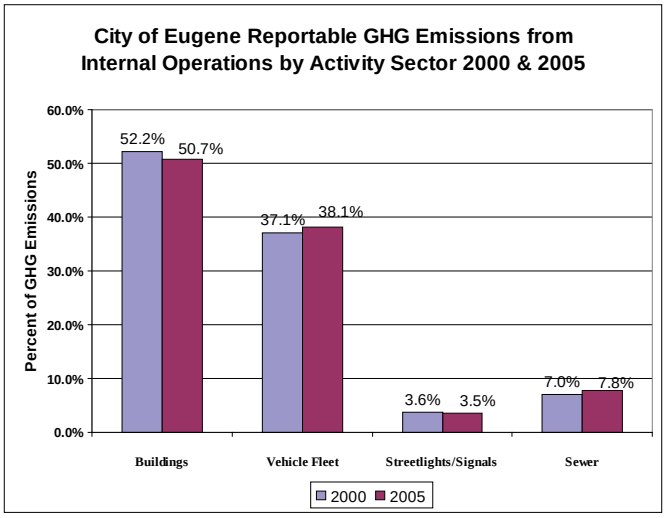

Figure 3

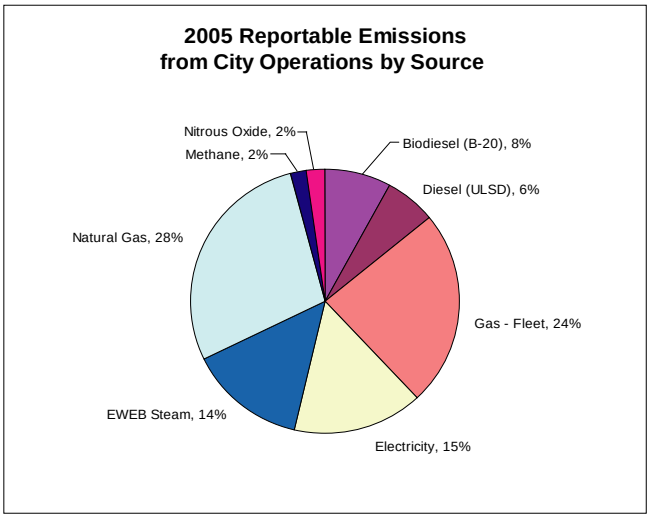

Figure 4

Diesel fuel, which was the fifth largest source of GHG emissions in 2000, was replaced by the use of ultra-low sulfur diesel and biodiesel by 2005. The two remaining sources of GHG emissions – methane and nitrous oxide – are process emissions from the operation of the wastewater collection and treatment system.

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[2] *An error was discovered in the Internal GHG Emissions Inventory report during the summer of 2009. As a result of additional review during the development of the Internal Climate Action Plan, it was learned that the emissions figures in the report are incorrectly labeled as metric tonnes, when they have actually been calculated in short tons. Relationships between the fuel types, scopes, sectors, departments, etc are not affected by this error. However, those referring to the Inventory Report should be aware that the emissions figures in the body of that document are 9.1% higher than the correct figures due to the difference between metric tonnes and short tons. Figure xx shown above cites the corrected summary information which should be used for total emissions.*

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A third way to evaluate GHG emissions is by their "scope." According to the ICLEI-Local Governments for Sustainability, Local Government Operations Protocol,

- Scope 1 includes all *direct* GHG emissions from energy consumption, such as vehicle fuels and natural gas in buildings, excluding CO2 emissions from biomass combustion;
- Scope 2 includes *indirect* GHG emissions related to the consumption of electricity, steam, heating, or cooling energy purchased from a third party or utility;
- Scope 3 includes all other indirect emissions not covered in Scope 2, for instance employee commuting and GHG emissions embedded in materials and services purchased by the City.

The Council's adopted goal of carbon neutrality for City operations by 2020 focuses on Scope 1 and 2 emissions only. Scope 3 emissions are not currently included in the Council's goal, due to the lack of accepted protocol for quantifying these emissions. However, the inventory does include some preliminary estimates of GHG emissions from Scope 3 activities - including employee commuting, waste disposal and a portion of the City's purchasing activity. Scope 3 emissions appear to be much larger than Scope 1 and 2 emissions combined, if embedded emissions in goods and services purchased by the City are included.

The full Inventory Report can be accessed on the web at the following address:

http://www.eugene-or.gov/portal/server.pt/gateway/PTARGS_0_2_308202_0_0_18/City_Operations_GHG_Inventory.pdf

2. Adaptation to Climate Change

The focus of this Action Plan is mitigation of greenhouse gas emissions to avoid future climate impacts, yet climate change is already affecting our lives in Eugene. For example, EWEB has reduced predictions for their own hydroelectric generation based on reduced stream flow and local vineyards are finding that their vines are no longer as suitable for local growing conditions. Even if CO2 emissions were to stabilize immediately, high CO2 concentrations already in the atmosphere will persist for years. In addition to reducing our emissions to prevent more dire consequences in the future, then, it is necessary to adapt to those changes that are happening now.

In early March 2009 Resource Innovations, a sustainability-focused research organization at the University of Oregon, in collaboration with the US Forest Service and the National Center for Conservation Science & Policy, released a report titled *Preparing for Climate Change in the Upper Willamette River Basin of Western Oregon*. This report highlights the likely impacts of climate change on the Upper Willamette River Basin based on models used by the IPCC adjusted for local conditions. While no models can predict exactly how climatic conditions may change, these recent findings suggest the following potential impacts here in the Upper Willamette Basin:

- Increased annual average temperatures of 2 to 4° F and increased average summer temperatures of 4 to 6° F by around 2040;

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- Slightly less precipitation during spring, summer, and fall, and up to a 60% decrease in snowpack in the Pacific Northwest by 2040;
- Warmer ocean temperatures provide more moisture in the atmosphere that in turn can lead to more severe storm events and increased flooding;
- Changes in plant and wildlife communities as they adjust to new conditions. This could include pests and disease bearing species.

Some potential operational impacts of such changes might be:

- Increased energy and water costs
- Need to respond to more frequent and severe weather or fire emergencies
- Extended season for mowing and irrigation in the parks
- Increased damage to buildings due to high heat, flooding or increased incidence of pest insect species.
- Increased damage to streets due to high heat or flooding
- A need to provide shelter during heat emergencies or more frequent flooding
- Potential need to modify recreational activities (e.g. outdoor concerts during heat emergencies)
- Impacts on natural areas maintained by the City
- Building cooling systems no longer adequate for increased temperatures
- A future influx of "climate refugees" from areas more hard-hit by climate change.

The Sustainability Board will be addressing the issue of adaptation and the organizational impact of climate change that is already underway. The next step of the group will be to formulate recommendations for the organization.

Reduction Goals

a. Operational Emissions Reduction Goals—Scope 1 and 2

The emissions reduction goal presented here comprises the broad range of greenhouse gas reduction actions currently available to us and those anticipated to become available within the timeframe of the Action Plan. Actions included in the plan encompass all scope 1 and 2 sectors, strategies and energy

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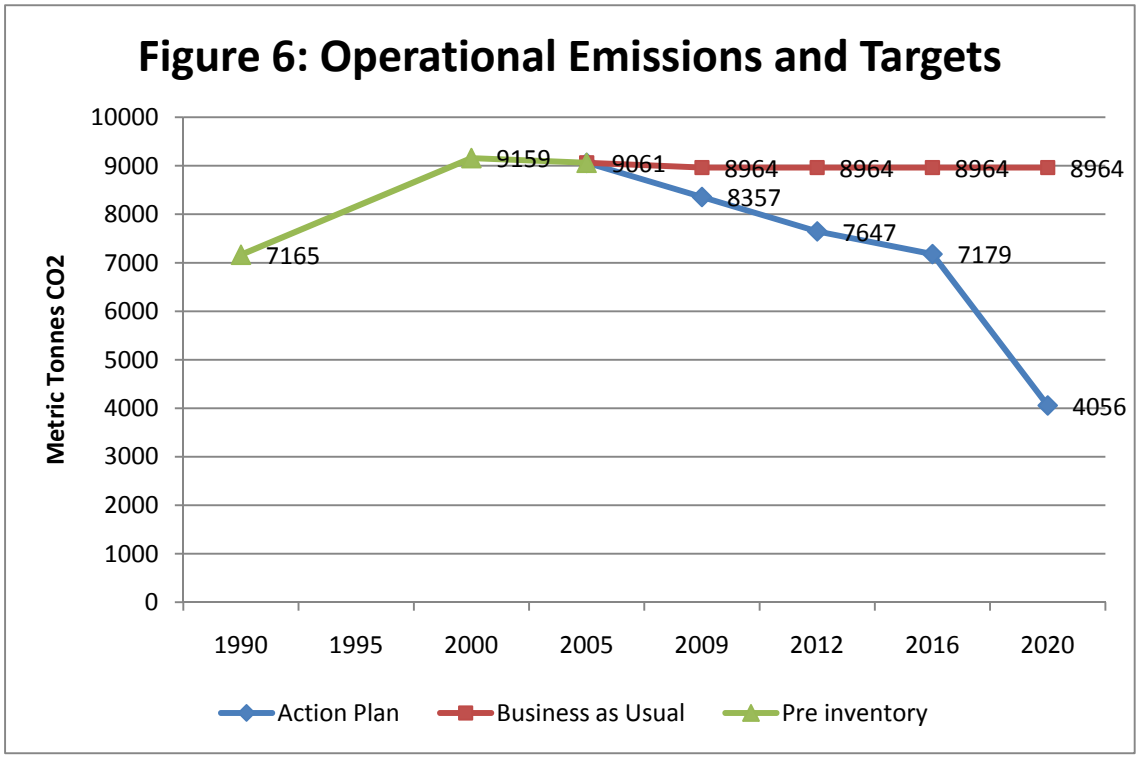
types. These actions taken together form a path to reduce emissions across the organization over the course the Action Plan.

Figure 5: Percent Reduction from 2005 Emissions
Scope 1 and 2 Operational Emissions

	By Timeframe	Cumulative
before 2012	8%	8%
by 2012	12%	20%
by 2016	14%	34%
by 2020	21%	**55%**

Figure 5 outlines projected emissions reductions from 2005 levels. Actions which have been put in place since 2005 have been accounted for in the "before 2012" timeframe. It should be noted that cumulative reductions expected by 2016 are projected to meet estimated 1990 levels of operational emissions. Operational emissions are projected to reach pre-1990 levels, in keeping with the Kyoto Protocol, early in the final timeframe. Total forecasted reductions of the plan are 55% of 2005 emissions by 2020 (Figure 6).



This goal represents

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the maximum potential for operational GHG reduction given the assumptions we have made and the best information available to date.

Figure 7 outlines some of the operational goals for other municipalities compared with the City of Eugene's goal. Though some care should be taken in making direct comparisons due to differing baselines or measurement protocols, it is clear that the goal of this action plan compares with those of regional leaders in climate action.

City	Operational Goal	Timeframe
Portland/ Multnomah County	50% of 1990 levels	2030
Bellingham	70% of 2000 levels	2020
Eugene	55% of 2005 levels	2020
Eugene—Final Goal with offsets	Net Zero Emissions	2020

Figure 7

Fossil Fuel Use Reduction

This plan is focused on operational reduction in GHG and fossil fuel is the primary contributor to the city's emissions. Yet there is another concern with the use of fossil fuel—that of future supply. It is estimated that fossil fuel extraction is at or near its peak and may soon begin to slow, causing higher prices and economic disruption.

Figure 8: Projected Fossil Fuel Use Reduction

Fuel type/units	Percent reduction
Unleaded/E10-gallons	90%
B20-gallons	28%
Natural Gas-therms	28%
EWEB Steam-klbs	60%
Total Fossil energy use reduction (MMbtu)	41%

Figure 8 shows the goals for reduction in fossil fuel that could be expected if the current plan can be fully implemented of this plan. Since different types of energy are measured with different units the impacts as percentages of their native units and then as a combined percentage of common unit of Btu's (British Thermal Units). It should be noted that the very small percentage of EWEB electricity that is derived from fossil fuel was not included in the figures below.

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Implementation Plan—2009 to 2020

b. Overview

i. Methodology

In September 2008, a staff team was assembled to formulate a plan to guide GHG reduction work within the City organization. Over the following eight months, the team solicited input on ways to reduce emissions and fossil fuel use from all City departments through departmental meetings and through a *Think Tank* intranet discussion. Over a hundred ideas, concepts and suggestions for action were received.

Beginning in May 2009, the ideas were refined and combined into larger concepts. Over the next four months the estimated GHG reductions and financial impacts were calculated for 32 specific actions using information and assumptions compiled with the help of staff around the organization. (See Action Plan charts for detail of calculation assumptions). These actions were prioritized first by timeframe based on availability of technology and funding, then by GHG reduction potential, strategy and cost to form the basis for this Internal Climate Action Plan.

ii. Assumptions and Uncertainty

The Internal Climate Action Plan team established guidelines concerning the factors outside our control that may influence our ability to make progress toward our goal. Both funding and timing for measures may be affected by these factors, and a process has been established to re-evaluate actions should these underlying assumptions change. The following are high level assumptions incorporated into the priorities:

- Energy cost increases would remain moderate for several years, due to economic conditions, and then return to a more volatile state with the trend being a higher inflation rate than the general economy.

- Federal funding for efficiency, conservation and GHG reduction, whether through the stimulus effort or other mechanisms, would continue at higher levels than in the recent past for 3-4 years, with moderate decreases. The City would continue to pursue all forms of funding at a higher level than in the recent past.

- Advances in technology in electric vehicles, particularly plug-in hybrids, would be available for our use within 2-3 years. These are likely to be adopted relatively slowly at first due to capital costs.

- Other technological advances, in areas such as renewable vehicle fuels, photovoltaic manufacturing or food waste recycling are likely within the decade covered by the plan. The group agreed that, given the aggressive nature of the Council goal, technological advances of a large magnitude will be required within 5-7 years.

iii. Operational Emissions Reductions by Timeframe-Scope 1 and 2

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Timeframes in this report are represented by the year in which the Action is fully implemented and actively reducing emissions.

iv. Actions taken Prior to 2005

The City of Eugene has been actively taking steps to reduce energy use, cost and emissions for nearly two decades. There are two categories of such "historical" actions outlined below.

Actions implemented between 1990 and 2000, the baseline for the internal inventory, are shown in figure 9 below. Though that period shows growth in emissions, the impact of these efforts should not be underestimated. These are the projects and programs that helped to slow the growth in our operational emissions and set the stage for the decreases that occurred between 2000 and 2005. It's important that these projects and programs be kept in place as we pursue greater reductions in emissions.

• Installed LED traffic lights to replace incandescent
• Installed LED lighting for Airport taxiway
• Installed energy-efficient high pressure sodium street lighting
• Generated electricity from methane recovery at wastewater treatment plant
• Implemented an energy tracking and management program
• Conducted energy audits of all major municipal facilities
• Installed energy-efficient exit sign lighting
• Performed energy-efficient lighting retrofits
• Program to swap out space heaters and incandescent desk lamps
• Installed ***Energy Star*** roofing when roof needs replacement
• Installed energy-efficient vending machines

Figure 9

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Figure 10 Action	Action in place
Whole building energy efficiency projects	2000
Use of biodiesel (B20) in City fleet	2003
Fleet advice to insure appropriate vehicle for needs.	2004
Reduce travel for sweepers by providing closer drops for material	2004

The actions outlined in figure 10 were responsible for reductions below 2005 emissions levels. This stabilization, and then decrease, of operational emissions is an excellent result for which many municipalities will continue to strive, but the City of Eugene has already achieved.

2005-2009: Actions underway during Action Plan process

Figure 11	Action in place	GHG Reduction	Percent of Total
Use of E10	2006	241	2.66%
Additional Hybrid vehicles	2005	34	0.38%
Current purchase GreenPower--6% of total City use	2007	100	1.10%
Suspend take-home vehicles for Police command staff	2009	19	0.21%
Implement no-idling policy	2009	155	1.71%
POS Fuel Conservation Program	2009	15	0.17%
Effects of Building Efficiency Admin Order	2009	100	1.10%
Reconfigure Library lighting and HVAC controls	2009	40	0.44%
	Total	704	7.77%

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The Internal Greenhouse Gas Inventory was completed in 2005. Actions that have been put in place since that time are not reflected in the 2005 emissions figures, the starting point for our emissions reduction goal. The actions outlined in figure 11 have enabled emissions reductions from 2005 levels and are considered part of the plan. Assuming that these actions, and those put in place before 2000, remain in place, a new inventory conducted today would be expected to show a nearly 8% reduction in city operational emissions since 2005.

Action Plan for 2012

The near-term of the Action Plan includes measures recommended for implementation by 2012. Measures are prioritized for this timeframe due to the relative ease of completion within less than three years.

Four of these actions are underway, or soon will be. The High Efficiency Gas Conversion and Upgrade Small HVAC actions are included in a formal agreement to fund under the Energy Efficiency and Conservation Block Grant. Actions Fine Tune Pool Schedules and Upgrade Remaining Inefficient Lighting fall under the existing Energy Management program and will be folded into that work plan over the timeframe.

However, staff time and some level of funding will need to be identified for the remaining four actions identified in the near-term plan; City Operations Transportation Policy, Expanded Purchase of GreenPower, Fitness Equipment Generates Power, Expanded Energy Education.

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Action Plan for 2012						
	GHG Reduction				Funded	Source
ActionTitle/ *Description*	Metric Tonnes	Percent of Total	Initial cost	Ongoing Savings	*Calculation Assumptions*	
High efficiency gas conversion for 4 steam heated buildings	786	8.67%	$$$$	Yes	Yes	EECBG/CIP/Incentives
The Hult Center, Parcade, Overpark and Atrium buildings must be converted to an alternate heat source from steam. High efficiency gas is a cost-effective choice that gives us significant savings in energy use and cost and emissions.				*Figures are from the Systems West analysis*		
Expanded purchase of GreenPower--additional 6%	100	1.10%	$	No	No	not identified
An additional purchase of Greenpower would be a quick way to gain emissions reductions and would support the continued improvement of EWEB's power resources				*Current city purchase of 2,277,600 Kwh multiplied by EWEB specific CO2 Coefficient*		
Upgrade Small HVAC units	97	1.07%	$$$	Yes	Yes	EECBG/CIP/Incentives
Efficiency upgrades have not yet been focused on smaller buildings. This action will survey all the small HVAC units and determine whether to replace, upgrade or simply tune them up.				*Figures are from the EECBG analysis, based on per ft2 cost and savings averages for HVAC retrofits per EWEB energy management*		
Fine-tune Pools' schedules to better match needs with temperatures	76	0.84%	$	Yes	Yes	staff time as part of Energy Management Program
Pool patrons have varied needs and prefer different water temperatures. This action looks at allowing water temperature to drift downward and scheduling activities accordingly.				*Based on a 5% savings from allowing temps to drift and scheduling classes to take advantage of lower temps*		
City Operations Transportation Policy--alt modes-bike, bus, train, walk, add'l time, carpool, telemeetings, route planning, shuttle use.	24	0.26%	$	Yes	No	staff time--not identified
Many suggestions were received about reducing emissions from on-the-job transportation. This action proposes wrapping them into a comprehensive policy around workplace transport.				*Discussion with PWE staff yielded conservative estimate of 5% reduction in fuel use in the City's passenger fleet. This was converted to CO2 based on emissions from E10*		
Audit and upgrade remaining inefficient lighting in City facilities	19	0.21%	$$	Yes	No	Staff time, CIP/Incentives
Much work has been done to upgrade lighting in City buildings, but there are still some opportunities to explore.				*Assumes that percent of lighting electrical use by most City Dpts is 25% This is a conservative estimate based on 3 energy analyses of City bldgs and a PGE study. Percent applied to total electrical use in buildings. Assumed 10% of lighting energy savings may be available, even after most areas have been upgraded to T8.*		
Hook up fitness equipment to generate electricity			$	Min	No	not identified
This action can make energy and conservation issues tangible to City staff. Ongoing education is important to support overall efforts.				*Direct savings are minimal . No calculations done*		
Expand education component of Energy Management Program			$	Yes	No	staff time Energy Management Program--not allocated
Many actions revolve around energy savings in buildings. Feedback and general education, as well as training on specific changes to system will need to increase as actions begin to change the culture of the organization.				*No calculations done*		
TOTAL	**1102**	**12.16%**				
$ < $50,000 **$$**-$50,000 to $100,000 **$$$** $100,000 to 400,000 **$$$$** > $400,000						

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Action Plan for 2016

The period between 2012 and 2016 is the mid-term of this Action Plan. Actions in this timeframe are considered more difficult to accomplish than those of the previous term, due to infrastructure, funding or technology issues. These actions are presented as doable given current information and are generally extensions of existing efforts. They are the preferred direction of the workgroups that would be responsible for implementation. However, these are not presented as confirmed or funded projects. Ongoing work remains in completing a full-scale cost/benefit analysis, identifying resources and overcoming existing challenges in order to bring these ideas to fruition. Inclusion of an action in this timeframe signifies that workgroups have committed to pursuing these objectives.

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Action Plan for 2016						
	GHG Reduction		Initial	Ongoing	Funded	Potential Source
Action Title/Description	Metric Tonnes	Percent of Total	Cost	Savings	Calculation Assumptions	
Conversion 50% of gasoline sedan vehicles to E85	595	6.57%	$$$	Yes	No	Grants, BETC, Fleet Fund
The City has a significant number of flexfuel vehicles in the fleet, and E85 is readily available. This action would continue the expansion of biofuels use, but requires an additional storage tank during the transition.				*Usage of E10 in 2008 was assumed to be replaced by E85. Adjusted to account for lower BTU/gal of E85.*		
Convert City non-emergency diesel fleet from B20 to B50	179	1.98%	$$$	No	No	Grants, BETC, Fleet Fund
Biofuels in place of fossil fuel can significantly reduce emissions. Many of the diesels in the City fleet can use higher bio-blends seasonally. The issue is the storage of multiple fuels and higher price of biodiesel.				*2008 fuel use for non-EMS and police diesel vehicles times CO2 per gal, adjusted for BTU difference. Assumes B50 would cost 10% more than B20 and that B20 avg cost for 2008 is $3.11*		
Study and upgrade indoor pool heating and ventilation equipment	260	2.87%	$$$	Yes	No	Grants, BETC, CIP, Incentives, Loans
Pools use a lot of energy in the form of natural gas and thus have a lot of opportunity for efficiency and emissions reduction. This action proposes to upgrade, if determined to be cost-effective, to a radiant heat system and recommission the ventilation controls.				*Based on end-use from analysis done prior to upgrades in 2000. Assumed 10-20% pool water heat energy savings, 20% savings in space heat energy from radiant heat and retrocommissioning controls, 30% savings on domestic hot water energy from adding solar, 10% reduction in energy use by motors.*		
Replace police patrol vehicles with a more efficient choice**	210	2.32%	$$$?	Yes	No	Grants, BETC, Fleet Fund
The current model of police patrol vehicle used by the City will no longer be manfactured as of 2012. This action is based on choosing a more efficient vehicle when replacement is needed.				*Assumption is that replacement vehicle will use 50% less fuel than the Crown Victoria. Current average is 9.2 mpg, assumption implies 18.4 mpg on avg.*		
Purchase plug-in hybrid or all electric vehicles to replace sedan fleet	50	0.55%	$$$	Yes	No	Grants, BETC, Fleet Fund
Supplementing or replacing fossil fuel with electricity in vehicles greatly reduces emissions. This action assumes that a suitable vehicle will be available when sedans over 12 years old need replacement.				*Assumes that any sedans 12 yrs or older will be gradually replaced with plug-in or electric vehicles. 2008 use of E10 for these vehicles was reduced 75%*		
Solar Domestic or Tankless Water Heating at multiple Fire Stations	17	0.19%	$$$	Yes	No	EECBG or other grants/CIP/Incentives
Hot water use at Fire Station is high due to the need to shower after calls. Several stations have solar hot water, and this action would add them at all stations where solar access exists. Stations not suitable for solar, would upgrade to a more efficient tankless heater.						
Use laptops instead of desktop computers where needed, complete change from CRT to LCD monitors**	4	0.04%	SOP	Yes	No	Gradual replacement already funded
Just over 100 CRT monitors are still in use. This action looks at the results from the gradual replacment of these units, and from the use of a laptop in place of a desktop in cases where mobility is needed.				*Assumes 75% of Exempts would have a business need for laptop Existing CPU's 190 avg watts vs laptops at 95 watts. Avg CRTuses 80 Watt, LCD is 35 watts for common sizes. Assumes 9hrs/day, 48 weeks per year times the number of CRT's still in use.*		
Solar Domestic Water Heating at Police and PW	2	0.02%	$	Yes	No	EECBG or other grants/CIP/Incentives
Police and the crew rooms at Public Works Maintenance were found to have a high number of daily showers. This is a good opportunity to directly replace energy use with renewables.				# of showers per day from Dept contacts. Assumed solar could provide 60% of hot water annually. Assumed $17,000 average design and installation cost, before utility incentives		
TOTAL	**1317**	**14.53%**				
$ < $50,000 $$-$50,000 to $100,000 $$$ $100,000 to 400,000 $$$$ > $400,000						
**Emissions reductions are not the primary focus of this action, but present an opportunity for a more efficient choice. Costs represented are the additional cost for a more efficient choice.						

*Plan ad

Action Plan for 2020

The end-term of this Action Plan runs from 2016 to 2020. Efforts included in this final phase of the Action Plan are primarily those that have significant challenges, but are deemed possible with expected improvements in technology or initial cost. The specific action Retro Commissioning for Major Facilities is intended to be a long term effort beginning in 2012 and finishing by 2020.

Like the mid-term of the Plan, actions included continue or expand efforts that have been undertaken in the past. Workgroups have committed to including these concepts in their decision-making and to positioning themselves for future implementation. Changes in conditions affecting the implementation of these actions are difficult to predict. It's recommended that these factors be monitored on an ongoing basis in order to adjust the plan, or implement an action as soon as it is feasible.

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CITY OF EUGENE – INTERNAL CLIMATE ACTION PLAN*

Action Plan for 2020						
	GHG Reduction				Funded	Potential Source
Action Title/ *Description*	Metric Tonnes	Percent of Total	Initial Cost	Ongoing Savings	*Calculation Assumptions*	
Conversion of remaining 50% of gasoline sedan vehicles to E85	595	6.57%	$$	Yes	n/a	n/a
This is a continuation of the related action from 2016 timeframe--see previous chart for more detail						
Ongoing retro-commissioning for Major City facilities	395	4.36%	$$$	Yes	No	CIP+Incentives
Retro-commissioning is an in-depth tune up of building mechanical systems to insure that they are functioning as efficiently as possible. Two larger buildings would be tuned up each year to reach all of them by 2020.				*Occupied buildings over 10,000ft2 were studied. Per Ft2 Cost and energy savings ranges were used from "Retro Commissioning Fact Sheet" CA Dpt of General Services. Buildings were classifed as "high", "med" or "low" within the two ranges depending on complexity and history of upgrades. Amount of energy and GHG savings per $ of energy cost savings estimated and applied for emissions savings estimates.*		
Install additional generation capacity to utilize methane now being flared.	320	3.53%	$$$	Yes	No	CIP+Incentives,SELP or CREB financing
Though all methane is flared to prevent escape into the atmosphere, not all of it currently produces electricity. This actions would expand generating capacity to use all available methane to produce power.				*Assumes that 15% additional generation can be added*		
Upgrade Street Lighting Technology to next generation--induction or LED	230	2.54%	$$$$	Yes	No	CIP+Incentives,SELP or CREB financing
Lighting technology is advancing rapidly and may soon offer cost-effective choices that improve levels of efficiency and lower maintenance costs. At that point this action would begin to retrofit a portion of the system each year.				*Assumes that 10% of the system would be retrofit each year beginning in 2016 with a source that has efficiency 15% better than existing. This is cumulative annual savings as of 2020, when system is 50% retrofitted..*		
Install photovoltaic (PV) solar cells on City buildings	160	1.77%	$$$$	Yes	No	CIP+Incentives,SELP or CREB financing
The price of solar cells is projected to drop over the next few years. When the cost of systems comes within range, we will be poised to install on City buildings.				*Bldgs not included <1000 ft2, historic structures, in shade, w/o power, bldgs, fire training structures, parking garages. Buildings in the downtown network included with the assumption that EWEB will overcome technical issues. Total roof area was reduced by 30% to account for other uses of roof, 30% again for potential shading. Remaining area multiplied by 1100 KWH per ft2 to get power potential. Cost of $8.00 pr ft2 installed were used. EWEB and ODOE BETC pass-through was applied for final cost.*		
Replace inefficient unit heaters with gas radiant heat	151	1.67%	$$$	Yes	No	CIP+Incentives,SELP or CREB financing
Radiant heat is up to 30% more efficient than heating and circulating air. Replacing the existing heaters will help reduce our largest single fossil fuel use--natural gas.				*From EECBG analysis. Cost, incentive and percent efficiency improvement from case study of Tualatin Fire Station*		
Replace lift trucks with hybrid version**	31	0.34%	$$$	Yes	No	CIP+Incentives,SELP or CREB financing
Nine lift trucks would gradually be replaced by hybrid versions as they needed replacement.				*Assumes B20 @$3.11 per gallon. Hybrid would be 40% more efficient than existing.*		
Facility booking program tied to HVAC Control			$	Yes	No	CIP+Incentives,SELP or CREB financing
This action would allow users to both reserve a meeting room and schedule the heating and cooling. Rooms could be left at unoccupied temperatures when not in use.				*no calculations done*		
TOTAL	**1882**	**20.77%**				
$ < $50,000 $$-$50,000 to $100,000 $$$ $100,000 to 400,000 $$$$ > $400,000						
**Emissions reductions are not the primary focus of this action, but present an opportunity for a more efficient choice. Costs represented are the additional cost for a more efficient choice.						

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Scope 3 and other Concepts

Scope 3 emissions are defined as those indirect emissions that are not covered under scopes 1 and 2. More specifically, scope 3 emissions are upstream impacts of purchased goods, materials and services, or transport in non-city owned vehicles (such as employee commute or business travel). Emissions in this category are not included in the Net-Zero Council Goal and thus are not a focus in this Action Plan. However, there are several efforts underway in the organization that address scope 3 issues.

- A study is currently in progress that will quantify all operational solid waste produced by the organization and formulate a plan to reduce this waste by 90%. A reduction of this magnitude will require significant changes in the organization's purchasing and recycling procedures. Such changes will have the additional benefit of reducing the GHG impact of the materials used by the organization.

- The City maintains an active employee commute reduction program as a participant in the regional "Commuter Solutions" program and provides staff with bus passes, an emergency ride home program and reduced parking rates for car pools. Staff commute choices are not under the operational control of the organization and thus are considered scope 3 relative to City operations. However, relative to the community's emissions the vehicle miles traveled (VMT) by City staff traveling to work are scope 1.

- Work is ongoing to reduce the nitrous oxide (NOx) released by the wastewater treatment plant (WWTP) NOx emissions that are known to be released to the air from WWTP have been included in the inventory. Other NOx released from the plant is water-borne. It is currently unclear if these emissions can eventually enter they atmosphere and impact climate change.

- Warm mix asphalt was used with good results in selected road construction projects during the 2009 construction season. Warm mix is made at a lower temperature than the traditional mix and thus reduces the amount of energy and emissions from asphalt production.

Other concepts

- A full-scale energy audit is underway at the Wastewater treatment plant. Once defined, the GHG emissions reductions from efficiency upgrades for the treatment process and the plant buildings can be included in the next update of the plan.

- Clean fuel specifications are being considered for capital road construction contracts. The use of bio-fuels by contractors hired by the City could reduce indirect emissions.

- An innovative idea has been put forward to study potential for installing piping under roads when major construction is undertaken. The piping could provide access to ground-source heating and cooling for nearby homes or businesses.

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Emissions Reductions by Strategy

Review of strategies

It's important to look at the plan in terms of not only the timeline, but in terms of the types of strategies which can be employed to reach our goal. The actions in the plan have been categorized into three strategies, each addressing a different facet of emissions reduction.

Implement Conservation: This strategy is based on specific changes in staff practices and procedures without any change in equipment. These types of actions can be accomplished initially with little or no cost and can be implemented relatively quickly. However, these types of actions are limited by existing technology and must be carefully implemented to avoid impact on staff productivity. Savings from these measures tend to decrease over time without centralized support from the organization in the form of policy, follow-up, training and feedback on their effectiveness. These types of strategies, combined with efforts to institutionalize the changes, are an excellent and cost-effective foundation for emissions reduction.

Efficient Technology: Upgrades to high efficiency equipment are the foundation of this plan. Replacement or retrofit of outdated equipment not only provides reliable emissions reduction and energy cost savings, but can improve reliability and comfort, and decrease maintenance cost. This strategy is maximized by combining efficiency improvements with conservation efforts. This can often help reduce the first cost by reducing overall equipment needs. Efficiency upgrades can be limited by availability and cost of equipment or existing conditions (for instance the orientation or structure of a building). They also must be balanced with the cost of maintenance and any issues around the maturity of the technology, since equipment that fails to function as intended will not achieve desired emissions reductions. Although not as dependent as conservation, these types of actions also require some support as there may be different expectations or operating procedures.

Renewable Energy: Renewable energy produces fewer greenhouse gas emissions and has less impact on the environment. This strategy uses alternative energy sources, such as bio-fuels, EWEB Greenpower or solar energy to meet operational needs. This strategy can provide rapid emissions reductions, often without significant initial investment. Connecting the use of renewable energy to conservation and efficiency efforts will amplify their effectiveness.

These three strategies present complementary approaches to meeting the challenge of emissions reduction. However, each type of action, and effective climate action in general, also requires comprehensive efforts to shift the culture of the organization. While action promoting culture change serves to support and "cement" the savings of other actions, and may be considered to be a part of those actions. The success of the overall plan will, to some extent, be dependent on the ability of the organization to internalize the concepts in the plan.

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Action Cost and Funding Recommendations

The majority of the actions identified in this plan are expected to return operational savings to the organization. At the time of this report, the only exceptions are some of those actions which depend on renewable energy. Of the broad range of actions put forward only the use of biodiesel and the purchase of Greenpower are not currently expected to provide savings. Additionally, the final step of purchasing offsets, to be considered at the end-term of this plan, would add operating cost. Other renewable energy actions, photovoltaic electrical generation in particular, are not currently cost-effective but were included in the end-term of the plan with the expectation that improved technology will soon reduce initial costs.

Considered on a purely economic basis, these actions make sense and potentially for reasons beyond ongoing savings. While not yet quantifiable beyond the cost benefits of reducing energy use, the investment in GHG reduction may buffer the organization against financial risk. It appears likely that the regulatory environment could shift toward a concrete and down-trending cap on emissions. Those entities producing emissions beyond the cap could incur financial consequences. Conversely, emissions levels below a cap may allow trading and reinvestment in GHG reduction. City staff will need to track these developments on federal, regional and state levels to determine potential impacts on the organization.

Several of the actions for the near-term (2012) of the plan are co-funded by EECBG, City Capital Improvement Projects(CIP) and utility incentives. It's not known if the EECBG funding will continue; however, several actions are outlined and studies will soon begin on several others in order to prepare for potential future EECBG funding opportunities.

In order to fund continuing progress toward GHG reduction and operational savings, it's recommended that the organization consider financing for mid-term efforts (2016). Those measures that are not eligible for EECBG funding or are beyond the capacity of the CIP to undertake, may qualify for low-cost financing through the Oregon Dept of Energy's SELP (Small-scale Energy Loan Program), CREBs (Clean Renewable Energy Bonds) or QECBs (Qualified Energy Conservation Bonds). Performance contracting may offer another avenue to explore. An agreement is crafted which sets a repayment schedule based on guaranteed energy savings from a specified efficiency upgrade project. Public agencies in Oregon have begun to use this mechanism.

The downside of financing initial investment is the impact of interest and the delay in realizing direct cost savings. However, if other options are not available to implement GHG reduction actions, financing allows immediate emissions reductions and eventual cost savings which may not have occurred at all.

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Use of emissions offsets to reach the Net-Zero Goal

According to the Climate Trust "A greenhouse gas (GHG) offset is generated by the reduction, avoidance, or sequestration of GHG emissions from a specific project. Offsets are so named because they counteract or offset greenhouse gases that would have been emitted into the atmosphere; they are a compensating equivalent for reductions made at a specific source of emissions." [3]

It is clear from the council goal that the purchase of offsets is to be considered a secondary strategy to be used only after all practicable operational reductions have been made. The ICAP team recommends that the purchase of offsets be used only in the end-term (2020) of the action plan when the full impacts of previous actions have been determined.

Cost for offsets are calculated based on the current price of Bonneville Environmental Foundation (BEF) offsets per metric tonne. BEF figures were used for this discussion because of the regional nature of their investment and third-party certification of offset quality.

Expected 2020 Emissions after Operational Emissions Reductions	Annual Cost from 2020 forward to offset remaining Emissions (present value)
4,005 metric tonnes CO2	$122,000

The cost of offsets can be reduced by expanding our emissions reduction efforts. We run the risk of committing financial resources to offsets that may not be needed to reach our goal if we begin those purchases before we have exhausted the potential of direct reductions.

Initial discussions have been held with the University of Oregon and EWEB concerning the feasibility of developing a local offset mechanism in order to benefit the local economy. Although there does not currently appear to be sufficient demand for a local offset, the concept should be revisited in the second or third timeframe of the plan.

Emissions offsets provide a method to quickly stimulate climate action, and the resulting economic activity. Use of offsets allows us to take the final step in achieving our Net-Zero goal within the timeframe of this action plan.

Plan Progress Review

It is recommended that a staff member be assigned to coordinate overall progress on the Internal Action Plan. Staff will be needed to:

[3] Climate Trust: *About Offsets* at http://www.climatetrust.org/about_offsets.php

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- Insure that plan is being implemented and report on progress
- Update the inventory on a regular basis
- Review and update the plan regularly, and as needed to respond to changes in conditions

Regular progress reviews are recommended at varying intervals, shown below in figure 12. Additionally, conditions affecting the GHG reduction potential of actions, cost savings, cost and availability of technology, and availability of funding should be monitored. Changes in these areas can quickly make an action more or less feasible.

Figure 12: Recommended Progress Review

Activity	Frequency
Information update to designated plan coordinator for actions in progress	Quarterly
Execs approval of work plan strategies and costs	At plan implementation; annually, as part of budget process; and explicitly every four years
Progress reports to Sustainability Board	Annually, with updates to Execs and others as needed
Progress reports to Sustainability Commission and City Council	At plan implementation and at least every 4 years
Update to Inventory	Every 4 years, beginning in 2012
Update to Action Plan	Every 4 years, beginning in 2012 with addendums when needed to respond to conditions

Conclusion

The problem

The City of Eugene organization is faced with a momentous challenge in responding to the issue of climate change. The community looks to municipal leadership to show commitment and demonstrate workable strategies. Without significant action the economic, personal and ecological well-being of our community are all at risk.

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The solutions

This Action Plan is the roadmap, an interactive and ongoing commitment to move toward the maximum possible internal emissions reductions, rather than a fixed set of instructions. It is a set of tools that we understand and some guidelines for using them. As we work to extend many of our existing efforts, find ways to fund investment, prepare to take action when conditions change and inform and educate our staff, we must keep in mind that there is no single solution, no silver bullet. Energy use and the resultant emissions are a part of almost every facet of modern life, and so changes will need to be made on every front. There are a thousand solutions, a thousand silver BB's, if you will. Our task is to understand which way they need to go and corral them accordingly.

While there can be no guarantee that all of our assumptions will continue to hold true and thus any one specific action will come to pass, we can commit to pursuing continued and expanded emission reduction action. Keeping the goal in mind, with a blueprint and a set of tools will help us overcome obstacles and carry the commitment to climate action forward.

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Appendix A: Link to related documents

City of Eugene No-Idle Policy

http://www.eugene-or.gov/portal/server.pt/gateway/PTARGS_0_2_317789_0_0_18/noidling%20policy.pdf

Energy Conservation Administrative Order

http://www.eugene-or.gov/portal/server.pt/gateway/PTARGS_0_2_354232_0_0_18/Admin_Order_44-09-06.pdf

Appendix B

Staff Suggestions for Internal Climate Actions

Presented By	Suggestion	Source
Fire/EMS	Retrofit stations not suitable for solar with tankless water heaters.	Multiple building energy sources
Fire/EMS	Develop multiple City owned fueling locations to reduce VMT	Multiple vehicle fuel sources
LRCS: Library	Implement point of use photovoltaic solar cells to power street lighting, parking meters, irrigation equipment, etc.	Electricity
LRCS: Library	Capture heat generated by the library and use to heat other City buildings	Multiple building energy sources
LRCS: Library	For the Library Building can we draw cool air from the stairwells to help cool the building?	Natural Gas
LRCS: Library	Reduce packaging for shipment of purchased media and books	
LRCS: Recreation	Add more manual lighting controls at the library so large banks don't stay on	Electricity
LRCS: Recreation	Hook up fitness equipment to generate electricity at fitness centers similar to the Olympic Trials	Electricity
LRCS: Recreation	Implement facility booking program tied to automated public meeting room thermostats	Multiple building energy sources
LRCS: Recreation	Implement more zones in buildings to allow more efficient climate control	Multiple building energy sources
LRCS: Recreation	Give staff limited control over on-site climate adjustments to adjust automated thermostats that are too hot or cold	Multiple building energy sources
LRCS: Recreation	Move Sheldon Community Center to a separate thermostat than the pool area.	Natural Gas
LRCS: Recreation	Replace light switches with motion sensors	Electricity
PDD	Turn off second computer monitor when not in use	Electricity
PDD	Install photovoltaic (PV) solar cells on City buildings	Electricity
PDD	Reduce office space by efficiently locating staff	Multiple building energy

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		sources
PDD	Stop offering flexible spending accounts for parking to City staff	Multiple vehicle fuel sources
PDD	Add batteries to PDD inspector vehicles to reduce idle time during inspections	Gasoline
PDD	Promote/support use of alternate modes for City business	Gasoline
PDD	Implement tele/video conferencing for City training	Gasoline
PDD	Improve quality, quantity, and accessibility of City bikes	Gasoline
PDD	Implement downtown City vehicle pool	Gasoline
PDD	Licensing incentives for clean taxi fleets	Gasoline
PDD	Create system master planning for solid waste haulers	Multiple vehicle fuel sources
PDD	Education on leaf pick-up to encourage on-site use and less PWM pickup	B20
PDD	PIC electronic submission and review of development plans	
Police	Add extra batteries to patrol vehicles to power electronic equipment while stopped to reduce idling	Gasoline
Police	Purchase fuel more efficient patrol vehicles in 2011 when Crown Victoria is retired	Gasoline
PW: Engineering	Install ground source geothermal when reconstructing streets, become heating/cooling provider	Multiple building energy sources
PW: Engineering	Allow use of fleet bikes for personal use	Gasoline
PW: Engineering	Use of Warm Mix Asphalt for capitol construction contracts	
PW: Engineering	Implement clean fuels specification for capitol construction projects	
PW: Engineering	Create employee shuttle service (Business use) to reduce VMT	Gasoline
PW: Engineering	Carpooling requirements for out of City training	Gasoline
PW: Engineering	Count tree planting as internal offset credit	
PW: Engineering	Change to four day work week for in full or in part.	Multiple vehicle fuel sources
PW: Engineering	City Fleet Bicycles (Training in use, gear, adequate bikes)	Gasoline
PW: Engineering	Develop an internal employee transportation options/choice plan	Gasoline
PW: Engineering	Enhance City Meeting Invitation Procedures	Gasoline
PW: Engineering	Enhance Vehicle checkout system	Gasoline
PW: Engineering	Create a quarterly Transportation Options Newsletter distributed to all City Employees	Gasoline
PW: Engineering	Employee Transportation Coordinator (ETC) in each Division	Gasoline

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PW: Engineering	Expand City Participation in the Business Energy Tax Credit (BETC) program	Gasoline
PW: Engineering	Employee Transportation Fairs (Educate employees on alt-transportation options)	Gasoline
PW: Engineering	Incorporate education on alt-modes use for City business during new city employee orientation	Gasoline
PW: Engineering	Electronic bidding for Capital Projects	
PW: Engineering	Specify and design projects for minimal virgin material use and maximum recycling	
PW: Maintenance	Convert City diesel fleet to minimum B50	B20
PW: Maintenance	Conversion of sedan fleet to use E85	Gasoline
PW: Maintenance	Purchase electric vehicles to replace sedan fleet	Gasoline
PW: Maintenance	Purchase hybrid lift trucks for street light and traffic signal maintenance	B20
PW: Maintenance	Purchase hybrid TV trucks for Storm and wastewater investigation	B20
PW: Maintenance	Implement strict standards on right sizing of fleet vehicles	Multiple vehicle fuel sources
PW: Maintenance	Increase drop box locations for sweepers	B20
PW: Maintenance	Implement fuel delivery truck for fire vehicle support	B20
PW: Maintenance	Implement tele/video conferencing for City meetings	Gasoline
PW: Maintenance	Meeting locations determined by location of greatest number of participants	Gasoline
PW: Maintenance	Route planning for maintenance vehicles	Multiple vehicle fuel sources
PW: Maintenance	Purchase smaller more fuel efficient sweepers	B20
PW: Maintenance	Infiltration and inflow projects to reduced amount of WWTP wet weather flow	Multiple building energy sources
PW: Maintenance	Publish quarterly fuel usage and VMT report to divisions	Multiple vehicle fuel sources
PW: Parks/Open Space	Install separate meters for different divisions occupying the same building or complex	Multiple building energy sources
PW: Parks/Open Space	Count removal of buildings and other impervious area as a credit.	
PW: Parks/Open Space	For general funded vehicles need to have incentive back to division for choosing the economic vehicles in a class	Multiple vehicle fuel sources
PW: Parks/Open Space	For general funded vehicles need to have incentive back to division for fuel savings	Multiple vehicle fuel sources
PW: Parks/Open Space	Use small solar installations for vehicles needing to power equipment while turned off	Gasoline
PW: Parks/Open Space	Improve bus shelters near City offices	Multiple vehicle fuel sources
PW: Parks/Open Space	Schedule non-emergency maintenance responses geographically to reduce VMT	Gasoline

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PW: Parks/Open Space	Assign vehicles a job description use appropriate vehicles for task.	Gasoline
PW: Parks/Open Space	Change the budgeting system to reward conservation.	
PW: Parks/Open Space	Utilize bike trailers for maintenance activities when possible	Multiple vehicle fuel sources
PW: Parks/Open Space	Set reduction goal for fuel usage to 5% by the end of 2009	Multiple vehicle fuel sources
PW: Parks/Open Space	Hold competition between workgroups on reduction of GHGs	
Think Tank	Power source cost equalizer: reserve difference b/w Nat Gas & Electric - "Charge" ourselves elect. rate for cheaper natural gas, the reserve the difference for green retrofits	Multiple building energy sources
Think Tank	Adjust timers on lighting	Electricity
Think Tank	Reduce to 4-day work week	Multiple building energy sources
Think Tank	Reduce number of servers in data center	Electricity
Think Tank	Lower building temperature	Multiple building energy sources
Think Tank	Install clear panels on equipment sheds at PW yard	Multiple building energy sources
Think Tank	Install motion detection lights (in all break rooms, bathrooms, low-occupancy rooms in particular)	Electricity
Think Tank	Program City computers to use energy saving settings	Electricity
Think Tank	Provide an on-screen reminder to turn off monitor on shut-down	Electricity
Think Tank	Unplug equipment when not in use - When printers off, it may signal a repair alert to ISD	Electricity
Think Tank	Pools - shut off water/air boilers & furnaces when facility not in use	Multiple building energy sources
Think Tank	Reduce lights in areas that don't really need them - bright day hallways and day-lit areas	Electricity
Think Tank	Solar thermal for city facilities - find ways to fund solar H2O on city facilities	Multiple building energy sources
Think Tank	Do more to encourage alternative modes of commuting (Incentives)	Multiple vehicle fuel sources
Think Tank	Charge for parking at all City facilities - Simultaneously provide better bike parking and some incentive for using it-$20/month, time off, etc.	Multiple vehicle fuel sources
Think Tank	Establish policy to discontinue use of disposable cups-Lug your own mug (to meetings, events, etc.)	
Think Tank	Use laptops instead of desktop computers	Electricity
Think Tank	Reduce the use of small motors	Multiple building energy sources

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Think Tank	Reduce maintenance fleet size - replace older vehicles; staff in 2-person teams	Multiple vehicle fuel sources
Think Tank	Make bikes available at all work locations for staff	Multiple vehicle fuel sources
Think Tank	Methane reduction - Have we reached potential for methane reduction at wastewater or can more be done?	Multiple building energy sources
Think Tank	Replace thermal paper used in printers - non-recyclable; NOTE-I've called BRING and tried reaching someone at Weyerhaeuser and it appears this paper may in fact be recyclable, I've been doing so thinking it was for years.	
Think Tank	A6 money to redesign maintenance intensive landscape in parks	
Think Tank	Go solar	Electricity
Think Tank	City-wide energy audit	Multiple building energy sources
Think Tank	Investigate and apply for EWEB Grant opportunity	Multiple building energy sources
Think Tank	Steam Decommission: Ask EWEB to help fund building retrofits; (Lane County has under-utilized Bond authority available-could we create a County-City partnership to accomplish this?)	Steam
Think Tank	Add solar panels to City buildings	Electricity
Think Tank	Return to 4-day workweek	Multiple building energy sources
Think Tank	Encourage Teleconferencing instead of meetings	Multiple vehicle fuel sources
Think Tank	Build travel time for Alt Modes into meeting schedules	Multiple vehicle fuel sources
Think Tank	Get rid of the driving incentives - and could incentivize alt modes (discussed elsewhere)	Multiple vehicle fuel sources
Think Tank	Develop an energy budget as if we're living on a fixed-income	Multiple building energy sources
Think Tank	Synchronize stop lights - (more of a community level action)	Multiple vehicle fuel sources
Think Tank	Use efficient travel routes	Multiple vehicle fuel sources
Think Tank	Buy a mobile fire engine fueling truck	Multiple vehicle fuel sources
Think Tank	More pervious surface - this could be more community or sustainability focused	
Think Tank	To change behavior… reward good behavior, disincentivize "bad" behavior; personalize consequences	
Think Tank	Street lighting, path lighting - find more info in Think Tank	Electricity
Think Tank	Look for intersections to replace signals w/roundabouts - more community GHG reduction based (RN)	

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Think Tank	Timed stop lights - more community GHG reduction based	
Think Tank	Inform broader organization of availability of free bus passes	Multiple vehicle fuel sources
Think Tank	Education (at the source, e.g. sign of alt modes avail. near car keys)	
Think Tank	Motivating folks to change behavior - Inform folks what can be "saved" through behavior change	
Think Tank	Staff training - Concerted training effort to highlight individual actions & responsibilities and collective impacts and actions	
Think Tank	Reinforce existing policies - use different media and forums to communicate existing policies like no-idling, computer turn-off, etc	
Think Tank	Performance data - Provide ongoing feedback on performance and consequences	
Think Tank	Bike locker facilities - more & better bike locker facils. where staff is concentrated	Multiple vehicle fuel sources
Think Tank	Encourage telecommuting	Multiple vehicle fuel sources
Think Tank	Vendor & contract relationships: Emphasize 3 legs of sustainability with all vendors & contractors - travel routes for waste collection, travel mode for consultants, use local consultants	
Think Tank	Develop plan to swap out less efficient street/path lighting - could reduce number of; light alt mode paths better to encourage use (community focus?)	Electricity
Think Tank	Create a carpooling resource for employees - (NOTE: Exists through LTD Commuter Solutions; add link to City inter- and intra-net)	

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