Climate Action Plan

Port Townsend/Jefferson County, Washington

City of Port Townsend & Jefferson County 2011 Climate Action Plan

June 15, 2011 - CAC Recommended Draft

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An electronic version of this document is available at
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**Expressing the call to action, need to get started, urgent but hopeful; this plan is only a first step*

Executive Summary

A near total consensus of the world's leading climate scientists has concluded that carbon-based fossil fuel emissions from human activity are destabilizing the Earth's climate, making it the most significant challenge for the future of our planet and our community. Average global temperatures and sea levels are already rising, and further climate changes will have far reaching effects on public health, local economies, food production, water supplies, power production, and habitability for many of Earth's life forms.

Reducing carbon emissions is a global challenge that must be met by all of us, locally and beyond. Much of the heavy work must take place at the federal and state level through alternative transportation investments, progressive energy policies, appropriate utility regulations, wise public lands use patterns, and stronger building codes. At the local level, we must also do our part, and both city and county governments must not only lead by example, but must also pursue policies that help our community reduce our carbon emissions.

This Climate Action Plan is a product of the Climate Action Committee (CAC), which was appointed by the Port Townsend City Council and Jefferson County Commissioners in 2007. The council and commission set a goal of reducing county-wide carbon-based emissions to 80% of 1990 levels by the year 2050. This document begins to address the immense challenge required to attain that goal.

The CAC ultimately decided on a phased approach to reach our goal. This plan is only phase one. It addresses specifically what the City and County governments can do to lead by example. It also recommends measures that the community should consider, as well as outreach, education, and partnership opportunities. Finally, it outlines land use and transportation policies that the City and County should refer to their respective planning commissions for further consideration.

To produce this plan the committee first studied the sources and amount of carbon-based emissions in 2005. This was the year for which good data was available to develop a baseline and then be able to "backcast" an estimate for 1990 and forecast to 2050 with our projected population increase and "business as usual".

Here in Jefferson County, stationary emission sources like buildings and industry contribute 61% and the transportation sector contributes 39% to our emissions. The estimate for 1990 was slightly more than half a million tons of CO2 equivalent emissions, and the forecast with "business as usual" for 2050 was twice that amount of emissions, or just over one million tons per year.

To set the community on course for the ultimate 2050 goal of an 80% reduction, interim targets were adopted. Due to energy efficiency measures implemented during the past 20 years, mostly at the local paper mill, our community-wide CO2 equivalent emissions are estimated to have gone up only slightly from 1990 to 2005, the baseline year for which we gathered data. In addition we assumed that due to ongoing efficiencies there has been no significant increase between 2005 and 2012. The targets for 2020 and 2030 were arbitrarily set with a straight-line reduction from 2012 to the goal of an 80% reduction by 2050, knowing that this is not the pattern in which emissions are likely to be reduced.

With broad community and government staff input, the committee then compiled a set of potential measures and implementation steps to address each significant source. The plan includes a beginning list of specific actions to be taken by local county and city governments so that they can do their part. It also includes numerous action ideas for the community at large to consider.

The interim targets and ultimate goal of an 80% reduction in emissions may not apply to every sector, every building, every business or every individual. Instead, a reasoned approach needs to be applied that considers many factors, especially cost effectiveness.

A case in point is the Government Sector, which produces less than 1% of the emissions in our county. Some of these are generated by essential services like the fire departments, police and sheriff departments, and water and sewer utilities, where emissions reductions may be very costly or unwise. It may be more cost effective to reduce emissions in the community rather than in the government sector. Some government investments could significantly reduce overall community emissions for example, limited resources may yield greater reductions in emissions in

helping homeowners make private homes more energy efficient than in further retrofitting historic government buildings.
In some situations, the most cost effective answer might even yield higher government sector emissions. Another low hanging fruit would be to encourage a shift in transportation mode away from motor vehicle use and toward increased walking, bicycling and transit use. This could be realized by implementing a number of strategies including: a significant investment for expanded Jefferson Transit service; greater investment in walking and biking facilities; a reduction, maximum cap, or elimination of motor vehicle parking requirements; and instituting parking fees in the commercial centers. These steps would result in a modest increase in Jefferson Transit's emissions but could yield an immense reduction in overall community emissions.

The Government Sector must play a leadership role in continuing to make this challenge a high priority and should do what it reasonably can to reduce its own emissions.

This plan will guide future efforts by the community and provide an innovative framework for the transition to a less carbon-based future. Irrespective of climate change issues, fossil fuels are a finite and costly resource and the steps taken to reduce carbon emissions will lead to a more stable, prosperous and healthy community. Implementing the plan will strengthen our economy, create local jobs, improve social equity, improve public and individual health, reduce our exposure to fluctuations in energy price and energy availability, improve air and water quality, and save money.

I. Introduction

In the fall of 2007, Jefferson County and the City of Port Townsend made a joint commitment **to reduce community-wide carbon emissions[1] by 80% below the 1990 level by the year 2050** (Appendix A, County Resolution No. 44-07; City Resolution No. 07-022).

To set the community on course for the ultimate 2050 goal, interim targets were adopted as shown in the table below. Due to energy efficiency measures implemented during the past 20 years, mostly at the local paper mill, our community-wide CO2 equivalent emissions are estimated to have gone up only slightly from 1990 to 2005, the baseline year for which we gathered data. In addition we assumed that due to ongoing efficiencies there has been no significant increase between 2005 and 2012. The targets for 2020 and 2030 were arbitrarily set with a straight-line reduction from 2012 to the goal of an 80% by 2050, knowing that this is not the way in which emissions are likely to be reduced.

Table 1 - Baseline Conditions and Emissions Targets

Year	Percent in relation to 1990 levels	Emissions in Tons of CO2eq
1990 (backcast)	100%	522,868
2005 (data base)	3% higher	536,713
2012 (target)	3% higher	536,713
2020 (target)	15% lower	445,737
2030 (target)	37% lower	332,016
2050 (goal)	80% lower	104,574

(For additional details see Section II, Our Goal In our Community, page 18).*

This Jefferson County/Port Townsend Climate Action Plan may at first appear overwhelming, unrealistic, politically infeasible, impossibly expensive and/or absolutely unnecessary. Indeed, these would all be true if the plan were intended for immediate implementation with only local funding and resources and without significant policy changes and additional support from state and federal governments. That is NOT how this plan is meant to work.

The plan proposes ambitious carbon-reduction efforts that promise to benefit the region's long-term economic, social and environmental prosperity while we lower our greenhouse gas emissions. By adopting this climate action plan, the City and County are not obligated to implement all the policies described herein. Rather, the activities listed are intended as a menu of ideas from which can be selected over time the

specific actions that are affordable, feasible, and appropriate for our community.

Port Townsend and Jefferson County governments have already taken many steps towards trying to reduce energy use and the resulting greenhouse gas emissions. They range from buying and using electric and hybrid vehicles to building a LEED Silver certified City Hall annex.

We must be ready with a comprehensive, long-term plan in order to take advantage of funding and other opportunities as they arise. Additional strategies will likely be developed over time further to meet the challenges and opportunities posed by global warming and climate disruption.

Other government entities in the Pacific Northwest, like the state of Washington, King and Skagit Counties, Tacoma, Seattle and City of Portland-Multnomah County are also responding to the challenge with climate action plans. Two of the plans, the Skagit County Plan and the Portland-Multnomah Plan, proved to be especially valuable models in the drafting of this plan.

A. How Was the Plan Created?

The Jefferson County- City of Port Townsend Climate Action Plan is the culmination of a multi-year process, various stakeholders were represented on the committee (Appendix B) and numerous public meetings were held including two separate series of open houses. Launched in the Fall of 2007 by the City and County's joint commitment to reduce carbon emissions[1], the process to develop the Climate Action Plan followed the 5-Milestone process developed by ICLEI Local Governments for Sustainability (www.iclei-usa.org):

[1] The City and County committed to reduce community-wide carbon emissions[1] by 80% from the 1990 level by the year 2050 (County Resolution No. 44-07; City Resolution No. 07-022).

Milestone One - Conduct a baseline emissions inventory - was completed by the Climate Protection Task Force, a motivated group of citizen activists (Appendix C). Working in collaboration with City and County staff and with technical support from ICLEI the task force compiled the 2005 emissions inventory for both community-wide and municipal operations. The inventory was adopted by City Council and the Board of County Commissioners (BOCC) on January 12, 2009 (City Resolution 09-022 and County Resolution 06-09). A copy of the complete inventory is available for public inspection at the City and County planning departments and is posted on the County website at http://www.co.jefferson.wa.us/commdevelopment/ClimateChange.htm

The Climate Action Committee (CAC), appointed by the Council and BoCC, continued to build on the momentum initiated by the task force. Per the adopted scope of work, the CAC was tasked with establishing interim targets **(Milestone 2)** and developing a Climate Action Plan **(Milestone 3).** This Action Plan provides guidance on implementation **(Milestone 4)** and outlines a monitoring program **(Milestone 5)**.

More detailed guidance was provided in the Climate Action Committee Workplan[2]. CAC members completed the following steps:

- Develop Initial List of Potential Measures to Reduce Emissions – The committee brainstormed ideas and borrowed ideas from numerous sources including but not limited to: ICLEI Milestone guide, State CAT report, Natural Capitalism Solutions Climate Protection Manual for Cities, and models from other jurisdictions. In crafting the list of potential measures, the Committee was directed by the adopted resolution, to apply the following hierarchical approach:

  Conservation/Efficiency Measures
  Voluntary/Incentive based interventions
  Regulatory controls

- Identified Existing Measures – CAC members interviewed various community leaders (including but not limited to US Navy, City and County Department Heads, Port Townsend Paper Mill, etc.) to identify existing measures. Where feasible, emissions savings were estimated.

- Conduct a Series of three Open Houses - In October 2008, three open houses were conducted in Port Townsend, Brinnon, and Chimacum to inform the public of the adopted goal and solicit input on potential measures.

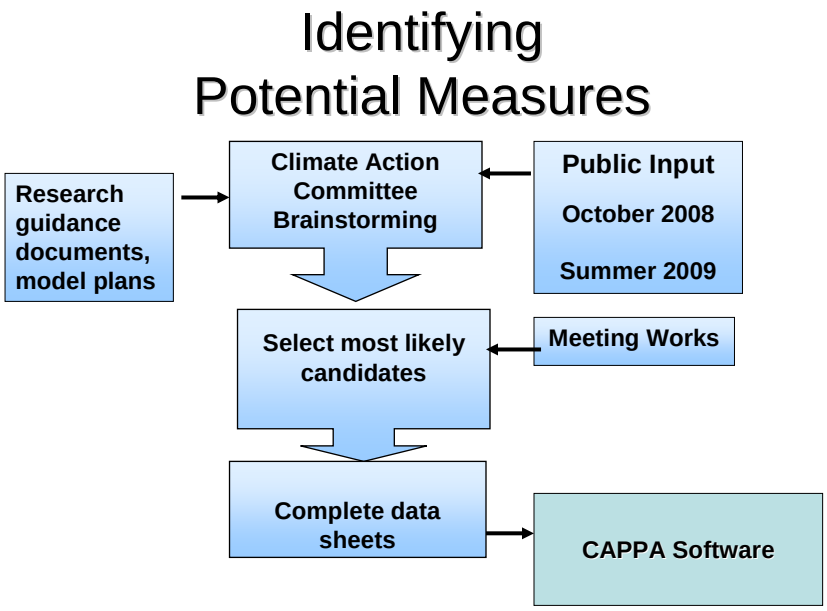
- Conduct Backcasting and Forecasting of GHG Emissions and Proposed Interim Targets for Reductions.

- Solicit Input on Potential Measures from State Departments of Commerce and Ecology as well as ICLEI support staff.

- Refine the List of Potential Measures – CAC members narrowed the list of potential measures to those that seemed the most promising given various factors including potential benefit/emissions reductions, cost, and public perception. The committee was aided by Kathryn Lamka and the MeetingWorks software. A software tool, Climate and Air Pollution Planning Assistant (CAPPA) designed by ICLEI was then used to compare the relative benefits and help identify those most likely to be successful. CAPPA includes a customizable and expandable library of more than 110 distinct emissions reduction strategies for local governments. Its calculation functions are based on real-world data from other U.S. communities and a variety of expert sources.

[2] County Resolution No 02-08; City Resolution No 00-081

- Conduct Series of Open Houses - A Public Discussion Document dated June 9, 2009, was vetted by BOCC and City Council on June 17, 2009. This document was then presented at a series of open house events (Port Townsend, Brinnon, and Chimacum) which included informational displays, a slideshow lecture, and an audience participation activity.



- Compile and Review the Draft Climate Action Plan over a series of noticed public meetings.

B. What's in the Plan?

Following is a quick overview of the contents of the Action Plan:

Chapter 1 the **Introduction**

Chapter 2 discusses **the challenge of climate change** and the benefits of an aggressive response.

Chapter 3 outlines **goals** at the federal, state and local level.

Chapter 4 presents the results of municipal and community-wide greenhouse gas emissions **inventories**.

Chapter 5 presents the climate **action plan**, including 26 discrete measures to reduce emissions from municipal operations as well as suggested measures for implementation community-wide. Local government cannot meet the challenge alone. We will have to work together as a community and take action at all levels.

Chapter 6 provides a discussion of potential transportation and land use **policies that are recommended for further consideration**. The Climate Action Committee recommends exploring transportation and land use policy amendments in the following categories.

- *Rural Resource Management,* to enhance the carbon sequestering potential of the County's forests, farms and open spaces

- *Urban Form and Transportation,* to locate and move both people and goods in a carbon-efficient manner and provide regional tools for compact, livable communities of mixed uses.

Chapter 7 includes a system for measuring and **monitoring** efforts to reduce community-wide emissions **and an adaptive management** approach.

And finally, a **Glossary of Terms** is provided.

Appendices include associated resolutions and detailed worksheets and a table of potential funding sources.

C. What's Next?

With adoption of the 2011 Climate Action Plan, the City and County have taken a substantial step forward in meeting adopted goals to reduce GHG emissions, both as organizations and as a region. But there is more work to be done.

1. Implementation:

The target will only be achieved by building a movement that achieves sustained action and coordination across stakeholders and sectors. Key to our success is our ability to generate awareness and educate the community about ways to reduce emissions. This Action Plan recommends:

1) **Specific measures to reduce government sector emissions (Chapter V.A)**

2) **Community outreach and engagement (Chapter V.B) and**

3) **Further consideration of transportation & land use policy (Chapter VI)**

What will implementation cost? In the current challenging fiscal environment, no one is more aware than the City Council and Board of Commissioners of the need to make the best use of the taxpayer dollar and to eliminate waste and overhead wherever possible. For actions targeting government sector emissions, the City and County, with the assistance of the Resource Conservation Manager (RCM), will need to develop an implementation strategy and, during budget proceedings, each will need to consider earmarking funds for implementation of recommended measures. It is anticipated that the City and County will take a phased approach to implementation based on specific types of funding available, feasibility, and rate of return. There will be many competing priorities and at times it will be more effective to help fund activities to reduce emissions in the community sector rather than attempt to make smaller, more expensive reductions in the government sector.

Fortunately, actions that reduce emissions also reduce electricity and fuel use, minimizing energy costs which in turn can also save an enormous amount of taxpayer dollars. Nearly every action in this document will save money, some in the near-term while others will require a longer period for cost recovery.

In 2005, through ICLEI's Cities for Climate Protection ® (CCP) Campaign, more than 160 U.S. local governments reported collective savings of over

23 million tons of global warming pollution and $600 million in related energy and fuel costs. Wise investments in retrofits can reap great rewards; for example, with a total investment of $105,000, the Portland City Hall Renovation Project saves the city an estimated $15,000 a year and $80,000 of upgrades to Fire Station #1 saves $8,000 a year.

2. Climate Change Preparation/Adaptation:
This phase involves an examination of the possible impacts of future climate changes (e.g., increased incidence of drought, flooding, forest fires, and disease, and other impacts like rising sea levels) and developing strategies to deal with these impacts.

3. Endorse Federal and State Initiatives:
The federal government must make fundamental shifts in energy policy and align its vast research and development resources with climate protection. The State of Washington has an invaluable role in transportation investments, strengthening building codes, regulating utilities, managing forest lands, reducing waste and guiding local land use policies. We have an indispensable role in pressuring federal and state governments to support our efforts. Our local action plan therefore also calls for the endorsement of state and federal actions that are required to make our actions both effective and affordable.

We in Jefferson County have the primary role in developing the fundamental shape of our local community, transportation systems and buildings, and in helping individuals make informed decisions about everyday business and personal choices.

In conclusion, this Climate Action Plan will guide future efforts by the City, the County and the citizens with an innovative framework for our transition to a more prosperous, sustainable and climate-stable future. In doing so, it will strengthen local economies, create more jobs, improve health, and help maintain the high quality of life for which we are already known.

[1] Throughout this document, the term “carbon emissions” refers to all greenhouse gas emissions.

II. The Challenge of Climate Change

A. The Problem:

Climate change is the defining challenge of the 21st century. The world's leading scientists report that carbon emissions from human activities have begun to destabilize the Earth's climate. Millions of people are already experiencing these changes through threats to public health, national and local economies, and supplies of food, water and power. Low-income and vulnerable citizens have fewer resources to respond to these changes and are facing disproportionate impacts of climate change and rising energy prices.

This increase in greenhouse gases is resulting in an unpredictable climate that is changing rapidly. Our state is particularly vulnerable to a warming climate — especially our snow-fed water supplies that provide our drinking water, irrigation for agriculture- and nearly three-fourth of the electrical power we produce. Close to 40 communities – including some of the state's largest population centers — along our 2,300 miles of shoreline are threatened by rising sea levels. Ocean acidification, which is created when carbon dioxide reacts with seawater and reduces the water's pH, threatens our abundant shellfish. The survival of local salmon and shell fish is at stake, as are the economies that depend upon them. For more information on impacts visit the Department of Ecology website at http://www.ecy.wa.gov/climatechange/index.htm

Unfortunately all of these changes will intensify in the decades ahead even as we begin to reduce our emission. There is a long time lag between changes in emissions and global climate patterns. Our near future climate will first reflect the past century of emissions, while ultimately reflecting our choices today. Efforts to reduce emissions must be coupled with preparations for this climate change.

B. Benefits of an Aggressive Response:

To respond to these intertwined problems — climate change, social inequity, economic stressors, rising energy prices, and degraded natural systems — requires an integrated response that goes far beyond reducing carbon emissions. Climate protection must be linked with actions to create and maintain jobs, improve community livability and public health, address social equity and foster strong, resilient natural systems.

By integrating these elements, Port Townsend and Jefferson County will:

1. Create Local Jobs:
The past decade has proven that many of the technologies, products and services required for the shift to a low-carbon future can be provided by regional and local companies. More dollars currently spent on fossil fuels will stay in our local economy to pay for home insulation, lighting retrofits, solar panels, bicycles, engineering, design and construction.

2. Improve Social Equity:
Low income and vulnerable citizens face disproportionate impacts from climate change in part because they have fewer resources to respond to these changes. We must ensure that impacted communities are included in the implementation of the Climate Action Plan in a meaningful and engaging way. Fortunately, measures that reduce emissions may also serve to improve social equity through increased access to local green jobs, healthy local food, affordable and efficient transportation and energy-efficient homes. We will need to seek out programs that ensure energy efficiency is affordable for all, for example Portland's "Clean Energy Works" program. This program provides financing to homeowners for energy efficiency upgrades. Low income households receive the lowest interest loans. Loans are repaid through the energy cost savings. The program is a model for creation of quality jobs and advancing social equity.

3. Create Healthier Residents:
Walkable neighborhoods, fresh foods and clean air mean healthier, more active residents. The "health dividend" is potentially vast in financial terms and invaluable in its contribution to quality of life.

4. Become More Energy Self-Sufficient and Secure:
Every action in this Plan will reduce reliance on fossil fuels. As prices continue to increase and supplies become more uncertain, a reduced reliance on volatile oil supplies will diminish the risks faced by everyone.

5. Protect and Enhance Air and Water Quality and Natural Systems:
Sustaining the values and functions of our tree canopies, forests, rivers, streams, wetlands and oceans is an essential part of our strategy. It can simultaneously reduce emissions, sequester carbon and strengthen our ability to adapt to a changing climate.

6. Save Money:
Using less energy in our homes, buildings and vehicles means lower energy and transportation costs for residents, business and government. Likewise, home-grown food saves on grocery bills. The savings from reduced health-care costs of a healthy, active community are potentially most significant of all.

III. Our Goal – *Think Globally, Act Locally*

Globally - In its Fourth Assessment report in 2007, the Intergovernmental Panel on Climate Change (IPCC) calculated that developed countries need to reduce their greenhouse gas emissions to 25-40% below 1990 levels by 2020 and to 80-95% below 1990 levels by 2050 in order to keep global atmospheric greenhouse gas concentrations below 450 ppm of CO2e. Subsequent studies indicate that keeping atmospheric CO2e below 350 ppm may be necessary to avoid significant climate impacts, which would require even more significant decreases in GHG emissions.

In 1994, the United Nations Framework Convention on Climate Change (UNFCCC) was formed. The Convention promotes cooperation, information sharing, implementation of national strategies for reducing GHG emissions and adapting to climate change. Recently, participating countries began to submit pledges under the Copenhagen Accord (December 18, 2009) to limit global warming to less than two degrees Celsius (3.6°F) above the average global surface temperatures in the preindustrial era. As of December 2010, 114 countries have submitted pledges, including the United States. In January of 2010, the US administration announced a target to reduce emissions in the range of 17 percent below 2005 levels by 2020, 42 percent below 2005 levels by 2030, and 83 percent below 2005 levels by 2050. Congress has not yet adopted these targets. Unlike the Kyoto Protocol, the Copenhagen Accord is not legally binding.

Table2: Sample of Pledges Under the Copenhagen Accord[3]

Developed Countries	Quantified economy-wide emissions targets for 2020	Base Year
Australia	5 to 25%	2000
Canada	17%	2005
European Union	20% to 30%	1990
Japan	25%	1990
Russian Federation	15 to 25%	1990
United States	17%	2005
Developing Countries	**Pledge**	
China	40 to 45% emission intensity reduction	2005
India	20 to 25% emission intensity reduction	2005

Source: http://www.pewclimate.org

Unfortunately, a UN report completed in 2010 found that even if all the pledges were met, it is likely that further reductions will be needed to reach the stated goal.[4]

At the State level - More than two years ago, Governor Gregoire committed Washington State as a whole to reducing statewide greenhouse gas emissions to 50% below 1990 levels by 2050.[5] Later in 2007, the Legislature codified these goals. The Department of Ecology (Ecology) is charged with monitoring the state's progress (RCW 70.235.020). Although, according to Ecology, policies currently being implemented will limit Washington's emissions growth to 3 percent between now and 2020; the state is not on track to meet its statutory reduction limit for 2020 or beyond. In a February 7, 2011 News Release, Ecology Director Ted Sturdevant said: "Washington state agencies have taken significant actions to reduce their own energy use and carbon emissions; to work with businesses and others on carbon reductions; to develop a program for reporting greenhouse gas emissions; and to implement the federal program to regulate greenhouse gas emissions

[3] "These numbers target 450ppm for GHG, not the 350 required. Furthermore, many signatories included the following proviso "provided that other developed countries commit themselves to comparable emission reductions and that developing countries contribute adequately according to their responsibilities and respective capabilities."

[4] http://www.climatecentral.org/blog/emissions-reduction-pledges-to-date-fall-far-short-of-copenhagen-accor/

[5] http://www.ecy.wa.gov/climatechange/washington.htm

under the federal Clean Air Act." "However, the actions that nations and states are taking now aren't enough to forestall the impacts of climate change. So we in Washington are building a plan to help prepare our coastal communities and vital infrastructure, ensure water supply in water-short areas, and provide emergency relief for people in prolonged heat waves. It will take all of us working together to be ready for the changes that already are affecting our state."

In our Community - Jefferson County Commissioners and the Port Townsend City Council have committed to the following goals of reducing our estimated 1990 community-wide greenhouse gas emissions (an estimated 536,000 ton CO2e) as follows:[6]

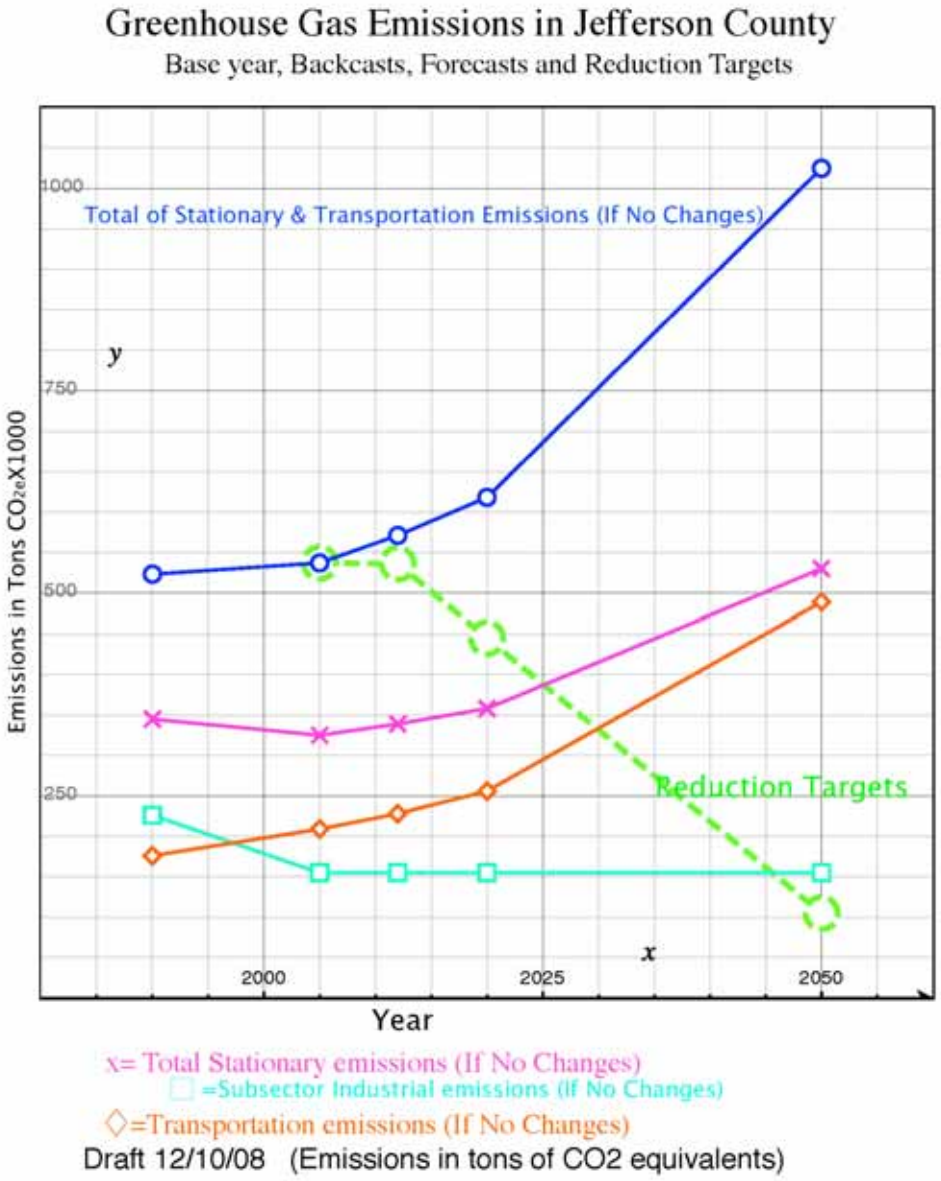
Table 3 - Baseline Conditions and Emissions Targets

Year	Percent in relation to 1990 levels	Emissions in Tons of CO2eq
1990 (backcast)	100%	522,868
2005 (data base)	3% higher	536,713
2012 (target)	3% higher	536,713
2020 (target)	15% lower	445,737
2030 (target)	37% lower	332,016
2050 (goal)	80% lower	104,574

In developing the interim year 2012, 2020, and 2030 targets, the CAC began with calculated 2005 emissions, and then estimated a "backcast" to 1990 and business as usual forecasts. The emission forecast to the target year of 2050[7] represents a "business-as-usual" prediction of how GHG emissions would grow in the absence of GHG policy, including any existing or future legislation at the state or federal level.

The following figure illustrates how the business-as-usual emissions are estimated to increase, thus widening the emissions reductions needed by 2050.

[6] Resolutions 44-07 and 07-022 respectively.
[7] Adopted January 12, 2009 (City Resolution No 00092 County Resolution No 069).



CAC used Clean Air Climate Protection Software, created by ICLEI Local Governments for Sustainability, which allows for computer-calculated backcasting and forecasting using census and estimated population growth data. (For additional detail, please see Appendix C. Worksheets – C02e Forecasts and Targets)
Interim years 2012, 2020 and 2030 were selected for showing emissions from "business as usual" and for interim emission level targets with the rational that this would allow the community adequate time to implement some measures to reduce emissions as we work towards our long-term goal for 2050.

The interim target for 2012 is the same level as our baseline for 2005. It is hoped that due to increasing efforts already underway and new measures planned in the community and by local, state and federal governments, our emissions may have begun to level off and will return to the 2005 baseline by the year 2012 in spite of continued growth in the population.

After that date, the target follows a straight-line decline in emissions towards our long-term goal, resulting in a target of 17% below 1990 emissions by 2020, and a 38% reduction by 2030.

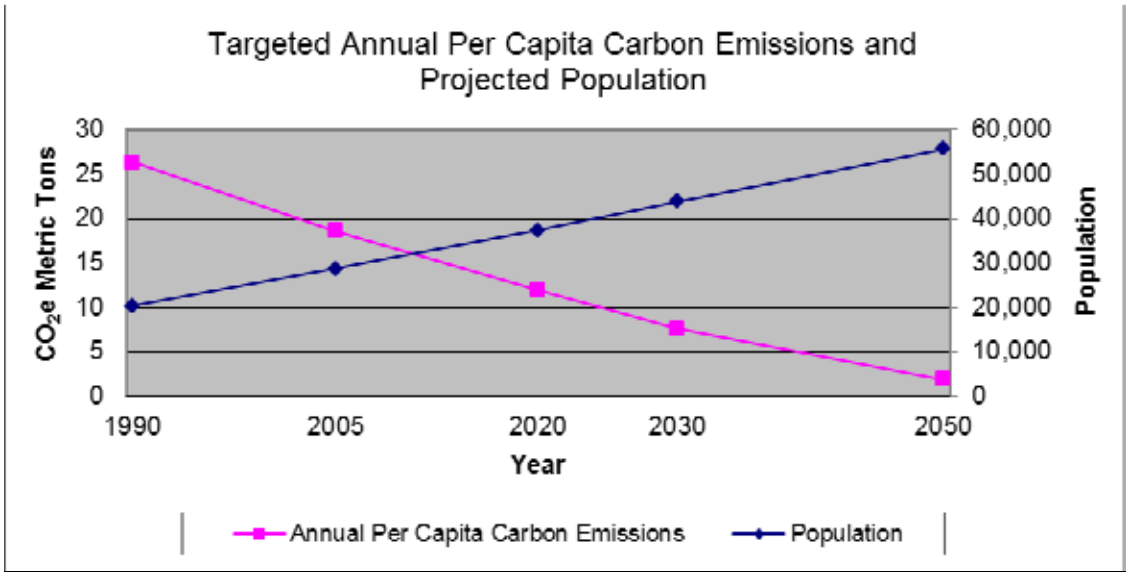
Putting the goals into perspective – how can individuals help?

These targets are difficult to comprehend. What does it mean? What will it take to achieve these targets?

To put the overall targets into perspective, the CAC estimated the per person reductions that would be needed to meet the interim targets. (To be clear, the action plan focuses on actions that the City and County can carry out on their own operations. It encourages, but does not require, individuals to take action to reduce GHG emissions.)

The goal is to reduce emissions despite population growth. Thus, if we were proposing to reach our goal by asking each individual to conserve energy, it would become increasingly more difficult as the population grows.

Figure 4. Annual Per Capita Emissions Targets Compared to Population Growth Over Time



If each of us were willing to reduce our carbon foot print, what would it take to reach the adopted targets?

It may seem impossible to reduce our consumption of fossil fuels and electricity enough for us to attain our goal by 2050. We should recall that it will be easier to do so as new technologies and efficiencies are employed during the next several decades. An example of this is shown in the Climate Action Plan for Portland/Multnomah County. They have estimated that a mere 63% reduction in vehicle miles traveled per capita will result in an 80% reduction in the total CO2 emissions from the transportation sector between 2005 and 2050, in spite of a 94% increase in population. Similarly, they project that they will require an only 68% reduction in per capital electricity use.

Fortunately, there are a myriad of ways to reduce emissions. Portland Climate Action Now provides a number of ideas for reducing your carbon footprint www.portlandclimate action.org (also see Appendix F) for example, eating locally grown foods, switching to an electric mower, etc. Each of us will choose a different combination of ways to reduce energy consumption.

Action must be taken at all levels if we are to succeed.

The Process of change:

Adopting new policies and changing behaviors will take time. The activities in our plan will be implemented gradually and their effect will at first be modest. Over time the effects will increase as ideas spread, additional policies are adopted and the benefits of our actions become more apparent. Our progress will not likely be in a straight line, but rather in a roughly "S" shaped curve with little effect at first while we get started, increasing success as actions are adopted, technologies developed and policies accepted, and then only gradual change again when we finally tackle the most difficult sources of emissions last.

IV. Summary of Inventory of Energy Usage and Associated Greenhouse Gas Emissions

In order to set targets and develop strategies to curb our emissions, an inventory of energy usage and greenhouse gas (GHG) emissions was performed by the Climate Protection Task Force, and adopted by the Jefferson County Board of County Commissioners and the Port Townsend City Council (January 12, 2009). The following is a brief summary. (A complete copy is on file at both the City and County planning departments).

Data was gathered for the Jefferson County community as a whole and for the County and City government operations as subsets of the whole. Energy use and emissions were grouped into 3 different Sectors: Stationary (buildings and equipment), Transportation (on-road mobile sources), and Solid Waste. The Clean Air and Climate Protection (CACP) software provided by ICLEI-Local Governments for Sustainability converted the energy-usage data into units of MMBtu and calculated CO_2e (equivalents of CO_2)released in tons (one ton equals 2,000 pounds).

Table 4. Community-Wide and Government Subset Emissions 2005

Sector or Subsector	Community-Wide[1] (tons CO_2e)	Community-Wide[1] (% CO_2e)	Jefferson County Operations (tons CO_2e)	Port Townsend City Operations (tons CO_2e)
Stationary Energy	**325,133**	**61%**	**1,443**	**1,609**
Residential	121,605	23%		
Commercial	49,017	9%	1,443	1,609
Industrial	154,511	29%		
Transportation	**209,079**	**39%**	**1,886**	**533**
Solid Waste	**2,502**	**<1%**	**35**	
Water, PUD#1[8]			**364**	
Total	**536,714**	**100%**	**3,728**	**2,142**

[8] The inventory included electricity consumed by Jefferson Public Utility District No. 1 to provide water service to County residents.

[1] Community-wide includes County and City operations. [2] Data obtained from CACP Model output.

How do we compare with others?

Table 5. 2005 Carbon Dioxide Annual Emissions per capita

Area	Metric tons of CO_2 per capita
United States	19.3
Canada	17.3
Jefferson County	19.4
Washington State	16.4
Germany	9.8
Sweden	5.7
China	4.3
India, Vietnam, Peru	<1.5

Source: Washington State and Jefferson County numbers from Backcasting and Forecasting of GHG Emissions and Proposed Targets for Reductions in Jefferson County **(available on the Jefferson County website** http://www.co.jefferson.wa.us/commdevelopment/ClimateChange.htm); remainder taken from: Wikipedia which provides a list of countries by carbon dioxide emissions per capita from 1990 through 2007. All data were calculated by the US Department of Energy's Carbon Dioxide Information Analysis Center (CDIAC), mostly based on data collected from country agencies by the United Nations Statistics Division.

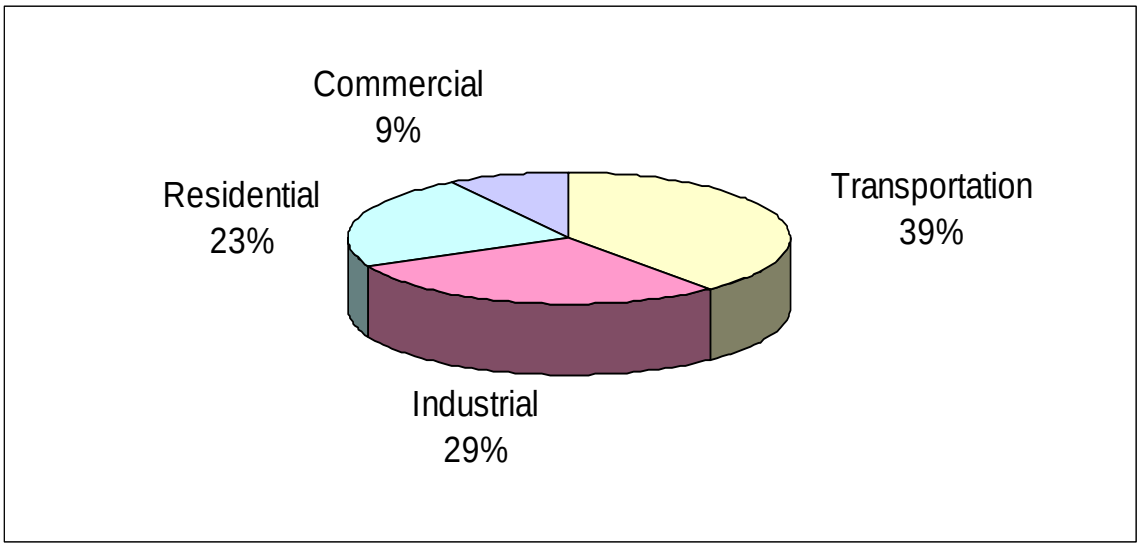
Why would per capita emissions be higher in Jefferson County than elsewhere in Washington State? To answer this we turn to the source of the emissions -

What is the source of these emissions?

As depicted in the Community-Wide Summary below, the transportation sector is the largest emitter of GHG, representing 39% of community-wide emissions. Vehicle miles traveled (VMT) for Jefferson County in 2005 were 1.3 times greater than the Washington State average. This helps explain why the total CO_2e emissions of 19.4 tons per capita (Table 5 above) in Jefferson County were 1.2 times greater than the value for the entire state.

Stationary Sector emissions account for 61% of total GHG emissions community-wide, with approximately one-half coming from electricity usage. Stationary sources refer to emissions generated from fixed places or objects, such as buildings and machinery. Stationary emissions include electricity, fuel oil, propane, and wood used in the Residential, Commercial, and Industrial Sectors

Figure 5. ***Community-Wide CO_2 Emissions in 2005***



Emissions are for Transportation Sector and for Residential, Commercial and Industrial Subsectors of the Stationary Energy Sector. Emissions from the Solid Waste Sector were too small to include. Data obtained from CACP Model output.

The inventory identified a very different profile for the City of Port Townsend when compared to the County. Thus, the two may have different priorities when it comes to reduction strategies.

Figure 6. ***Port Townsend City Operations - CO_2e Emissions in 2005***

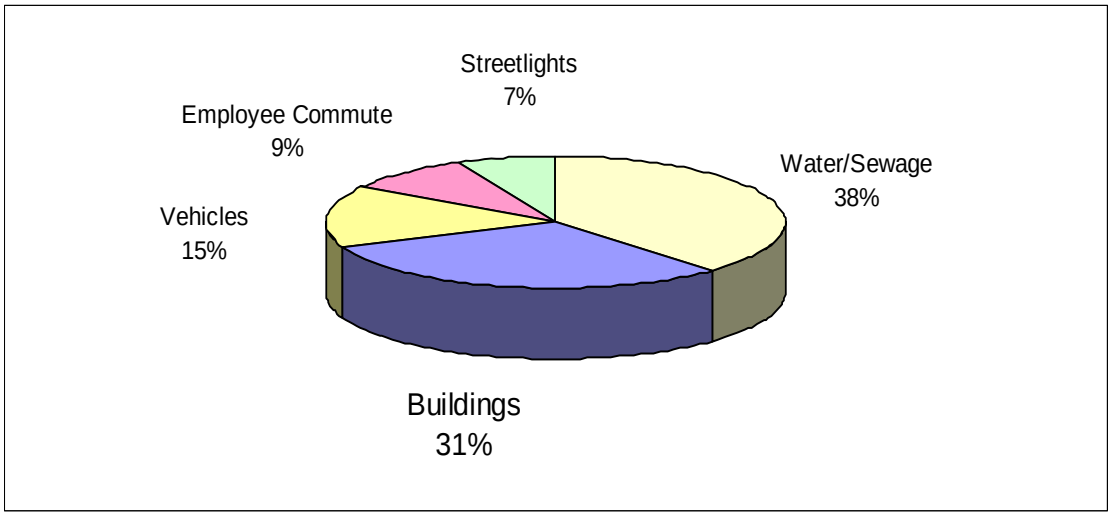
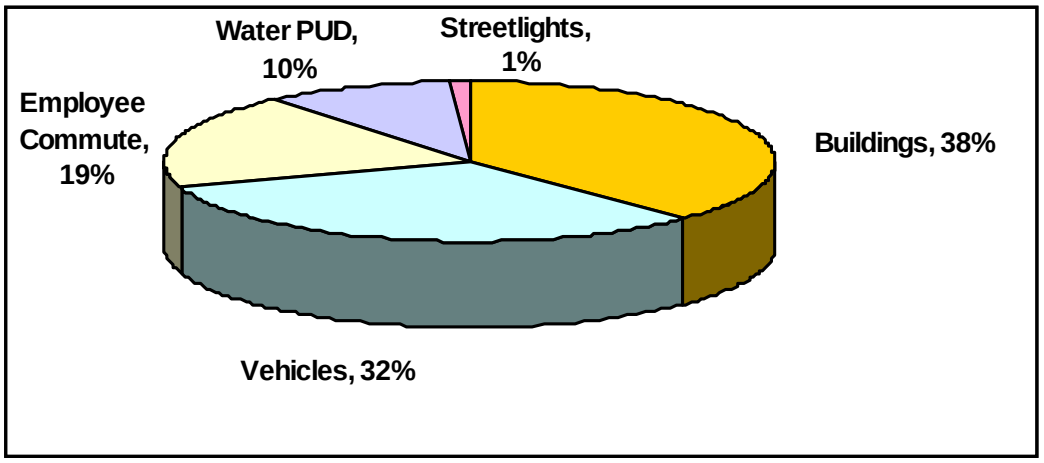


Figure 7. ***Jefferson County Operations – CO_2e Emissions in 2005***



Source: CACP Model output

It should be noted that at the time of the inventory, Puget Sound Energy (PSE) was the sole electric purveyor to Jefferson County. PSE's fuel mix for electricity delivered in 2010 consisted of: 41% Hydroelectric, 36% Coal, 20% Natural Gas, 1% Nuclear, and 2% Other (Source of data: PSE). The Jefferson County Public Utility District (PUD) is in the process of purchasing the local electric infrastructure from PSE. The PUD has a contract to buy power from the Bonneville Power Administration; BPA power is approximately 85 percent hydro and 15 percent nuclear. But while the change to BPA-supplied power will significantly boost our efforts to reduce carbon emissions, it does not diminish the need to conserve energy and look to green technologies as the local demand for power increases over time.

V. The Plan: Objectives and Actions

The goal of reducing greenhouse gas emissions in Port Townsend and Jefferson County by 80 percent (compared to 1990 levels) by 2050 will be difficult, if not impossible, using technologies that are currently available or expected to be available in the near future. Nonetheless, the actions outlined here offer ways to begin reducing greenhouse gases today

The actions contained in this plan provide a menu of recommended measures for the City and the County – the list is not intended to be limiting. We fully expect and hope that additional measures will be identified and implemented.

In this document:

"Plan" refers to the entire climate action effort.

"Goals" are the broad overall carbon emissions reductions - 80 percent by 2050 and 17 percent by 2020.

"Objectives" are specific measurable outcomes. Objectives have been identified by sector. If we are successful in achieving each of the objectives, we will meet our 2020 interim goal.

"Actions" are the specific steps that will be strategically implemented to meet the 2020 objectives.

This section is divided into two main categories:

Government actions - This section recommends actions to reduce emissions from City and County operations.

Community-wide actions - This section recommends education and outreach and the formation of partnerships. Several recommended voluntary measures are included. Our success requires participation at all levels.

The municipal and community categories are explored independently for several reasons:

- As documented in the inventory, a much finer resolution is possible for municipal operations (energy use by facility, etc.) than for the community as a whole.

- When attention is turned to the question of where emissions reductions are possible, there will be a different set of options for municipal facilities than for private sector emissions. For example, a county might opt to implement a procurement policy requiring that certain vehicles in the county fleet be replaced by hybrid vehicles, whereas in the private sector an education program about hybrids or an incentive program would be appropriate.
- Actions for government operations are under the operational or financial control of City/County government; while community-wide efforts are voluntary and incumbent upon all.

A. Government Leading by Example

Together, the City of Port Townsend and Jefferson County government account for less than one percent of the total emissions in our county. Despite their limited emissions, governments have an essential obligation to do their part and to lead by example. Just as the City and County must provide enabling policies, technical assistance, education, incentives and other support to help the community achieve the objectives of this Climate Action Plan, the City and County must also lead the way in their own operations.

If we can demonstrate success, others may follow suit. Most of the actions listed here can also be taken by other public entities in the county, like the Public Utility District, the Port of Port Townsend, Jefferson Health Care, the school districts, the fire districts, Jefferson Transit and Fort Worden State Park. Representatives from many of these entities participated in the development of this Climate Action Plan. Furthermore, it is hoped that these different public entities will collaborate in making their operations more energy efficient by sharing resources and funding opportunities. One example of this is the new Resource Conservation Manager partly funded by grants from PSE and WSU and jointly hired by the City, the County, Fort Worden State Park, Chimacum and Port Townsend School Districts to reduce energy consumption.

Most of the actions listed here are also applicable to private businesses. Hopefully citizens of our community will become increasingly motivated to take actions in their personal lives as well as in their places of work to reduce greenhouse gas emissions. Increasingly, tourists and other consumers have demonstrated support for those businesses that make efforts to demonstrate their concerns about climate change.

Table 6. 2020 Objectives for City and County Operations – An 18% decrease in CO2e emissions from 2005 levels.
(Greenhouse gas emissions in tons of CO2e)

	Stationary Sources	Trans-portation	Solid Waste	Water (& Sewer in UGAs)	Total	Percent of 1990
County	1,182	1,545	29	298	3,055	115%
City	661	437	--	657	1,755	115%

An 18% decrease from the high emissions mark in 2005 is still 15% higher than the estimated 1990 emissions levels. and. As shown in Figure 8 below, this rate of reduction keeps us on track for making the needed reductions between 2020 and 2050. Once again, the reduction targets have been arbitrarily assigned to each category identified in the Inventory, realizing that one size does not fit all and that some sources of emissions may be more cost-effective to address than others. The actions listed in this plan further demonstrate some of these differences.

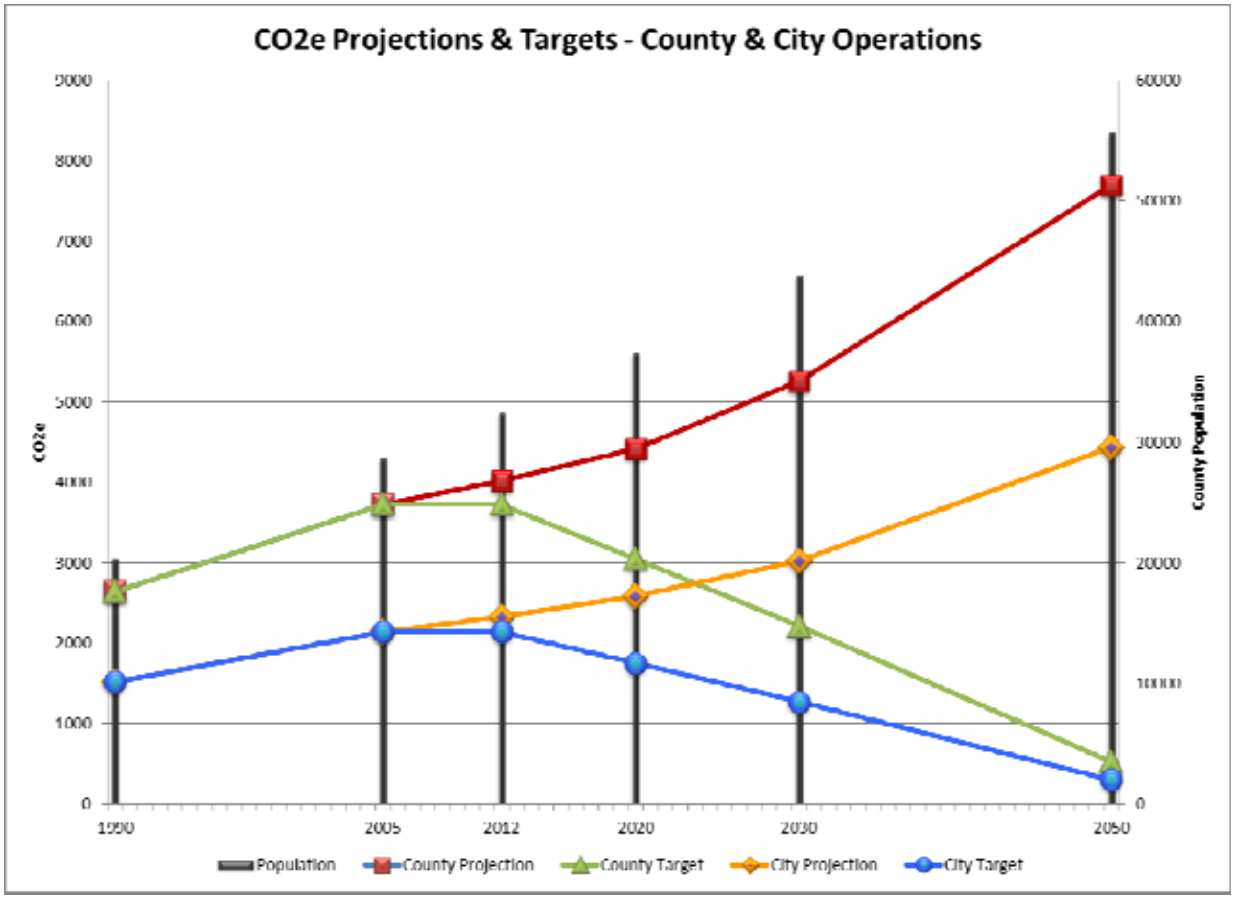


Figure 8 CO2e Projections and Targets for City & County Operations contrasted against projected population growth.

Actions listed in the following tables were derived from the CAC, citizen workshops and action plans from other communities, especially those in Portland and Multnomah County. They have been vetted by the Resource Conservation Manager (RCM) and City and County Department Heads. Existing measures currently being implemented by the City and County have been included. Actions are listed in the order by which the magnitude of emissions reductions appeared to be the highest (Additional detail is provided in the Worksheets, Appendix F). For the rough analyses, the CAC relied on municipal information, research, and the assistance of ICLEI CAPPA Software.

It is anticipated that the City and County will take a phased approach to implementation based upon specific types of funding available, feasibility, and rate of return (See Appendix E. Potential Funding

Sources). City and County, with the assistance of the RCM, will need to develop an implementation strategy and, during budget proceedings, each will need to consider earmarking funds for implementation of recommended measures.

The RCM will play a significant role in implementing the government actions outlined below. However, it is important to keep the scope of the RCM clear. Due to the source of grant funding, the RCM does not currently handle transportation related energy costs. The first two years of the RCM scope also exclude assessment of costs associated with the pool and golf course. Though it is hoped the RCM's position will be more flexible in future, in the interim others will need to take the lead in these areas.

Tables 7 and 8, Actions for Reducing Emissions from City and County Government Operations, refer to worksheets found in Appendix E which provide additional detail.

Again, we emphasize, the actions contained in this plan are not intended to be limiting. We fully expect and hope that additional measures will be identified and implemented and that some of these may allow a further reduction in Government Sector emissions as well as those in the community at large.

City of Port Townsend

Government Operations

Worksheet	Action	Lead	Cost Recovery (Years)	CO2e (metric tons)
1.14	Purchase Green Energy from the grid	County Administrator	n/a	320
1.1	Build all new City & County buildings and develop sites to at least a LEED Silver criterion, or some other third-party certification of energy, water and waste conservation strategies (e.g., Architecture 2030)	City Council and Public Works	0.46	118
1.4	Conduct energy audits for each city or county owned buildings and infrastructure to develop and implement a plan to reduce energy consumption.	RCM	4.81	112
1.9	Convert Streetlights to LED	Public Works	2.49	43
1.13	Set goals for government departments and encourage all local businesses to become certified by the Green Business program of Jefferson County Health	RCM & County Env. Health		40
1.6	Install photovoltaic panels on existing buildings and for stand-alone lighting on streets and in parks, where appropriate and productive	RCM & Public Works	18.26	24
1.7	Establish a reduced idling policy for all government vehicles (heavy trucks)	Dept. Heads, Fleet Mgr & CAC	0.04	61
E-Cars	More efficient fleet and use of vehicles	Fleet Manager		40
1.5	Replace low-efficiency and high-emission vehicles with fuel-efficient & low-emission vehicles, like plug-in hybrids, as soon as possible	Fleet Managers & Dept. Heads	0.00	22
1.10	Create incentives for employees to reduce emissions in their daily commute	Dept. Heads	1.08	14
1.2	Implement vehicle trip reduction policy incorporating teleconferencing, telecommuting and alternative work schedules, where practical. Establish video and/or web conferencing capabilities in all major City and County facilities	Dept. Heads	4.09	14
1.3	Use electric vehicles or bicycles whenever possible (e.g., for meter reading and building inspection)	CAC & Fleet Manager	5.09	11
E-Meters	Replace all the water meters with remote read meters. About 400 of the total 5,000 are already remote read.	Public Works	1.44	9
1.7	Establish a reduced idling policy for all government vehicles (light vehicles)	Fleet Managers & Dept. Heads	0.03	4
1.12	Use wetland wastewater treatment as an alternative to traditional method in Urban Growth Areas where water quality can be preserved	Public Works	41.13	105
	Total Greenhouse Gas Emission Reduction (13% above 2020 goal)			**937**

Jefferson County Government Operations				
Worksheet	**Action**	**Lead**	**Cost Recovery (Years)**	**CO2e (metric tons)**
1.14	Purchase Green Energy from the grid	Building	n/a	967
1.4	Conduct energy audits for each city or county owned buildings and infrastructure to develop and implement a plan to reduce energy consumption.	RCM	6.42	188
1.13	Set goals for government departments and encourage all local businesses to become certified by the Green Business program of Jefferson County Health	RCM & County Env. Health	0.09	124
1.6	Install photovoltaic panels on existing buildings and for stand-alone lighting on streets and in parks, where appropriate and productive	RCM & Public Works	18.26	47
1.2	Implement vehicle trip reduction policy incorporating teleconferencing, telecommuting and alternative work schedules, where practical. Establish video and/or web conferencing capabilities in all major City and County facilities	Dept Heads	1.03	54
1.7	Establish a reduced idling policy for all government vehicles	Dept. Heads, Fleet Mgr & CAC	0.05	42
1.5	Replace low-efficiency and high-emission vehicles with fuel-efficient & low-emission vehicles, like plug-in hybrids, as soon as possible	Fleet Manager & Dept Heads	0.00	28
1.10	Create incentives for employees to reduce emissions in their daily commute	Dept Heads	1.95	23
1.3	Use electric vehicles or bicycles whenever possible (e.g., for meter reading and building inspection)	CAC & Fleet Manager	5.09	7
E-4day	Telecommute	Transport	0.00	6
E-Zenn	Electric Vehicles	Transport	0.00	4
	Total Greenhouse Gas Emission Reduction (9% above 2020 goal)			**1,490**

In developing this plan, we listed and analyzed the actions that we believed were within our current capabilities. They clearly do not yield reductions below 1990 by the year 2020, but they do put the government sector on track to meet the 2050 goal. Perhaps interim targets for all of Jefferson County should not be arbitrarily applied to every sector, every building, every business or every individual.
Instead, a reasoned approach needs to be applied that considers many factors.

A case in point is the Government Sector, which produces less than 1% of the emissions in our county. Some of these are generated by essential services like the fire departments, police and sheriff departments, and

water and sewer utilities, where emissions reductions may be very costly or unwise. It may be more cost effective to reduce emissions in the community rather than in the government sector. Limited resources may yield greater reductions in emissions in helping homeowners make private homes more energy efficient than in further retrofitting historic government buildings. Some government investments could significantly reduce overall community emissions for example, i. investments in promoting a shift in transportation mode away from motor vehicle use and toward increased walking, bicycling and transit use. This could be realized by implementing a number of strategies including: a significant investment for expanded Jefferson Transit service; greater investment in walking and biking facilities; a reduction, maximum cap, or elimination of motor vehicle parking requirements; and instituting parking fees in the commercial centers. These steps would result in a modest increase in Jefferson Transit's emissions but could yield an immense reduction in overall community emissions.

In spite of our limited abilities to reduce emissions further today, we must be prepared to take advantage of every opportunity to reduce our community-wide emissions in the near future. The Government Sector must play a leadership role in continuing to make this issue a high priority.

B. Encouraging Community-wide Reductions

While the City or County will have a major role in carrying out many of the following objectives and actions, successful implementation will require many diverse partners, including neighboring jurisdictions, non-profit organizations, business leaders, and neighborhood associations.

Education and Outreach. Educating ourselves about the need for change, the choices available to us, and the values that motivate us is a fundamental part of this plan. In order to reach our greenhouse gas emission reduction targets, Port Townsend & Jefferson County need informed and supportive employees and citizens. Government must promote a broad awareness of the predicted effects of climate change and provide the tools and incentives to reduce GHG emissions in homes, businesses, and workplaces.

Outreach efforts will require the formation of partnerships – both municipal partnerships and public-private partnerships. The City and County have already begun to reach out to other counties and cities, here on the Olympic Peninsula including Clallam County, Port Angeles and Sequim. Examples of government partnerships include:

- Peninsula Development District (PDD), through the PDD, local jurisdictions collaborated on a proposal and submitted a grant application (the DOT TIGER II – HUD Community Challenge Planning Grant) to develop and implement a regional strategy to reduce vehicle miles traveled and plan for a more sustainable transportation system across the North Olympic Peninsula. Though the DOT TIGER II grant was not funded, the PDD will continue to seek funding.

- Jefferson County Public Health Green Business Program – Staff from the Green Business Program have been coordinating with CAC staff and anticipate enhanced outreach under the existing Green Business program. This program is focused on assisting businesses in developing cost-effective "green" solutions to prevent waste and pollution, and to conserve valuable resources. The program provides free technical assistance to business aimed at improving existing practices. Green Business is a voluntary program that gives recognition to businesses that are working to reduce waste, recycle and otherwise conduct business in an environmentally conscience manner. http://www.jeffersoncountypublichealth.org/index.php?green-business

- The Jefferson County Public Utility District (PUD) is in the process of purchasing the local electric infrastructure from Puget Sound Energy (PSE). As a public utility, the PUD uses community input in making local energy policy decisions, and takes a lead role in encouraging energy conservation and the reduction of greenhouse gases through incentive and outreach efforts.

- ICLEI for Sustainable Governments is another example of a collaborative effort. With over 600 member jurisdictions, ICLEI provides software support for analyzing the effect of reduction activities, and other resources for ideas. ICLEI tools have proven invaluable in the development of the inventory and targets as well as evaluating measures to reduce emissions.

Other potential partners include:

- Local 2020 - a citizen-based organization dedicated to exploring opportunities in our local community to promote economic self-reliance, environmental stewardship, and community well-being. Local 2020 holds regular meetings offering opportunity for community members to voice their thoughts and get involved, maintains an informative website, and distributes a weekly email newsletter. http://www.L2020.org

- Jefferson CAN - Jefferson Climate Action Now is a website dedicated to giving individuals the tools needed to save energy, save money, and reduce their carbon (CO2) footprint – at home, at work, and on the road – with tools specific for Jefferson County, Washington.– www.JeffersonCAN.org

- Jefferson County HomeBuilders - As per Homebuilders website, "Built Green™ of Jefferson County's program is tailored to fit our unique community. The guidelines demonstrate that green building is not an "all or nothing" method of construction. Experienced builders will not be daunted by any of this. The checklist provides a baseline for determining minimum thresholds for cost-effective, resource-efficient homebuilding. Conservation of materials, energy efficiency and good site planning are among the items considered."
  http://www.jeffcobuiltgreen.com/

  - Other local government entities.

Objectives & Recommended Actions

The Climate Action Committee has identified several potential actions to be implemented as part of the campaign. All are voluntary. **With the exception of the First Priority Item - Task the CAC with Designing and Implementing the Community Outreach Campaign - they are not listed in any particular order nor are they all inclusive.** There are numerous measures that may be implemented to reduce emissions and new opportunities will arise as technology evolves.

Five Action Areas have been identified and are further outlined in the following tables:

- **Education and Outreach**
- **Buildings and Energy**
- **Urban Form and Transportation**
- **Consumption and Solid Waste**
- **Food & Agriculture**

Table 9. Objectives & Recommended Actions for Community-wide Emissions Reductions

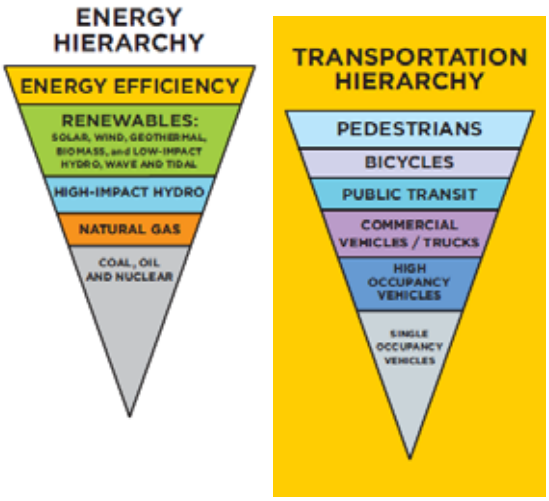
Education and Outreach	
Objective: Actively engage the public in reducing greenhouse gas emissions.	
1.	**Task the CAC with Designing and Implementing the Community Outreach Campaign.** The campaign should be designed to build on existing efforts, foster partnerships and develop new initiatives. The CAC committee membership may be modified to include representatives from the following: Jefferson County Builders Association – Built Green Jefferson County Public Health – Green Business Local 20/20 – JeffersonCAN WSU Jefferson County Extension RCM Research has identified a set of tools to promote behavior change: obtaining commitments, using prompts, utilizing social norms, designing effective communications, providing incentives, and

	removing external barriers. Depending on the audience and available funding, a variety of outreach materials may be produced (e.g., expanded websites, electronic newsletters, email messages, brochures, print ads, flyers, and postcards for direct mailings; newspaper articles; workshops, festivals or fairs, curriculum or lesson plans for grades K-12). **At a minimum, the CAC should:** • Partner with local media to publish articles and a regular newspaper column with information about sustainability and maintain a reference list and links on the website. (B-1.14) • Engage and inspire other public institutions and private businesses to incorporate climate protection action into their daily affairs. • Promote voluntary measures that reduce emissions – including measures recommended herein. • Partner with local educational institutions to develop and provide classes for clean energy, gardening, agriculture, sustainability skills. (B-1.15)

Buildings and Energy Encourage Community Action	
Objective. Community-wide emissions target of 445,737 tons of CO2eq by 2020. Currently, this sector accounts for 61% of overall emissions.	
1	Conservation – Encourage businesses and homeowners to reduce energy and water consumption (e.g., energy from outdoor lighting can be reduced by minimizing the number, using motion sensors, or installing high - efficiency bulbs, etc.)
2	Promote the use of drought-tolerant native plants as well as tolerant non-natives.
3	Increase use of energy assessments in homes and businesses by encouraging owners to conduct assessments periodically.
4	Encourage all local businesses, to become certified by the Green Business program of Jefferson County Health. (NOTE: This program incorporates many of the measures listed throughout this Climate Action Plan.) (A-1.13)

Lower water usage cuts energy consumption for water treatment and pumping.

5	Establish low - interest loan and energy assistance programs that reduce energy consumption (e.g., weatherization, appliances, lighting, heating, ventilating and air conditioning improvements, and renewable energy) for both existing and new housing.
6	Provide and/or promote incentives for carbon - reducing design & retrofit of buildings (e.g. passive solar, solar - thermal, solar - photovoltaic, heat pumps, wind, and other renewable - energy systems.) One example is the FIRST program.
Objective: 15% of total energy used within Jefferson County will be from renewable energy sources.	



These figures are taken from the City of Portland Multnomah County Climate Action Plan 2009 and serve as a reminder of the hierarchy of energy efficiency.

	Urban Form and Transportation Encourage Community Action
Objective: Community-wide emissions target of 445,737 tons of CO2eq by 2020. Currently, the transportation sector accounts for 39% of overall emissions.	
	Develop a program to promote ride-sharing, walking and biking; such as Whatcom County's Smart Trips program and the grant application developed by the Peninsula Development District (PDD) for the 2010 DOT TIGER II – HUD Community Challenge Planning Grant)
	Develop a commuter-friendly transit plan and increase service.
	Reduce transportation energy needs by promoting the purchase of local goods and services.
	Increase consumption of local food in facilities with central

	cafeterias; such as schools, hospital and housing.
	Provide strategically placed recharging stations and priority parking for electric vehicles.
	Increase non-motorized transportation infrastructure by fully implementing existing plans in PT. Build "complete streets" with facilities for pedestrians and bicycles.
	Explore barge shipping as a more efficient means of transporting freight.
	Support investments to provide high-performance broadband connectivity to every business and residence to enable widespread e-commerce, telecommuting and improved emergency response.

	Consumption and Solid Waste Encourage Community-wide
Objective: Community-wide emissions target of 445,737 tons of CO2eq by 2020. Currently, solid waste accounts for less than 1% of overall emissions. .	
	Reduce trash through incentives and other measures. (E.g. Require waste recycling especially for construction sites; increase pick - up services for reuse, upcycling and recycling; and encourage reduced use of packaging, especially for building materials.)
	Increase composting of all food and yard waste through a variety of measures (e.g. neighborhood composting centers, worm bins, etc.)
	Encourage relocation or deconstruction and recycling of structures to be demolished.
	Encourage adaptive reuse of buildings.

	Food & Agriculture Encourage Community-wide
Objective: Community-wide emissions target of 445,737 tons of CO2eq by 2020.	
	Promote sustainable local organic farming -

VI. For Further Consideration CAC Recommended Transportation and Land Use Policies

City Council and the Board of County Commissioners tasked the CAC with developing recommended amendments to the county and city codes and comprehensive plans to align with the Climate Action Plan strategies

City and County Code define distinct public participation processes for adoption of land use comprehensive plan amendments and development regulations, through which the suggested code and policy amendments specified below, have not yet been vetted. The City Council and Board of County Commissioners hereby direct their respective Planning & Development Services Departments to take the following steps:

- *Review the recommended strategies for consistency with adopted policies.*
- *If consistent and non-regulatory in nature, implement the strategy as resources allow.*
- *For all other strategies, further investigate the potential emissions reductions and feasibility of strategies and advance those with the greatest potential for success during the next cycle of Comprehensive Plan update/amendments to the development regulations.*

Land Use Policy recommendations are divided into three sections:

Rural Resource Management, to enhance the carbon sequestering potential of the County's forests, farms and open spaces

Urban Form and Transportation, to locate and move both people and goods in a carbon-efficient manner and provide regional tools for compact, livable communities of mixed uses.

A: Rural Resource Management
Maximizing Carbon Sequestration in Natural Resource Lands and Open Space

Much of Jefferson County's land is natural resource land, including forestry, agriculture, open space, conservation land, and critical areas such as wetlands and wildlife habitat. Our large land base, particularly that in forestry, provides a large amount of sequestration for carbon

emissions generated elsewhere. Jefferson County should maximize this "carbon sink" function of our natural resource lands by supporting and encouraging management practices that retain or improve storage.

Jefferson County should work with the forestry and agricultural communities to explore ways to turn net-carbon-emitting natural resource lands into carbon sinks, without jeopardizing the profitable industry. Options to be explored include, but are not limited to:

1. Explore economic incentives (e.g., Tax benefits or other subsidies) that may encourage landowners to increase carbon storage on their land as well as decrease the conversion out of farmland and forest use.

2. Fund demonstration projects and highlight best practices for forestry and agriculture.

3. Seek ways to cluster legally allowed development rights on smaller portions of natural resource lands and permanently conserve the carbon sequestration qualities of the remaining land (this may be accomplished on a working forest/farm if properly managed).

4. Identify key areas with high carbon sequestration rates and consider protection measures such as transfer of development rights, purchase of development rights/conservation easements.

5. Assess the potential for increasing carbon sequestration on County-owned forest lands.

6. Increase tree planting requirements or incentives for all public and private projects, including transportation projects that incorporate the use of trees. Tree lined corridors provide a carbon sponge and increase the attractiveness of the area.

7. Increase investment in local wood manufacturing businesses that are able to supply local products for wood markets.

8. Increase the amount of local wood products grown and manufactured locally and purchased by government and private sectors. Thus encouraging the economic viability of forest land in our area.

B: Urban Form and Transportation

There is no practical way to divorce land use and transportation. As our community develops, we must be mindful of where we build and how we build. Emissions from buildings account for more than half of the total community-wide GHG emissions in Jefferson County (Stationary emissions including buildings and machinery account for 61%). Traveling between destinations accounts for over half of the carbon emissions released in Washington State and 39% of Jefferson County community-wide emissions.

In general, concentrating development within urban growth areas (UGAs) will produce fewer harmful effects than development outside UGAs. For this reason, the County, in coordination with the City, must reemphasize the need for future development to occur within urban growth areas (UGA).

Jefferson County and the City of Port Townsend should collaborate to manage growth in accordance with the Growth Management Act (GMA) in a manner that:

- Adheres to principles of sustainability and reduction of carbon emissions
- Promotes more livable, pedestrian/bike-friendly, transit-oriented communities
- Preserves carbon sink potential of surrounding rural and natural resources areas.

Built Green and LEED are two national standards for energy efficiency and sustainability in new construction and remodeling. In practice, Built Green is used more in residential projects while LEED is used more in commercial projects. Both organizations offer comprehensive means to rate newly proposed subdivisions or other large-scale residential development: the Built Green Communities Checklist and LEED for Neighborhood Development.

The City and County should consider the following policy options:

1. Direct staff to research the benefits of implementing a city and county energy code for commercial and residential construction that exceeds current WA state code (e.g. greater insulation, passive solar, Passive House and small footprints) and for new buildings, site development and substantial remodels consider establishing a minimum compliance target (e.g., meet at least a LEED Silver or similar level for Built Green or another green building standard).

2. Within designated UGAs, encourage increased urban density through code revisions for items such as setbacks, height restrictions, cluster and mixed - use development.

3. Consider further reductions in off-street parking requirements in order to increase density and further promote transportation choices.

4. Increase non-motorized transportation infrastructure by completing NMTP plans for areas in the county.

VII. Monitoring & Adaptive Management

As with the Objectives and Actions in Section V, monitoring for the municipal and community categories are explored independently, primarily because a much finer resolution is possible for municipal operations (energy use by facility, etc.) than for the community as a whole.

Applying an adaptive management approach; we fully anticipate that the plan will be revised periodically as we monitor our progress, track changing conditions, and become aware of new information and technological advancements.

Government Emissions
For each action recommended for implementation, the City and County will work to refine, monitor, and report on measurable indicators of success. A number of tools and practices exist that can enable the City and County to track and report progress toward achieving the goals outlined in this plan, including monitoring the funds allocated to climate-protection goals. Tools can be as simple as spreadsheet tracking sheets developed to monitor estimated annual energy and water savings; waste diverted, and associated GHGs reduced.

Most of the actions recommended in Section A are under the purview of and will be monitored by the Resource Conservation Manager.

Those measures falling outside of the RCM's scope of work (e.g., measures to reduce fuel consumption by vehicles) will need to be monitored by the fleet manager or other designated staff.

Community-wide Emissions
Track community-wide aggregate emissions – The Climate Action Committee should be tasked with conducting a GHG emissions inventory approximately every three to five years. Measuring GHG emissions on a regular basis is important to verifying that the climate initiatives are effectively reducing emissions and that the appropriate scale of GHG reductions are being pursued.

Other indicators of success may include miles of bike lanes and number of households actively participating in composting and recycling programs.

GLOSSARY OF TERMS

Adaptation
Climate **adaptation** refers to the ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damage, to take advantage of opportunities, or to cope with the consequences. For example, relocating development from areas prone to flooding, adjusting to increased summer drought conditions). Compare to *mitigation*.

Backcasting
The process of estimating a previous GHG emission if a base year's emissions are known. This estimate is based primarily on the ratio of the population of the base year to the population at some previous time. It is assumed that this population ratio is proportional to the ratio of the base year emissions to that of the previous year being backcast. (For our reports, the base year for which we had good data was 2005. In backcasting to 1990 we used not only changes in population but included as well an estimate of how the Port Townsend Paper Corporation emissions had been reduced since then.)

Carbon footprint
Shorthand for an estimate of the total GHG emissions caused by, or associated with, a person, product, activity, or organization. Usually expressed in units of CO2e. An average. In 2007, an average American's carbon footprint was about 19 tons of CO2e per year. In the United Kingdom it was 9, while in China it was 5. (www.en.wikipedia.org/wiki/List_of_countries_by_carbon_dioxide_emissions_per_capita)

CAPPA Software
'Climate and Air Pollution Planning Assistant' is designed by ICLEI to help U.S. local governments explore, identify and analyze potential climate and air pollution emissions reduction opportunities. CAPPA allows users to compare the relative benefits of a wide variety of emissions reduction measures, and helps identify those most likely to be successful for a community based on its priorities and constraints. CAPPA includes a customizable and expandable library of more than 110 distinct emissions reduction strategies for local governments. Its calculation functions are based on real-world data from other U.S. communities and a variety of expert sources.

CO2
Carbon dioxide, a colorless, odorless gas consisting of one atom of carbon and two atoms of oxygen. CO2 is created during combustion of

carbon-based fuels and absorbed by most plants in photosynthesis. CO2 currently exists at a global average concentration of 385 parts per million by volume in Earth's atmosphere. (As reported by NOAA, the National Oceanic and Atmospheric Association, in January 2011. www.co2now.org)

CO2e
Carbon dioxide equivalent. A measure used to compare the effect of a greenhouse gas in terms of an equivalent amount of carbon dioxide.

Emission intensity reduction
Reduction of carbon emissions per Gross Domestic Product (GDP).

Fossil fuels
Fuels derived from geologically ancient vegetation that has been transformed into coal, petroleum and natural gas over long periods of time.

GHG
Greenhouse gas. Chiefly carbon dioxide (CO_2), Water, Methane (CH_4), Nitrous oxide (N_2O) Chlorofluorocarbons, all of which in the atmosphere absorb heat radiation coming from the earth and reradiate it back to the earth thus causing a net increase in the heat balance of the earth. This is actually different than how greenhouses work by isolating warm air inside the structure so that heat is not lost by convection.
See *CO2e*.

Gigaton
A unit of measure equal to one billion metric tons. A metric ton is approximately 2,205 pounds.

ICLEI
Also known as **"ICLEI - Local Governments for Sustainability"**, ICLEI is an association of over 1200 local government Members from 70 different countries representing more than 569,885,000 people who are committed to sustainable development. ICLEI provides technical consulting, training, and information services to build capacity, share knowledge, and support local government in the implementation of sustainable development at the local level. Our basic premise is that locally designed initiatives can provide an effective and cost-efficient way to achieve local, national, and global sustainability objectives. Founded in 1990 and initially called 'International Council for Local Environmental Initiatives' (ICLEI), its mission expanded and its name was changed in 2003. (www.iclei.org)

IPCC
Intergovernmental Panel on Climate Change. The IPCC is a scientific intergovernmental body set up by the World Meteorological Organization and by the United Nations Environment Programmed. Visit the IPCC website at www.ipcc.ch.

kW-h
Kilowatt-hour, when you use 1000 watts for 1 hour, that's a kilowatt-hour. For example, it is the amount of energy needed to light a 100 Watt light bulb for 10 hours.

LEED
Leadership in Energy and Environmental Design (LEED) is an ecology-oriented building certification program run under the auspices of the U.S. Green Building Council (USGBC). LEED concentrates its efforts on improving performance across five key areas of environmental and human health: energy efficiency, indoor environmental quality, materials selection, sustainable site development and water savings.

LEED has special rating systems that apply to all kinds of structures, including schools, retail and healthcare facilities. Rating systems are available for new construction and major renovations as well as existing buildings. There are 4 levels of energy efficiency of a building. They are in increasing order: Certified, Silver, Gold and Platinum.

Mitigation

Climate mitigation is any action taken to permanently eliminate or reduce the long-term risk and hazards of climate change to human life, property. Examples include making our vehicles and buildings more energy efficient, expanding carbon “sinks”, trading single-occupancy cars for mass transit, switching to renewable energy sources, etc.

Compare to *adaptation*.

MMBtu
1million Btu. The British thermal unit (BTU or Btu) is a standard unit of measurement used to denote both the amount of heat energy in fuels and the ability of appliances and air conditioning systems to produce heating or cooling... It is approximately the amount of energy needed to heat 1 pint (which weighs 16 ounces) of water one degree Fahrenheit. One Btu is approximately one fourth of a food Calorie or 0.29 kW-h.

Resource Conservation Manager (RCM)
Individual dedicated to supporting an agency's resource conservation program, focusing on energy, water and solid waste. Five jurisdictions (Jefferson County, the City of Port Townsend, Port Townsend and Chimacum School Districts, Fort Worden State Park) hired a shared RCM in November 2010 on a three year contract to evaluate their resource usage and create facility action plans.

UGA
Urban Growth Area (UGAs) - areas designated by a county, with input from towns and cities, where urban development is to occur. The UGA is one of the major tools provided by the Growth Management Act for deciding where urban development should be encouraged and where the limits to that development should end. UGAs are areas where growth and higher densities are expected and supported by urban services. By directing growth into urban areas, natural resource lands – such as farms and forests – can be conserved and the rural character of rural lands can be maintained.

Appendix A

Joint Resolution County 44-07 City 07-022 to commit to addressing energy use and climate change

STATE OF WASHINGTON
County of Jefferson

JOINT RESOLUTION OF THE BOARD OF COUNTY COMMISSIONERS AND THE PORT TOWNSEND CITY COUNCIL TO COMMIT TO ADDRESSING ENERGY USE AND CLIMATE CHANGE/GLOBAL WARMING	}	44-07 **COUNTY RESOLUTION NO.** 07-022 **CITY RESOLUTION NO.**

The Board of County Commissioners of Jefferson County, Washington, and the City Council of Port Townsend, Washington, do jointly resolve as follows:

WHEREAS, numerous scientific organizations have determined that warming of the climate system is unequivocal as evidenced by increases in global average air and ocean temperatures, receding glaciers, decreasing snow pack, and coral bleaching, and by rising global mean sea levels, and further is potentially damaging to our environment and our economy; and

WHEREAS, energy consumption, specifically the burning of fossil fuels, e.g., coal, oil and gas, accounts for more than 80% of U.S. greenhouse gas emissions and that the U.S. produces nearly one quarter of all global emissions; and

WHEREAS the governments of Jefferson County and the City of Port Townsend can greatly influence the community's energy usage by exercising power over land use, transportation, building construction, waste management, and energy supply and management; and

WHEREAS governments can provide leadership by motivating and supporting citizens to improve energy use within businesses, port facilities, schools, churches, and homes; and

WHEREAS, Jefferson County and the City of Port Townsend recognize that the probable adverse effects on our citizens and infrastructure, and on our mountains, glaciers, forests, rivers, oceans, and other waterways from severe weather, rising temperatures, and rising sea levels due to climate change pose a risk to future economic viability; and

WHEREAS, actions taken to reduce greenhouse gas emissions and increase energy efficiency provide multiple local benefits by decreasing air pollution, creating jobs, reducing energy expenditures, saving money and reducing tax burdens for governments, businesses and citizens;

NOW THEREFORE, BE IT RESOLVED, that Jefferson County and the City of Port Townsend commit to collaborate in a program to reduce greenhouse gas emissions, specifically:

- Collaborating with the Climate Protection Campaign volunteers in conducting a comprehensive baseline inventory of local energy uses that contribute to greenhouse gas emissions, especially CO2, and making estimates of current emissions and forecasts of future emissions if current practices do not change,
- Appointing a joint City/County citizen's committee tasked with developing a Local Climate Action Plan. Specifically, the committee should provide recommendations for achieving a community-

wide standard of cutting greenhouse gas emissions to levels 80 percent lower than 1990 levels by 2050, with preliminary reduction targets to be set for earlier years,

- Implementing policies and measures to meet the emission reduction targets, and
- Monitoring and verifying results

This resolution shall become effective upon adoption by the Board of County Commissioners and the City of Port Townsend.

APPROVED AND SIGNED THIS 29th DAY OF MAY, 2007.

SEAL

JEFFERSON COUNTY
BOARD OF COMMISSIONERS

Phil Johnson, Chairman

David Sullivan, Member

John Austin, Member

ATTEST

Julie Matthes, Deputy Clerk of the Board

ND SIGNED THIS 9th DAY OF ~~MAY~~ July, 2007.

SEAL

CITY OF PORT TOWNSEND

Mark Welch, Mayor, Deputy

ATTEST

Pamela Kolacy, City Clerk

Appendix B

Joint Resolution of the Board of County Commissioners County Resolution No 02-08 and the Port Townsend City Council City Resolution No 08-001 Providing Composition Terms of Office and Procedural Rules for the Climate Action Committee

STATE OF WASHINGTON
County of Jefferson
City of Port Townsend

Joint Resolution of the	}	
Board of County Commissioners	}	**County Resolution No. 02-08**
And the Port Townsend City Council	}	**City Resolution No. 08-001**
Providing Composition, Terms of Office	}	
And Procedural Rules for the	}	
Climate Action Committee	}	

The Board of County Commissioners (BoCC) of Jefferson County, Washington and the City Council of Port Townsend, Washington do hereby jointly resolve as follows:

WHEREAS, Jefferson County and the City of Port Townsend have adopted a joint resolution (County 44-07; City 07-022) to commit to addressing energy use and climate change/global warming; and

WHEREAS, the above mentioned resolution establishes a joint County/City committee, herein called the Climate Action Committee (CAC), tasked with developing a local climate action plan; and

WHEREAS, the CAC is charged with providing recommendations for achieving a community-wide standard of cutting greenhouse gas emissions to levels 80% lower than 1990 levels by 2050, with preliminary reduction targets to be set for earlier years; and

WHEREAS, Jefferson County and the City of Port Townsend have committed to implementing policies and measures to meet the emission reduction targets and to monitoring and verifying results; and

WHEREAS, the CAC will bring together representatives from the city and county governments as well as from various sectors of our community that may provide input, as well as furthering community acceptance of the action plan; and

WHEREAS, Jefferson County and the City of Port Townsend value the natural resources of the region and recognize the importance of protecting and conserving said resources; and

WHEREAS, Jefferson County and the City of Port Townsend recognize that the probable adverse effects on our citizens and infrastructure, and on our mountains, glaciers, forests, rivers, oceans, and other waterways from severe weather, rising temperatures, and rising sea levels due to climate change pose a risk to future economic viability,

NOW THEREFORE, BE IT RESOLVED by the City Council of the City of Port Townsend and the Board of County Commissioners as follows:

Section 1. Establishment:
Formation of the Climate Action Committee is hereby specifically approved by the Port Townsend City Council and by the Board of County Commissioners of Jefferson County. The Committee shall follow applicable County and City rules pertaining to citizen advisory committees. The BoCC and City Council shall resolve any conflict that may arise between applicable rules.

Section 2. Purpose and Scope of Work

2.1 The Purpose of the Climate Action Committee (CAC) is to serve as an advisory group to the City of Port Townsend and Jefferson County on climate protection policies, programs and priorities. CAC will have no formal decision-making responsibilities.

2.2 The principal role of the CAC is to create a Climate Action Plan with specific focus on reducing energy use and greenhouse gas emissions.

2.3 The draft Climate Action Plan, to be approved by the City Council and the Board of County Commissioners, shall include, at a minimum:

2.3.1 Preliminary reduction targets for greenhouse gas emissions for years prior to
2.3.2 A set of strategies and relative priorities
2.3.3 Climate Action Plan implementation steps
2.3.4 A monitoring plan including quantifiable benchmarks
2.3.5. Recommended amendments to the county and city codes and comprehensive plans in accordance with the Climate Action Plan strategies.

2.4 Within six months of its formation, the CAC shall present, for approval by the Board of County Commissioners and City Council, a work plan outlining the proposed process, timelines, and resources required to prepare the Climate Action Plan. The timeline shall include each of the above listed elements of the plan (with preliminary recommendations to be submitted within one year), opportunities for public comment, periodic reports to the BoCC and City Council. The CAC shall work with County and City staff to develop a work plan that is cognizant of available financial and human resources.

2.5 The CAC will meet as needed to complete the scope of work outlined herein.

2.6 Participation as a CAC member will not and does not preclude one's later participation in any formal review or comment process before the City Council and/or Board of County Commissioners.

Section 3. Committee Members, Appointment and Confirmation Process, Terms & Vacancies

3.1 The Board of County Commissioners and the City Council shall each appoint an elected official as a representative to the CAC.

3.2 The Chair of the BoCC and the Mayor, in consultation with the County Administrator and City Manager, shall review letters of interest and recommend individuals to serve on the CAC, for appointment by the Council and Board of County Commissioners. The committee shall consist of no more than 15 members, representing a broad range of interests, which may include but is not limited to:

Board of County Commissioners
City Council
Education/Schools
Builders
Industry (e.g., Port/Marine Trades)
Port Townsend Paper Corporation
Business (e.g., Chamber, EDC)
Non-motorized transportation and/or Transit
Faith Based Organizations
Citizens at Large

3.3. Each person shall be deemed appointed and shall commence service after confirmation by the Board of County Commissioners and City Council or on the effective date of the previous member's resignation or on the expiration of the existing term for the position, as applicable.

Section 4. Officers – Election and Duties

4.1 The officers of the CAC shall consist of a Chair and a Vice Chairperson elected from the appointed members of the CAC and such other officers as the CAC may, by majority vote, approve and appoint.

4.2 The election of officers shall take place once each year on the occasion of the first meeting of each calendar year. The term of each officer shall run from that meeting until the first meeting of the subsequent calendar year.

4.3 In the event of a vacancy of the Chair, the Vice Chairperson would replace the Chair, and the Vice Chairperson replaced by vote of the members of the CAC.

4.4 The Chair will sign documents of the CAC and represent the committee before the Board of County Commissioners and City Council. The Chair is entitled to a single vote and shall retain the right and responsibility to participate in all deliberations and to vote on all matters. The Vice-Chair will act for the Chair in the Chair's absence.

Section 5. Meetings

5.1 The CAC shall meet as needed to complete the tasks outlined in Section 2 of this resolution and as may be further detailed in the approved work plan (Section 2.4). All meetings of the CAC shall be subject to all requirements of the Washington Open Public Meetings Act, and shall be open to the public, and shall be held at a public place.

5.2 All meeting dates and terms shall be posted consistent with adopted County and City policies. No meeting shall be scheduled without a t least 48 hours notice to the County and City Clerk's offices.

5.3 Except as modified by these rules of procedure, the CAC rules of procedure shall be guided by Robert's Rules of Order Newly Revised (10th Edition, Perseus Publishing), as the same may be amended or updated.

Section 6. Attendance and Alternates

6.1 To achieve its greatest effect the CAC will meet with the regular attendance of its members at most meetings; the CAC benefits greatly from full participation of each member.

6.2 In light of this, CAC members are expected and required to notify the chair of anticipated absence from any meeting of the CAC as far in advance of the meeting as possible. In the event that such notifications indicate that a quorum will not be present, the chair will ordinarily cancel or reschedule the meeting.

6.3 If a member is absent for three (3) consecutive regular meetings without excuse, or absent for thirty-five percent (35%) of all meetings (including committee meetings) in any six (6)-month period, the member's record of attendance may be forwarded to the Mayor and the Chair of the BoCC for consideration of removal in accordance with RCW 35.63.030.

6.4 If the CAC determines a need, it will recognize an appropriate designated alternate in the event of a member's absence. An "appropriately designated alternate" will have been recommended by the CAC and approved by the Board of County Commissioners and City Council. In the event of that member's absence, the alternate can exercise the voting privilege of the seat that he/she represents.

Section 7. Quorum - Voting

7.1 The decision making approach of the CAC will be by consensus. If consensus cannot be reached, the CAC will require a 2/3-majority vote. Any dissenting opinions will be recorded and included in the meeting summary.

7.2 A simple majority of the total of the members currently appointed to CAC shall constitute a quorum for the conduct of CAC business. No meeting shall occur unless a majority plus one of the appointed CAC members are present. Voting is by voice vote, except where these rules or the CAC itself may require a roll call vote.

Section 8. Conflicts of Interest

8.1 Conflicts of interest will rarely arise as a matter of concern for CAC members; however, in the discussion or recommendation of funding proposals for CAC projects it is possible that a conflict or the appearance of a conflict may arise. When a conflict or appearance of conflict may arise, applicable state, county, and city policies regarding Appearance of Fairness shall apply.

Section 9. Order of Business Meeting Procedure

9.1 Call to order, roll call and determination of quorum.

9.2 Agenda items

- 9.2.1 Minutes of previous meeting
- 9.2.2 Old business
- 9.2.3 New business
- 9.2.4 Discussions of next meeting date and agenda
- 9.2.5 General Announcements
- 9.2.6 Community Member Comments
- 9.2.7 Adjournment

9.3 The chair may alter the regular order of business in preparing the agenda when special circumstances and the efficient use of time dictate.

9.4 All meetings of the CAC shall be conducted pursuant to the Open Public Meetings Act, as codified in RCW 42.30, as the same may be amended or updated.

Section 10. Minutes and Records

10.1 Findings and recommendations, etc., of the CAC are prepared at the direction of the chair. Copies will be provided to all CAC members in a timely manner for review and approval at the next regular CAC meeting.

10.2 The CAC shall provide for the taking of minutes and maintaining the records of all meetings. Committee minutes shall be filed with the County and City Clerk's offices within 10 days of approval.

Section 11. Term of Committee - Sunset Provision
CAC shall formally end within three years from the date of adoption of this Resolution unless otherwise extended by ordinance or resolution or by written permission from the County Director of the Department of Community Development.

Section 12. Communications to the Board of County Commissioners and City Council
The Committee shall report to the Board of County Commissioners and Port Townsend City Council at least semi-annually.

Section 13: Compensation and Reimbursement of Expenses
Members of CAC shall serve without compensation.

Section 14 Amending Rules

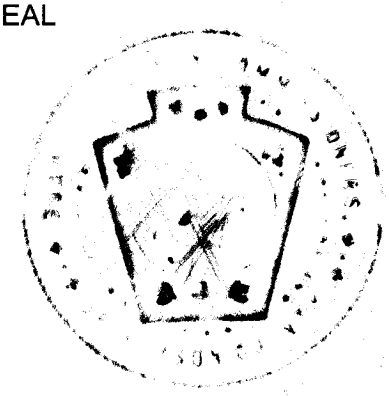
14.1 CAC may recommend amendments to these rules at any meeting by a vote of the majority of the entire membership, provided five (5) days notice has been given to each CAC member.

14.2 CAC is a joint county/city committee and thus the two government entities agree to maintain consistency by processing any amendments hereto as "Joint Resolutions" requiring approval by both entities.

This resolution shall become effective upon adoption by the Board of County Commissioners and the City of Port Townsend.

APPROVED AND SIGNED THIS 7th day of January, 2008.

SEAL



JEFFERSON COUNTY
BOARD OF COMMISSIONERS

Phil Johnson, Chairman

David Sullivan, Member

John Austin, Member

Attest:

Julie Matthes, CMC
Deputy Clerk of the Board

Approved as to Form:
David Alvarez 1/30/08
David Alvarez
Deputy Civil Prosecuting Attorney

APPROVED AND SIGNED THIS 7th day of January, 2008.

CITY OF PORT TOWNSEND

Michelle Sandoval, Mayor

Attest:

Pamela Kolacy, MMC
City Clerk

Approved as to form

John P. Watts
City Attorney

Appendix C.
CO2e Forecasts and Targets

Greenhouse Gas Emissions in tons of CO2e							
		Backcast	Base Year	Forecasts, assuming current practices			
Category	**Sectors/Subsector**	**1990**	**2005**	**2012**	**2020**	**2030**	**2050**
Community	Stationary Energy						
	Residential	86827	121605	131487	143936	168974	261127
	Commercial	32902	49017	53868	60012	74893	114641
	Industrial	225665	154511	154511	154511	154511	154511
	Stationary Subtotal	**345394**	**325133**	**339866**	**358459**	**398378**	**530279**
	Rate of Change from previous milestone			1.05	1.05	1.11	1.33
	Transportation	175697	209079	228455	256018	319449	488989
	Rate of Change from previous milestone			1.09	1.12	1.25	1.53
	Solid Waste	1777	2502	2831	3261	3823	5852
	Rate of Change from previous milestone			1.13	1.15	1.17	1.53
	Community Total	**522868**	**536714**	**571154**	**617738**	**721650**	**1025120**
	Rate of Change from previous milestone			1.06	1.08	1.17	1.42
Jefferson County Gov't	Stationary Energy	1025	1443	1508	1591	1768	2353
	Transportation	1340	1886	2061	2309	2882	4411
	Solid Waste	25	35	40	46	53	82
	Water	259	364	412	474	556	851
	Jefferson County Total	**2648**	**3728**	**4021**	**4420**	**5259**	**7698**
City of Port Townsend	Stationary Energy	573	807	844	890	989	1316
	Transportation	379	533	582	653	814	1247
	Water/Sewage	570	802	907	1045	1225	1876
	City of Port Townsend Total	**1522**	**2142**	**2333**	**2588**	**3029**	**4439**
Population Data/Estimates		20406	28724	32500	37427	43858	55656

Notes on calculation methods Draft 4-29-11

For both backcast and forecasts, the method was to apply the annual percentage change from the base year of 2005 for any given year in the Jefferson county population to the various inputs in the Clean Air and Climate Protection (CACP) software.

For each period, this annual percentage change was applied to the following inputs:

Residential: Electrical usage and number of households
Commercial: Electrical usage, propane usage, floor area, number of employees and number of establishments
Transportation: Gasoline and diesel usage
Waste: Total tons CO_{2e}

The annual percentage population changes used were:
1990 – 2005 2.31%
2005 – 2012 1.78%
2005 – 2020 1.78%
2005 – 2030 1.71%
2005 - 2050 1.90%

For the industrial backcast an estimate of the reduction of Port Townsend Paper from 1990 to 2005 of about 32% was used based on the information supplied by Kristin Marshall and Bruce McComas. Thereafter, the future emissions were assumed to be constant based on the assumption that the production of green house gas was not population dependent.

Stanley Willard

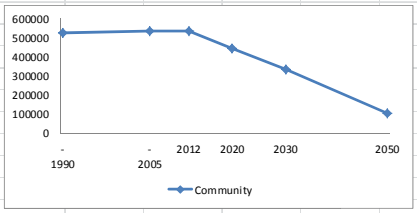
These calculations were made at the community level. The City and County Government Operations are a included in the Community total. The rate of change for a each subsector was applied to the known baseline inventory values for the City and County to determine the forecast their respective subsectors. Example: Transportation CO2e increased 9% in the community between 2005 and 2012. City Transportation in 2012 is calculated to be 582, reflecting a 9% increase over 2005.

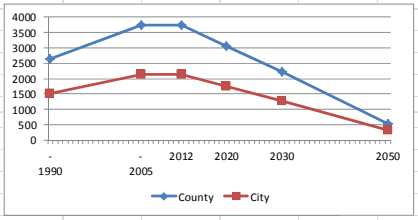
Deborah Stinson

Targets for Future GHG Emissions

Greenhouse Gas Emissions in tons of CO2e

Category	Sectors/Subsector	-1990	-2005	2012	2020	2030	2050
Community	Stationary Energy						
	Residential	86827	121605	121605	99660	72228	17365
	Commercial	32902	49017	49017	40083	28915	6580
	Industrial	225665	154511	154511	131484	102700	45133
	Stationary Subtotal	**345394**	**325133**	**325133**	**271227**	**203844**	**69079**
	Transportation	175697	209079	209079	172460	126687	35139
	Solid Waste	1777	2502	2502	2050	1485	355
	Grand Total	**522868**	**536714**	**536714**	**445737**	**332016**	**104574**
Percent from 1990			0.03	0.03	-0.15	-0.37	-0.80
Jefferson County Gov't	Stationary Energy	1025	1443	1443	1182	857	205
	Transportation	1340	1886	1886	1545	1120	268
	Solid Waste	25	35	35	29	21	5
	Water	259	364	364	298	216	52
	County Total	**2648**	**3728**	**3728**	**3055**	**2213**	**530**
Percent from 1990			0.41	0.41	0.15	-0.16	-0.80
Percent from prev benchmark			0.41	0.00	-0.18	-0.28	-0.76
City of Port Townsend	Stationary Energy	573	807	807	661	479	115
	Transportation	379	533	533	437	316	76
	Water/Sewage	570	802	802	657	476	114
	City Total	**1522**	**2142**	**2142**	**1755**	**1272**	**304**
Percent from 1990			0.41	0.41	0.15	-0.16	-0.80
Percent from prev benchmark			0.41	0.00	-0.18	-0.28	-0.76





Calculation Notes

This version of Targets treats each SubSector separately with 2050 being 20% of what was Backcast for that particular category. The Targets for 2020 and 2030 are simply proportioned from the reduction between 2012 and 2050 according to the number of years.

Calculations by Stanley Willard 5-23-11

Appendix D.

Potential Funding Sources

The Resource Conservation Manager (RCM) is tasked with identifying funding for energy savings related to government operations. Savings on energy costs can then be directed toward other measures.

In regards community-wide emissions, stay in touch with ICLEI - they have several recommendations for where to turn when municipal resources fall short such as:

- *Local utilities should invest in energy conservation and offer rebates and other incentives for residential and commercial energy consumption.*

- *Assistance through federal and state programs - ICLEI's program staff can help connect city and county liaisons to resources at the state and national level to provide opportunities for obtaining financial and technical assistance available to local governments.*

- *Energy service corporations (ESCOs) ESCOs finance energy improvements which are then paid back by the cost savings from reduced energy bills. These businesses encourage the implementation of energy-saving measures and may be valuable resources for technical assistance, financing, and program implementation.*

We'll need to get creative – for example, - seek out partnerships for Education and Outreach like the 'partnership with non-profit' model implemented by Sustainable Connections, Bellingham & Whatcom WA. Another option is to look into funding for community outreach specifically, or even local economic development grants for business outreach (as opposed to just energy/environmental funding sources.)

Source	What is eligible?	Contact/Website
Federal		
American Reinvestment and Recovery Act (ARRA) Loan Program	Low-interest loans (with an interest rate of 1%) to help pay for energy efficiency retrofits in municipal, residential, commercial, non-profit, and low-income housing facilities. Eligible projects include improving lighting systems, replacing streetlights or traffic signals LEDs, installing automated energy management systems/controls and building insulation, energy generation including renewable and combined heat and power projects, heating and air conditioning modifications and upgrading waste water treatment equipment. Swimming pools and golf courses are not eligible for funding under this program.	http://www.energy.ca.gov/efficiency/financing/index.html. http://www.recovery.wa.gov/
EPA		
The Federal Transportation Investment Generating Economic Recovery (TIGER) grant program was created by the American Investment and Recovery Act (ARRA) of 2009.		http://www.dot.gov/recovery/ost/.

DOT TIGER II – HUD Community Challenge Planning Grant)	VMT Reduction Strategy - to develop and implement a regional strategy to reduce vehicle miles traveled and plan for a more sustainable transportation system across the North Olympic Peninsula.	Grants and Budget Division HUD's Office of Sustainable Housing and Communities Phone: 202-402-7683 Zuleika Morales-Romero, Director zuleika.k.morales@hud.gov.
State Funding		
Washington State Department of General Administration (GA)	Retrofit government buildings for energy efficiency	
Local Government/Utility		
Electricity Provider	Incentives for conservation and renewable energy , rebate programs for lighting, insulation, LEDs, high-efficiency HVAC equipment, etc.	
Non-Governmental Organizations		
American Forests Global ReLeaf Grant Program	Forest conservation/ tree planting projects in urban and natural areas.	http://www.americanforests.org/global_releaf/.

Appendix E

Worksheets – Proposed Actions for Government Operations

Governments Leading by Example Action Area

Prioritized Actions for **City of Port Townsend**

As Generated by CAPPA and Refined by RCM

CO2e (metric tons)	Sector	Actions	Estimated Cost	Est Annual Savings	Payback Years	CAPPA Worksheet	**Notes -** Please see numbered worksheets for details
320	Building	1.14	$6,000	$0	n/a	Green Energy	Cost is annual - fixed as proposed
118	Building	1.1	$12,500	$27,230	0.46	Green Building	Library and Mountain View
112	Building	1.4	$124,500	$25,863	4.81	Retrofits	RCM Estimates merged with CAPPA
43	Building	1.9	$24,750	$9,937	2.49	LED Streetlight	Replace only, already optimized for number
40	Building	1.13	$800	$9,200		Green Business	Green Business in 8 Departments
24	Building	1.6	$100,000	$5,475	18.26	Solar PV	RCM estimates run through CAPPA
0	Building	1.8	$0	$0		Lighting Retrofits	Do not include, most already switched (pre inventory)
61	Transport	1.7	$1,000	$25,749	0.04	Truck Idling	1.7 combines truck & LV idling
40	Transport	E-Cars					Existing Electric Cars
22	Transport	1.5	$0	$103,500	0.00	Small Vehicles	Cost previously budgeted (replacement schedule)
14	Transport	1.10	$6,250	$5,806	1.08	Carpool	
14	Transport	1.2	$23,750	$5,806	4.09	Telecommute	
11	Transport	1.3	$30,000	$5,889	5.09	Electric Vehicles	
9	Transport	E-Meters	$5,000	$3,475	1.44		Existing Remote Water Meters
4	Transport	1.7	$1,000	$35,000	0.03	Light Vehicle Idling	1.7 combines truck & LV idling
105	Waste	1.12	$1,000,000	$24,315	41.13	Digester	Anaerobic Digester for Wastewater
937							

 # & Description of Potential Measure

1.1 Build all new City & County buildings and develop sites to at least a LEED Silver criterion, or some other third-party certification of energy, water and waste conservation strategies (e.g., Architecture 2030)

Current Estimate (impact/cost/benefit/barriers/measurability)

H $$ + L H

Implementation Scenario

Step:	Lead:	Timing
Mandate all contracts for new construction follow LEED Silver criterion.	City Council and Board of County Commissioners	3 months
Educate employees responsible for contract specifications on LEED Silver criteria.	Public Works	1 month
Inform all potential contract bidders of requirement for LEED Silver criteria	Public Works	on going
LEED Certified Inspector available	Public Works	on going

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- 100 % of new building projects built under LEED Silver Criteria
- Companies the city and county work with are qualified to build to criteria.

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Increase initial costs
- Port may have difficulty mandating on leased land

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Decreased energy costs and increased efficiency fewer GHG emissions.
- Government leading by example
- More comfortable work environment
- More contractors encouraged to learn Green Building skills

Costs

Upfront cost: Standard building cost + 1 Week – 1 Month FTE – Policy work

Annual cost: <1/10 FTE

Potential Funding Source: HUD grants

Anticipated Cost Savings

___27,230____ $/yr.

Estimate Emissions Reduction:

____118__tons/yr.

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):

GreenBuilding

Estimated 50,000 SQ FT

Assumed no additional cost at time of construction:
http://www.davislangdon.com/USA/Research/ResearchFinder/Cost-of-Green-in-New-York-City/

Briangol comments	ft2	
PT City will rebuild mountain view	28,000	
PT City library rebuilt	15,000	estimate

Looks like your estimate is reasonable

All estimates applied to City

 # & Description of Potential Measure

1.2 Implement vehicle trip reduction policy incorporating teleconferencing, telecommuting and alternative work schedules, where practical. Establish video and/or web conferencing capabilities in all major City and County facilities

Current Estimate (impact/cost/benefit/barriers/measurability)

H $ + M H

Implementation Scenario

Step:	Lead:	Timing
Each Dept conducts analysis of potential for telecommunication,	Dept Heads	6 months
Tech review for teleconferencing, telecommuting,	Dept Heads	3 months
Policy and Plan for teleconferencing, alterative work schedules,	Dept Heads	6 months
Implementation of Plan	Dept Heads	Overtime
Adaptive management	Dept Heads	Over time

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- 5% reduction per for the first 5 years
  - From travel and reduced use of office space

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Getting needed technology; Changing behavior and corporate culture; Community access to services

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Happy Employee, More efficient work place, Less work space needed , Traffic congestion reduction

Costs	**Anticipated Cost Savings**
Upfront cost: $5,000 + 3 mo FTE @ **Annual cost:** ¼- ½ FTE @ **Potential Funding Source:**	____5,806_____ $/yr. **Estimate Emissions Reduction:** ____14_____tons/yr.

CAC Recommendation

X Recommend by Consensus

□ Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

□ Recommend – with Strong Opposition
(Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

□ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):

Telecommute

From 2005 Inventories:
457 Employess (PT 105, JC 352)
229 potential telecommuters (50% total employees)
20% of the 229 telecommute any given day

1,482,508 Total commute miles
12.98 Avg Commute miles (miles/457)/250days))

City

From 2005 Inventories:
105 Employess
53 offered incentives (50% total employees)
20% of 53 telecommute any given day

295,094 Total commute miles
11.24 Avg Commute miles (miles/352)/250days)) 11.24168
5.62 Avg One-way commute 5.62

 # & Description of Potential Measure

1.3 Use electric vehicles or bicycles whenever possible (e.g., for meter reading and building inspection)

Current Estimate (impact/cost/benefit/barriers/measurability)

H $$ + L H

Implementation Scenario

Step:	Lead:	Timing
Research current fleet & document usage	CAC & Fleet Mgr	2 months
Develop plan	CAC & Fleet Mgr	3 months
Implement as feasible	Dept. Heads	TBD

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- Government fleets are pools that are assigned per use, some % cannot be replaced
- Look into intergovernmental pool to reserve when needed, force carpooling?
- Target 15% replacement with electric vehicles or bicycle
- Assumes electricity source is cleaner than source being replaced

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- How difficult would it be operate intergovernmental pool?
- Can we reach this goal with Neighborhood Electric Vehicles (NEV) only or will it have to wait for plug-in hybrids?
- ADA issues (cannot require someone to bicycle).
- Security issues (easy to steal).
- Counterproductive if electricity source is not cleaner than replaced source.

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Quieter, reduced maintenance, intergovernmental cooperation

Costs	**Anticipated Cost Savings**
Upfront cost: $30,000 (for 3)	_____5,889____ $/yr.
Annual cost: ¼ - ½ FTE @	**Estimate Emissions Reduction:**
Potential Funding Source:	_____11____tons/yr.

CAC Recommendation

X Recommend by Consensus

☐ Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

☐ Recommend – with Strong Opposition
(Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

☐ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):
Electric Vehicles
Assumptions:
Only 5 vehicles replaced (default), need fleet plans
$3/gal gas
$.0988/kWh until gov rate confirmed
12K/vmt per vehicle replaced @ 19.7 MPG avg
$10,000 cost per vehicle

Simple Payback: 7.4 years

City Only

Only 3 vehicles replaced, need fleet plans
$4/gal gas
$.10/kWh
12K/vmt per vehicle replaced @ 19.7 MPG avg
$10,000 cost per vehicle

 # & Description of Potential Measure

1.4 Conduct energy audits for each city or county owned buildings and infrastructure (e.g., street lights, water pumps, waste water treatment) to develop and implement a plan to reduce energy consumption. (E.g. smart thermostats, insulation, windows, high-efficiency infrastructure, air or ground source heat pumps, furnaces, variable-speed pumps and ultra-efficiency motors, illumination, etc.)

Current Estimate (impact/cost/benefit/barriers/measurability)

M $$ + L H

Implementation Scenario

Step:	Lead:	Timing
Issue a directive to form a team to implement	RCM	2 Mo
Follow thru with evaluations to track progress	RCM	On going

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- There will be energy auditors
- Sufficient money can be found to implement the plans

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Adequate funding

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- leading by example
- job creation/retention (auditors, implementers)

Costs

Upfront cost: $124,500

Annual cost: <1/10 FTE @

Potential Funding Source:

Anticipated Cost Savings

___25,863_____ $/yr.

Estimate Emissions Reduction:

___112_____tons/yr.

CAC Recommendation

X Recommend by Consensus

☐ Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

☐ Recommend – with Strong Opposition
(Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

☐ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):
Retrofits

Assumptions:

83,000 Total Sq Ft.

.10/kWh until verified
na /therm Nat Gas until $/gal propane verified
20% energy savings est (due to age of buildings)
$1.50/sq ft retrofit until local verify

Briangol (RCM) comments	**Tons Base CO2**	**Savings**	
~~Reduce energy use in county bldgs by 25% by 2020~~	~~687~~	~~171.75~~	
Reduce energy use in PT city bldgs by 25% by 2020	**445**	**111.25**	**83000 Sf**

My contract calls for 10% reduction by 2013, but I am confident I can get to 15%
Squeezing the other 10% out should be doable with investment in better insulation, windows, HVAC equipement, solar PV, etc
This will happen as energy prices rise and capital investment is justified

 # & Description of Potential Measure

1.5 Replace low-efficiency and high-emission vehicles with fuel-efficient & low-emission vehicles, like plug-in hybrids, as soon as possible

Current Estimate (impact/cost/benefit/barriers/measurability)

L $$$ + M H

Implementation Scenario

Step:	Lead:	Timing
Review fleet inventories and ID which vehicles could be reassigned or replaced	Fleet Manager with City/County departments	6 months
Develop plan to reassign vehicles and replace where needed	Fleet Manager with City/County dept heads	6 months
Build into budget	City & County Mangers	3 months
Implement plan per budget schedule		

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- Government fleets are pools that are assigned per use, some % cannot be replaced,
- Look into intergovernmental pool to reserve when needed
- Force carpooling (e.g. meetings in Olympia, PA, etc.)
- Give preference to local government contractors and regulated fleets (e.g., taxis and waste/recycling haulers) whose vehicles exceed minimum standards

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Interagency pool – Will there be a loss of efficiency or excessive time to coordinate?
- Ensure swapped out vehicles are reused responsibly

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Employees look at own vehicles in new light.
- Might encourage replacement and/or neighborhood sharing of special-use vehicles.

Costs	**Anticipated Cost Savings**
Upfront cost: None (previously budgeted) **Annual cost:** None **Potential Funding Source:**	____103,500_____ $/yr. **Estimate Emissions Reduction:** ____22_____tons/yr.

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):
Small Vehicles

Assumptions:

City: 5 non-hybrid passenger vehicles, 19 Light Truck
County: 31 non-special use LT or Veh
(No Sheriff or Police vehicles included)
Assume 12 City converted, 15 County: total 27

MGP and average VMT from national standards

No additional implementation cost, assume replacing as budgeted

Gasoline price per gallon: $4.00

 # & Description of Potential Measure

1.6 Install photovoltaic panels on existing buildings and for stand-alone lighting on streets and in parks, where appropriate and productive

Current Estimate (impact/cost/benefit/barriers/measurability)
M $$$ + L H

Implementation Scenario

Step:	Lead:	Timing
Make an assessment of such structures to find the appropriateness and possible energy savings	RCM & Public Works	3 mo
Develop implementation plan and build into department budgets	RCM & Public Works	6 mo
Arrange for purchase and installation of such panels	RCM & Public Works	1 yr

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)
- PV for stand-alone lighting only practical for new, hard to reach lights
- Only one firm government building example from new City Hall – see notes – costs and savings come from Power Trip, GHG impact from CAPPA

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)
- Adequate funding
- Detract from the beauty of parks street views

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)
- Leading by example
- Reduce initial cost and encourage local investing if use 'community solar' model

Costs	**Anticipated Cost Savings**
Upfront cost: $100,000 Annual cost: 1/10 FTE? Potential Funding Source: Community Investment, Grants	5, 475 $/yr. (18 year payback) Estimate Emissions Reduction: _____24____tons/yr.

CAC Recommendation

X Recommend by Consensus

□ Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

□ Recommend – with Strong Opposition
(Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

□ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):
Solar PV

Assumptions
Briangol comments
Solar is going to go viral when the cost comes down to 2K per kW. I predict that will happen in 10 years based on current costs and slope. I can easily see the city and county installing PV on 25% of their buildings by 2030, since they are in a good position to recoup the savings over 10-20 years.

based on RCM buildings, you may have better data	**Total**	**25%**	**KW**	**$ Cost**	**$ Save**	**CO2 save**	**Payback**
City ft2	**83000**	**20750**	50	100000	5,475	24	18 years
County ft2	186000	46500	100	200,000	10,950	47	18 years
est cost per kwh: .10							

 # & Description of Potential Measure

1.7 Establish a reduced idling policy for all government vehicles

Current Estimate (impact/cost/benefit/barriers/measurability)

L 0 + L M

Implementation Scenario

Step:	Lead:	Timing
Determine if/where problem exists	Dept Leads / Fleet Manager & CAC	Month 1
Review any existing policies, assess effectiveness	Dept Leads / Fleet Manager & CAC	Month 1
Recommend new and/or revised policies	Dept Leads / Fleet Manager & CAC	Month 2
Approve new/revised policies for implementation	Council / County Comm	Month 3
Roll out new policy to impacted departments	Dept Leads / Fleet Manager & CAC	Month 3

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- Large diesel: 5 minutes is efficiency breakeven point
- Gasoline engines: 1 minute (need to verify)
- Calculation does not include fire or police vehicles

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Policy can only address governmental entities. Some exceptions, like fire trucks, are expected.

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Quieter community, fewer smelly fumes.

Costs :	**Anticipated Cost Savings**
Upfront cost: < $1,000 **Annual cost:** <1/10 FTE **Potential Funding Source:** N/A	$25,749/yr. **Estimate Emissions Reduction:** 61 tons/yr.

CAC Recommendation

X Recommend by Consensus

☐ Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

☐ Recommend – with Strong Opposition
(Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

☐ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):
Truck Idling & Light Vehicle Idling
Assumptions:

Number of Vehicles: as reported in combined 2005 Inventory, need to verify with fleet managers

72 Light Truck or vehicle (no police/sheriff)
48 Heavy Truck or vehicle (no fire)
City Only

26 Heavy Truck (City)	59 tons
31 Light Truck or Vehicle (City, no Police)	2 tons

$4.00 gallon (both deisel and gasoline)

 # & Description of Potential Measure

1.8 Replace incandescent lights with compact fluorescent lights or LEDs in buildings and where ever else it is possible.

Current Estimate (impact/cost/benefit/barriers/measurability)

H $ + L H

Implementation Scenario

Step:	Lead:	Timing
Make an assessment of such lights to find the appropriateness and possible energy savings	RCM	3 mo
Arrange for purchase and installation of such lights	Dept Head / RCM	1 yr

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- Approximate energy reductions per replaced bulb: CFL 70%, LED 90%

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Adequate funding, harsh light color of LED or CFL lights
- Disposal of 'perfectly good' incandescent bulbs

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Leading by example
- Cost savings and reduced maintenance

Costs

Upfront cost: $5,730 + 3 mo FTE

Annual cost: < 1/10 FTE

Potential Funding Source:

Anticipated Cost Savings

___19,593_____ $/yr.

Estimate Emissions Reduction:

____86_____tons/yr.

CAC Recommendation

X Recommend by Consensus

☐ Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

☐ Recommend – with Strong Opposition
(Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

☐ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):
CFL Distribution

Only provided for COMMUNITY LEVEL, but can extrapolate for Gov as follows:
1,000 CFLs Installed
.0988/kWh
44/kWh annual savings per CFL
$2.58/each CFL
Annual savings: $4,347, 19 Tons
Simple Payback: .6 year

DO NOT INCLUDE - DOUBLE COUNTS 1.4 (Audit/retrofit) and most lights have not been incandescent since before inventory

Briangol (RCM) comments
This is covered in energy audits
There aren't many incandescent lights left in bldgs
The bigger improvement in lighting is replacing HID (high intensity discharge) lamps with fluorescents and LED in gyms, libraries and parking lights
And replacing the older T12 fluorescents with newer T5 and T8

 # & Description of Potential Measure

1.9 Convert Streetlights to LED

Current Estimate (impact/cost/benefit/barriers/measurability)

H $ + L H

Implementation Scenario

Step:	Lead:	Timing
Make an assessment of such lights to find the appropriateness and possible energy savings	Public Works	3 mo
Work with community to plan decommissioning	Public Works	3 mo
Implement decommissioning	Public Works	2 mo

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

-

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Safety concerns

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Leading by example
- Cost savings and reduced maintenance
- Dark skies – tourism interest

Costs

Upfront cost: $_____$24,750 _____

Annual cost: < 1/10 FTE

Potential Funding Source:

Anticipated Cost Savings

_____9,937____ $/yr.

Estimate Emissions Reduction:

_____43_____tons/yr.

CAC Recommendation

X Recommend by Consensus

☐ Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

☐ Recommend – with Strong Opposition
(Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

☐ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):

LED Streetlights

495 streetlights - 1,025,000 KwH, $82,000 (2010 #'s)
Lights operate avg of 11 hours/night
All replaced are Sodium Vapor lights @ 100 Watts
LED bulb est. cost by replacement time: $50 each
CITY ONLY

Briangol (RCM) comments

I would predict the LED swap out will happen
in 5-10 years (PSE tends to do them all at once) and could save 50% of the energy.
the number of street lights is around 500 assume 1 ton per MWh for coal plant,

cost is around $82,000 per year	$	kwh	tons CO2/yr
2010	82000	1025000	2050
2020 (assuming 50% savings in energy)	41000	512500	1025

 # & Description of Potential Measure

1.10 Create incentives for employees to reduce emissions in their daily commute. (e.g. subsidized bus passes, covered parking & showers for bicyclists or pedestrians, awards for carpools, guaranteed ride home for emergencies, etc.)

Current Estimate (impact/cost/benefit/barriers/measurability)

M $ 0 L H

Implementation Scenario

Step:	Lead:	Timing
Survey of employees to see who can use other alternatives transport (find barriers)	CAC & Dept Head	3 months
Create Plan to address barriers	CAC & Dept Head	2 months
Address barriers with incentives	CAC & Dept Head	6 months
Each Dept to do cost/benefit analysis of potential for telecommunication.	CAC & Dept Head	3 months
Implementation	Dept Head	Overtime
Adaptive Management	Dept Head	Overtime

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- 10% reduction in vehicle miles traveled
- Medium impact only if all districts and businesses included (Low if government only)

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Access to alternative mode of travel, Behavior change, Funding for implantation

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Healthy employees
- Less traffic congestion
- Might encourage behavior outside of work
- Less need for parking

Costs

Upfront cost: 1 month FTE

Annual cost: 1 week FTE

Potential Funding Source:

Anticipated Cost Savings

____5,806_____ $/yr.

Estimate Emissions Reduction:

_____14____tons/yr.

CAC Recommendation

X Recommend by Consensus

☐ Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

☐ Recommend – with Strong Opposition (Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

☐ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):

No real good fit. Used **CARPOOL** for rough calculations

Assumptions:

229 employees offered incentive (50% total PT+JC)
$3.00/gal gas
8% reduction overall trips
6.49 miles/one way (see 1.2 or below for calc)
19.7/MPG (default)

1,482,508 Total commute miles
12.98 Avg Commute miles (miles/457)/250days))

City only

From 2005 Inventories:
105 Employess
53 offered incentives (50% total employees)
20% of 53 telecommute any given day

295,094 Total commute miles
11.24 Avg Commute miles (miles/352)/250days))
5.62 Avg One-way commute

 # & Description of Potential Measure

1.11 Revise purchasing policies to products with the lowest possible energy footprint and lifecycle emissions, including embedded energy in production and transportation, use and disposal of goods

Current Estimate (impact/cost/benefit/barriers/measurability)

L $? H M

Implementation Scenario

Step:	Lead:	Timing
1. Develop criteria to guide purchasing (define sustainable products/create preferred purchasing guidance (i.e., the rubric of the life cycle). Where practical, include the sustainable practices of prospective vendors, contractors and service providers as evaluation criteria. A formula matrix may have been developed by others (e.g., http://www.icleiusa.org/action-center/learn-from-others/environmentally-preferable-purchasing-guide) Free Life Cycle Analysis (LCA) modeling tool from Carnegie Mellon: www.eiolca.net/index.html Shared product list vetted to meet similar San Francisco green purchase ordinance: www.sfapproved.org/	CAC	TBD as models become available
2. Adopt policy to use the preferred purchasing guidance	BoCC/City Council	1 month
3. Purchasing departments implement with each purchase	Purchasing staff	Ongoing
4. Monitor and evaluate	Purchasing staff	Ongoing

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- Short term energy savings, Long-term cost savings.
- Impact will be LOW if government only. Include all districts & businesses for M impact.

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Will it undermine desire to buy local?
- Potential cultural barriers – shifting practices and vendors.
- Cost/time to use the formula when purchasing; Unreliability of data.

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Employees may implement similar measures at home and encourage others to do so.
- Other public entities/businesses may follow suit.
- Manufacturers may respond by producing more sustainable products.

Costs	**Anticipated Cost Savings**
Upfront cost:	_____ $/yr.
Annual cost: ongoing with purchase orders	**Estimate Emissions Reduction:** _____tons/yr.
Potential Funding Source: EPA, PSE/PUD, Energy Star program	

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):

No CAPPA worksheet -
From ICLEI Blog: Shared product list
www.icleiusa.org/blog/san-francisco-shares-its-database-for-green-purchasing

From Michael Steinhoff, CAPPA Program Manager, ICLEI
model from Carnegie Mellon
http://www.eiolca.net/index.html

When you open up the model part of the site there are options for "Standard Models" and "Custom Models". The Standard ones are around very broad sectors, and probably of little use to you. The Custom model you can do an analysis around something more like a finished product that you would actually purchase. The output will include GHG impacts (others available as well) from each step along the production process. You could then do some exploratory analyses by posing some hypotheticals like "If we reduced transportation energy by 10%, the impact would be approximately X".
It wouldn't be terribly accurate, but it would at least give you some numbers to work with and you could think about these things in an "order of magnitude" sort of way.

Briangol (RCM) comments
This is VERY hard to calculate
LCA is just emerging, and getting the embedded cost of one product, let alone a whole suite, is nearly impossible
LEED construction helps identify wood and other products that are better based on LCA
But evaluating this for office products, appliances, transportation, etc is super hard

 # & Description of Potential Measure

1.12 Use wetland wastewater treatment as an alternative to traditional method in Urban Growth Areas where water quality can be preserved

Current Estimate (impact/cost/benefit/barriers/measurability)

M $$? H L

Implementation Scenario

Step:	Lead:	Timing
Research use (costs/results) in other communities	Public Works	3 months
If successful elsewhere, local feasibility study	Public Works	6 months
If feasible, develop implementation plan	Public Works	3 months
Build into budget	City Manager, County Manger	3 months
Implement per plan (longer term if land acquisition required)	Public Works	1 – 3 years

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- City has primary wastewater treatment facility, so would be primary candidate.
- CO2 due to reduced electric pump demand?
- Wetlands absorb CO2 (or would decomposition create CO2?)

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Not sure if/where it could be used in County. Land use issues.
- Is there enough property around current treatment plant? Concern about land costs.
- Community concerns: odors, land contamination, health.
- There a point in size that makes this option not practical such as our WWTF.

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Wetland preservation, aquifer regeneration

Costs

Upfront cost: $1,000,000

Annual cost: 1/10 FTE

Potential Funding Source:

Anticipated Cost Savings

___24,315_____ $/yr.

Estimate Emissions Reduction:

____105_____tons/yr.

CAC Recommendation

☐ Recommend by Consensus

X Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

☐ Recommend – with Strong Opposition

(Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

☐ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):

Digester (Anaerobic digester)

Assumptions:

City only at this time

Population served: 10,000 (until capacity verified)

.10/kWh

(results in line with email from David Montgomery:

323000 kWh and $24,315 saved)

Simple Payback: 43.2 years

Another Worksheet:

Wastewater Flaring

Population served: 10,000

No other parameters in this worksheet

Est. CO2 reduction: 3,285

Implementation Cost: $10,000

HOWEVER: 3,285 Co2 was not included in our initial inventory (pumps,etc. only).

Therefore: Should either of these be included without adjusting the inventory accordingly??

 # & Description of Potential Measure

1.13 Set goals for government departments and encourage all local businesses to become certified by the Green Business program of Jefferson County Health. (NOTE: This program incorporates many of the measures listed throughout this Climate Action Plan.)

Current Estimate (impact/cost/benefit/barriers/measurability)

L 0 + L L

Implementation Scenario

Step:	Lead:	Timing
Educate and Certify the Gov. dept. on green business program	RCM & County Environmental Health	6 months
Campaign to support green business program to community	Green Building Program	6 months
Green business award to business each year	Green Building Program	annual

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- Need to consult with Green Building program to understand emission reductions
- Includes energy-star & enviro-start programs

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Getting people to change habits,
- Cost to upgrade new tech.,
- Reduction in energy costs

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Reduction of other waste and pollution problems

Costs	**Anticipated Cost Savings**
Upfront cost: $800 (gov program) **Annual cost:** ¼ - ½ FTE? **Potential Funding Source:**	____9,200_____ $/yr. to businesses **Estimate Emissions Reduction:** ____40_____tons/yr.

CAC Recommendation

X Recommend by Consensus

☐ Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

☐ Recommend – with Strong Opposition
(Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

☐ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):
Green Business

Assumptions:

Number of Departments: 8
.10/kwh, no natural gas
$100/per department to implement

These measurable costs and results are for
CITY DEPARTMENTS ONLY

 # & Description of Potential Measure

1.14 Purchase Green Energy from the grid.

Current Estimate (impact/cost/benefit/barriers/measurability)

L 0 + L L

Implementation Scenario

Step:	Lead:	Timing
Contact provider to set appropriate level	City Manager Office	1 Day

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- The standard green power charge is $0.0125/kilowatt-hour over standard utility charges. In addition, PSE offers a large volume rate of $0.006/kilowatt-hour for green power purchases of 1,000,000 kilowatt-hours or more in a year. The costs & ghg savings listed below assume high-volume rate of .006/kwh.

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Budget concerns,

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Partnership opportunities with PSE (see brochure) for effective outreach and leading by example

Costs	**Anticipated Cost Savings**
Upfront cost: $0 **Annual cost:** $6,000 **Potential Funding Source:**	____0_____ $/yr. to businesses **Estimate Emissions Reduction:** ____320_____tons/yr.

CAC Recommendation

X Recommend by Consensus

☐ Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

☐ Recommend – with Strong Opposition
(Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

☐ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):
Green Power Purchase

Assumptions:

Percentage of Green Power	Annual Green Power Purchase	Monthly Charge	Annual Expense	PSE Business Recognition Level
6%	48,000 kWh	$50	$600	Partner
13%	96,000 kWh	$100	$1,200	Leader
50%	374,400 kWh	$390	$4,680	Leader
100%	750,000 kWh	~$781.25	~$9,375	100% Leader
100% +	1,000,000 kWh	$500	$6,000	100% Leader – Large Volume

Contract for 100% +
Known price, less cost

Climate Action Committee

Worksheet #2 – Existing Measures

Sector: Transportation

Category: (circle one) City

Measure: More efficient fleet and use of vehicles:
1. Electric cars – 5 yrs ago purchased I for the Police and 2 for Parks/Rec.
2. Hybrid cars – 5 yrs ago purchased 1 for the detective and 2 for admin. Staff.
3. Use biodiesel in the Parks Dept tractors and trucks.

Contact: Bob LaCroix

Implementation Status

Step:	Lead:	Timing	Barriers (e.g. regulatory, resources, technology)
Continue to purchase best options when cars need replacing.	LaCroix	Ongoing	Cost
Change the culture around using electric vehicles	?		Some employees, like the meter readers, are unionized and won't use electric cars.

Estimate Emissions Reduction: /yr.

Assumptions:

Concerns

Disproportionate effects?
None.

Environmental impacts?
None

Subcommittee Recommendation:	**Priority:**
□ Support ongoing efforts	H – M - L
□ Provide additional resources, explain:	
□ Address policy/regulatory barriers	

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):
Electric Vehicles, Hybrid Vehicles, Biodiesel

Assumptions:

3 Electrics replaced 3 small vehicles
3 Hybrids replaced 3 small vehicles
4 Tractors and Trucks converted to biodiesel

Conclusions:
GHG Reduction: Electrics: 11 Hybrid: 10
Annual savings: Elec $6,532 - Hybrid: $4,194
Payback years: Electric: 7.7 Hybrid: 1.8

GHG Reduction: Biodiesel: 29
Annual COST: $4,167 (biodiesl > diesel)
Payback??

Climate Action Committee
Worksheet #2 – Existing Measures

Sector: Transportation

Category: (circle one) City

Measure: Replace all the water meters with remote read meters. About 400 of the total 5,000 are already remote read.

Contact: Bob LaCroix

Implementation Status

Step:	Lead:	Timing	Barriers
Purchase only remote read meters for new taps and replace the old ones at 100 per year.	LaCroix	Ongoing	Cost $150 each (regular ones cost $50) and the labor to replace.

Estimate Emissions Reduction: /yr.

Assumptions:
Currently takes 20 person days/month of driving all day to find and read all the meters.

Concerns

Disproportionate effects?
None.

Environmental impacts?
None

Subcommittee Recommendation:	**Priority:**
□ Support ongoing efforts	H – M - L
□ Provide additional resources, explain:	
□ Address policy/regulatory barriers	

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):
Light vehicle Idling
Telecommute (miles not driven)
(Neither saved - used for projection)

Assumptions:

500 already replaced
250 read per day = 40 miles + 5 hours idling
2 fewer days driving (40 miles & 10 hours)

Conclusions:
GHG Reduction: 9
Annual savings: $3,475
Cost: 100x500=$5,000
Payback: 1.43

Governments Leading by Example Action Area

Prioritized Actions for **Jefferson County**

As Generated by CAPPA and Refined by RCM with Maximum Green Energy

CO2e (metric tons)	Sector	Actions	Estimated Cost	Est Annual Savings	Payback Years	CAPPA Worksheet	**Notes -** Please see numbered worksheets for details
967	Building	1.14	$13,500	$0	n/a	Green Energy	Cost is annual - incremental per kWh
188	Building	1.4	$279,000	$43,468	6.42	Retrofits	RCM Estimates run through CAPPA
124	Building	1.13	$2,500	$28,750	0.09	Green Business	Green Business in 25 County Departments
47	Building	1.6	$200,000	$10,950	18.26	Solar PV	RCM estimates run through CAPPA
0	Building	1.1	$0	$0		Green Building	No new construction anticipated - RCM
0	Building	1.8	$0	$0		Lighting Retrofits	Do not include, most already switched (pre inventory)
0	Building	1.9	$0	$0		Streetlight LED	None (too few) for County -RCM
54	Transport	1.2	$23,750	$23,157	1.03	Telecommute	
42	Transport	1.7	$1,000	$22,163	0.05	Truck & LV Idling	1.7 combines truck & LV idling CAPPA worksheets
28	Transport	1.5	$0	$103,500	0.00	Small Vehicles	Cost previously budgeted
23	Transport	1.10	$18,750	$9,610	1.95	Carpool	
7	Transport	1.3	$20,000	$3,926	5.09	Electric Vehicles	
6	Transport	E-4day	$0	$48,244	0.00	Telecommute	Existing 20 employees w/20% reduced commute
4	Transport	E-Zenn	?	$6,758	0.00	Electric Vehicles	Existing 1 Taurus replaced by ZENN
0	Waste	1.12	$0	$0		Digester	City Only
1,490							

 # & Description of Potential Measure

1.1 Build all new City & County buildings and develop sites to at least a LEED Silver criterion, or some other third-party certification of energy, water and waste conservation strategies (e.g., Architecture 2030)

Current Estimate (impact/cost/benefit/barriers/measurability)

H $$ + L H

Implementation Scenario

Step:	Lead:	Timing
Mandate all contracts for new construction follow LEED Silver criterion.	City Council and Board of County Commissioners	3 months
Educate employees responsible for contract specifications on LEED Silver criteria.	Facilities Manager	1 month
Inform all potential contract bidders of requirement for LEED Silver criteria	Facilities Manager	on going
LEED Certified Inspector available	Facilities Manager	on going

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- 100 % of new building projects built under LEED Silver Criteria
- Companies the city and county work with are qualified to build to criteria.

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Increase initial costs
- Port may have difficulty mandating on leased land

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Decreased energy costs and increased efficiency fewer GHG emissions.
- Government leading by example
- More comfortable work environment
- More contractors encouraged to learn Green Building skills

Costs	**Anticipated Cost Savings**
Upfront cost: Standard building cost + 1 Week – 1 Month FTE – Policy work **Annual cost**: <1/10 FTE **Potential Funding Source:** HUD grants	___23,850____ $/yr. **Estimate Emissions Reduction:** ____109__tons/yr.

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):
GreenBuilding

Estimated 50,000 SQ FT by 2030
.. Library, possibly one County?

Need to verify est. cost of electricity
.. Using national avg until local per kWh rate known
Cost for Natural Gas: Assume PROPANE
.. Using national avg until local per gal rake known

Assumed no addition cost at time of construction:
http://www.davislangdon.com/USA/Research/ResearchFinder/Cost-of-Green-in-New-York-City/
..need to download entire report

Briangol comments	ft2	
PT City will rebuild mountain view	28,000	
PT City library rebuilt	15,000	estimate

Looks like your estimate is reasonable

No new building for County??

 # & Description of Potential Measure

1.2 Implement vehicle trip reduction policy incorporating teleconferencing, telecommuting and alternative work schedules, where practical. Establish video and/or web conferencing capabilities in all major City and County facilities

Current Estimate (impact/cost/benefit/barriers/measurability)

H $ + M H

Implementation Scenario

Step:	Lead:	Timing
Each Dept conducts analysis of potential for telecommunication,	EO or RCM for City and County Gov.	6 months
Tech review for teleconferencing, telecommuting,	EO or RCM for City and County Gov.	3 months
Policy and Plan for teleconferencing, alterative work schedules,	EO or RCM for City and County Gov.	6 months
Implementation of Plan	EO or RCM for City and County Gov.	Overtime
Adaptive management	EO or RCM for City and County Gov.	Over time

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- 5% reduction per for the first 5 years
  - From travel and reduced use of office space

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Getting needed technology; Changing behavior and corporate culture; Community access to services

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Happy Employee, More efficient work place, Less work space needed , Traffic congestion reduction

Costs	**Anticipated Cost Savings**
Upfront cost: $5,000 + 3 mo FTE @ **Annual cost:** ¼- ½ FTE @ **Potential Funding Source:**	____23,157_____ $/yr. **Estimate Emissions Reduction:** ____54_____tons/yr.

CAC Recommendation

X Recommend by Consensus

□ Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

□ Recommend – with Strong Opposition
(Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

□ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):

Telecommute

From 2005 Inventories:
457 Employess (PT 105, JC 352)
229 potential telecommuters (50% total employees)
20% of the 229 telecommute any given day

1,482,508 Total commute miles
12.98 Avg Commute miles (miles/457)/250days))

County Only

From 2005 Inventories:
352 Employess
176 offered incentives (50% total employees)
20% of 176 telecommute any given day

1,187,414 Total commute miles
13.49 Avg Commute miles (miles/352)/250days))
6.75 Avg One-way commute

Upfront cost changed from $10000 to $5000 ($10k was for both city and county)

 # & Description of Potential Measure

1.3 Use electric vehicles or bicycles whenever possible (e.g., for meter reading and building inspection)

Current Estimate (impact/cost/benefit/barriers/measurability)

H $$ + L H

Implementation Scenario

Step:	Lead:	Timing
Research current fleet & document usage	Energy Officer	2 months
Develop plan	Energy Officer w/ dept Leads	3 months
Implement as feasible	Dept. Leads	TBD

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- Government fleets are pools that are assigned per use, some % cannot be replaced
- Look into intergovernmental pool to reserve when needed, force carpooling?
- Target 15% replacement with electric vehicles or bicycle
- Assumes electricity source is cleaner than source being replaced

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- How difficult would it be operate intergovernmental pool?
- Can we reach this goal with Neighborhood Electric Vehicles (NEV) only or will it have to wait for plug-in hybrids?
- ADA issues (cannot require someone to bicycle).
- Security issues (easy to steal).
- Counterproductive if electricity source is not cleaner than replaced source.

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Quieter, reduced maintenance, intergovernmental cooperation

Costs	**Anticipated Cost Savings**
Upfront cost: $20,000 (for 2)	_____3,926____ $/yr.
Annual cost: ¼ - ½ FTE @	**Estimate Emissions Reduction:**
Potential Funding Source:	_____7____tons/yr.

CAC Recommendation

X Recommend by Consensus

☐ Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

☐ Recommend – with Strong Opposition (Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

☐ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):

Electric Vehicles

Assumptions:

Only 5 vehicles replaced (default), need fleet plans

$3/gal gas

$.0988/kWh until gov rate confirmed

12K/vmt per vehicle replaced @ 19.7 MPG avg

$10,000 cost per vehicle

Simple Payback: 7.4 years

County Only

Only 2 vehicles replaced, need fleet plans

$4/gal gas

$.010/kWh

12K/vmt per vehicle replaced @ 19.7 MPG avg

$10,000 cost per vehicle

 # & Description of Potential Measure

1.4 Conduct energy audits for each city or county owned buildings and infrastructure (e.g., street lights, water pumps, waste water treatment) to develop and implement a plan to reduce energy consumption. (E.g. smart thermostats, insulation, windows, high-efficiency infrastructure, air or ground source heat pumps, furnaces, variable-speed pumps and ultra-efficiency motors, illumination, etc.)

Current Estimate (impact/cost/benefit/barriers/measurability)

M $$ + L H

Implementation Scenario

Step:	Lead:	Timing
Issue a directive to form a team to implement	Dept Head/Eo	2 Mo
Follow thru with evaluations to track progress	Dept Head/Eo	On going

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- There will be energy auditors
- Sufficient money can be found to implement the plans

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Adequate funding

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- leading by example
- job creation/retention (auditors, implementers)

Costs

Upfront cost: $279,000

Annual cost: <1/10 FTE @

Potential Funding Source:

Anticipated Cost Savings

___43,468_____ $/yr.

Estimate Emissions Reduction:

___188_____tons/yr.

CAC Recommendation

X Recommend by Consensus

☐ Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

☐ Recommend – with Strong Opposition
(Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

☐ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):
Retrofits

Assumptions:
186,000 Sq Ft (County) 83,000 Sq Ft City
.10/kWh
0 /therm Nat Gas
20% energy savings est (due to age of buildings)
$1.50/sq ft retrofit until local verify

		Tons	
Briangol comments	**Base CO2**	**Savings**	
Reduce energy use in county bldgs by 25% by 2020	**687**	**171.75**	186,000 SF
~~Reduce energy use in PT city bldgs by 25% by 2020~~	~~445~~	~~111.25~~	83000

My contract calls for 10% reduction by 2013, but I am confident I can get to 15%
Squeezing the other 10% out should be doable with investment in better insulation, windows, HVAC equipement, solar PV, etc
This will happen as energy prices rise and capital investment is justified

 # & Description of Potential Measure

1.5 Replace low-efficiency and high-emission vehicles with fuel-efficient & low-emission vehicles, like plug-in hybrids, as soon as possible

Current Estimate (impact/cost/benefit/barriers/measurability)

L $$$ + M H

Implementation Scenario

Step:	Lead:	Timing
Review fleet inventories and ID which vehicles could be reassigned or replaced	EO with City/County departments	6 months
Develop plan to reassign vehicles and replace where needed	EO with City/County dept heads	6 months
Build into budget	City & County Mangers	3 months
Implement plan per budget schedule		

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- Government fleets are pools that are assigned per use, some % cannot be replaced,
- Look into intergovernmental pool to reserve when needed
- Force carpooling (e.g. meetings in Olympia, PA, etc.)
- Give preference to local government contractors and regulated fleets (e.g., taxis and waste/recycling haulers)whose vehicles exceed minimum standards

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Interagency pool – Will there be a loss of efficiency or excessive time to coordinate?
- Ensure swapped out vehicles are reused responsibly

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Employees look at own vehicles in new light.
- Might encourage replacement and/or neighborhood sharing of special-use vehicles.

Costs

Upfront cost: None (previously budgeted)

Annual cost: None

Potential Funding Source:

Anticipated Cost Savings

____103,500_____ $/yr.

Estimate Emissions Reduction:

____28_____tons/yr.

CAC Recommendation

☐ Recommend by Consensus

X Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

☐ Recommend – with Strong Opposition

(Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

☐ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):
Small Vehicles

Assumptions:

City: 5 non-hybrid passenger vehicles, 19 Light Truck
County: 31 non-special use LT or Veh
(No Sheriff or Police vehicles included)
Assume 12 City converted, 15 County: total 27

MGP and average VMT from national standards

No additional implementation cost, assume replacing as budgeted

Gasoline price per gallon: $4.00

 # & Description of Potential Measure

1.6 Install photovoltaic panels on existing buildings and for stand-alone lighting on streets and in parks, where appropriate and productive

Current Estimate (impact/cost/benefit/barriers/measurability)
M $$$ + L H

Implementation Scenario

Step:	Lead:	Timing
Make an assessment of such structures to find the appropriateness and possible energy savings	EO	3 mo
Develop implementation plan and build into department budgets	Dept Head/EO	6 mo
Arrange for purchase and installation of such panels	Dept Head/EO	1 yr

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)
- PV for stand-alone lighting only practical for new, hard to reach lights
- Only one firm government building example from new City Hall – see notes – costs and savings come from Power Trip, GHG impact from CAPPA

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)
- Adequate funding
- Detract from the beauty of parks street views

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)
- Leading by example
- Reduce initial cost and encourage local investing if use 'community solar' model

Costs	**Anticipated Cost Savings**
Upfront cost: $200,000 Annual cost: 1/10 FTE? Potential Funding Source: Community Investment, Grants	___10,950 $/yr. (18 year payback) Estimate Emissions Reduction: _____47____tons/yr.

CAC Recommendation

X Recommend by Consensus

□ Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

□ Recommend – with Strong Opposition
(Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

□ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):
Solar PV

Assumptions
Briangol comments
Solar is going to go viral when the cost comes down to 2K per kW. I predict that will happen in 10 years based on current costs and slope. I can easily see the city and county installing PV on 25% of their buildings by 2030, since they are in a good position to recoup the savings over 10-20 years.

based on RCM buildings, you may have better data

	Total	25%	KW	$ Cost	$ Save	CO2 save	Payback
City ft2	83000	20750					
County ft2	**186000**	**46500**	100	200,000	10,950	47	18 years

est cost per kwh: .10

From Jeff Randall - Power Trip Solar

We have only evaluated one city or county building for solar and that is the new city hall building. That system would be 6.9 kW in size and would generate about 6,900 kW hours of electricity per year. First year cost savings of this electricity would be about $1,690. Figure an installation cost of about $52k.

We are currently working on a 16 kW community solar project at the Port of Port Townsend airport. This project would generate about 16,000 kW hours of electricity per year which the Port will buy at a discounted rate. The array will be paid for by private investors in the community and after 10 years the Port will be able to buy the array at a much reduced cost (about 1/3 of original installation cost). This system will generate about 16,000 kW hours of electricity per year. The Port will be buying the environmental attributes (carbon offsets) from the system for 2 cents per kWh. Similar systems could be installed on other local government buildings at no initial costs to the government entities if the community solar concept proves successful (we are awaiting some additional legal review on the necessary agreements). Our installation timeline is scheduled for later this year.

 # & Description of Potential Measure

1.7 Establish a reduced idling policy for all government vehicles

Current Estimate (impact/cost/benefit/barriers/measurability)

L 0 + L M

Implementation Scenario

Step:	Lead:	Timing
Determine if/where problem exists	Dept Leads / EO	Month 1
Review any existing policies, assess effectiveness	Dept Leads / EO	Month 1
Recommend new and/or revised policies	Dept Leads / EO	Month 2
Approve new/revised policies for implementation	Council / County Comm	Month 3
Roll out new policy to impacted departments	Dept Leads / EO	Month 3

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- Large diesel: 5 minutes is efficiency breakeven point
- Gasoline engines: 1 minute (need to verify)
- Calculation does not include fire or police vehicles

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Policy can only address governmental entities. Some exceptions, like fire trucks, are expected. *See related measure 2.9*

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Quieter community, fewer smelly fumes.

Costs :	**Anticipated Cost Savings**
Upfront cost: < $1,000	$22,163/yr.
Annual cost: <1/10 FTE	**Estimate Emissions Reduction:**
Potential Funding Source: N/A	42 tons/yr.

CAC Recommendation

X Recommend by Consensus

☐ Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

☐ Recommend – with Strong Opposition
(Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

☐ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):
Truck Idling & Light Vehicle Idling

Number of Vehicles: as reported in combined 2005 Inventory, need to verify with fleet managers

72 Light Truck or vehicle (no police/sheriff)
48 Heavy Truck or vehicle (no fire)
County Only
22 Heavy Truck (County) 40 tons
41 Light Truck or Vehicle (County, no Sheriff) 2 tons

$4.00 gallon (both deisel and gasoline)

 # & Description of Potential Measure

1.8 Replace incandescent lights with compact fluorescent lights or LEDs in buildings and where ever else it is possible.

Current Estimate (impact/cost/benefit/barriers/measurability)

H $ + L H

Implementation Scenario

Step:	Lead:	Timing
Make an assessment of such lights to find the appropriateness and possible energy savings	EO	3 mo
Arrange for purchase and installation of such lights	Dept Head / EO	1 yr

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- Approximate energy reductions per replaced bulb: CFL 70%, LED 90%

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Adequate funding, harsh light color of LED or CFL lights
- Disposal of 'perfectly good' incandescent bulbs

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Leading by example
- Cost savings and reduced maintenance

Costs

Upfront cost: $5,730 + 3 mo FTE

Annual cost: < 1/10 FTE

Potential Funding Source:

Anticipated Cost Savings

___19,593_____ $/yr.

Estimate Emissions Reduction:

____86____tons/yr.

CAC Recommendation

X Recommend by Consensus

☐ Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

☐ Recommend – with Strong Opposition
(Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

☐ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):
Lighting Retrofits
This is more than bulb replacement, but seems a better fit. Assume most lights already swapped?
Concerns
Might duplicate some savings from 1.4 (energy audit and retrofit)
Assumptions
45000 Sq Ft - County/Community Center
5000 Sq Ft - City/Carnegie Library (orig)
46,500 Sq Ft - County/Courthouse
96,500 Total Sq Ft.
.0988/kWh (default) until local verified
default lighting per sq ft used, cost per sq ft
30% reductions (default) used
Simple payback: .3 year

Other worksheet: CFL Distribution
Only provided for COMMUNITY LEVEL, but can extrapolate for Gov as follows:
1,000 CFLs Installed
.0988/kWh
44/kWh annual savings per CFL
$2.58/each CFL
Annual savings: $4,347, 19 Tons
Simple Payback: .6 year

Other worksheets available:
StreetLights & LED Streetlights
DO NOT INCLUDE - DOUBLE COUNTS 1.4 (Audit/retrofit)
Briangol comments
This is covered in energy audits
There aren't many incandescent lights left in bldgs
The bigger improvement in lighting is replacing
HID (high intensity discharge) lamps with fluorescents and LED in gyms, libraries and parking lights
And replacing the older T12 fluorescents with newer T5 and T8

 # & Description of Potential Measure

1.9 Reduce number of streetlights and building lights as appropriate

Current Estimate (impact/cost/benefit/barriers/measurability)

H $ + L H

Implementation Scenario

Step:	Lead:	Timing
Make an assessment of such lights to find the appropriateness and possible energy savings	EO	3 mo
Work with community to plan decommissioning	Dept Heads / EO	3 mo
Implement decommissioning	Public Works	2 mo

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

-

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Safety concerns

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Leading by example
- Cost savings and reduced maintenance
- Dark skies – tourism interest

Costs

Upfront cost: $_____<1/10 FTE_____

Annual cost: < 1/10 FTE

Potential Funding Source:

Anticipated Cost Savings

_____5,848____ $/yr.

Estimate Emissions Reduction:

_____26_____tons/yr.

CAC Recommendation

X Recommend by Consensus

☐ Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

☐ Recommend – with Strong Opposition

(Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

☐ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):

Streetlight Time

This worksheet is designed to measure reducing all lights by set number of hours. Modified to reduce subset by max hours

Concerns

All assumptions are very rough

Assumptions

495 streetlights in city - 275,000 KwH, $22,000

6 streetlights for county - 39,133 KwH (not included)

Est: Eliminate 20% or 99 lights

Lights operate avg of 9 hours/night

All Mercury Vapor lights @ 182 Watts

Does not include outside building lights (no inventory)

Other worksheets available:

StreetLights & LED Streetlights

CITY ONLY - Too small to count for County

Briangol comments

Reducing building lights is part of audits

John Merchant

is in charge of those for the city, and he tells me that they are optimized right now for number of lights. I would predict the LED swap out will happen in 5-10 years (PSE tends to do them all at once) and could save 50% of the energy.

the number of street lights is around 600

cost is around $82,000 per year

	$	kwh	assume 1 ton per MWh for coal plant, tons CO2/yr
2010	82000	1025000	2050
2020 (assuming 50% savings in energy)	41000	512500	1025

 # & Description of Potential Measure

1.10 Create incentives for employees to reduce emissions in their daily commute. (e.g. subsidized bus passes, covered parking & showers for bicyclists or pedestrians, awards for carpools, guaranteed ride home for emergencies, etc.)

Current Estimate (impact/cost/benefit/barriers/measurability)

M $ 0 L H

Implementation Scenario

Step:	Lead:	Timing
Survey of employees to see who can use other alternatives transport (find barriers)	Dept Head	3 months
Create Plan to address barriers	Dept Head	2 months
Address barriers with incentives	Dept Head	6 months
Each Dept to do cost/benefit analysis of potential for telecommunication.	Dept Head	3 months
Implementation	Dept Head	Overtime
Adaptive Management	Dept Head	Overtime

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- 10% reduction in vehicle miles traveled
- Medium impact only if all districts and businesses included (Low if government only)

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Access to alternative mode of travel, Behavior change, Funding for implantation

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Healthy employees
- Less traffic congestion
- Might encourage behavior outside of work
- Less need for parking

Costs	**Anticipated Cost Savings**
Upfront cost: ¼ FTE **Annual cost:** ¼ FTE **Potential Funding Source:**	____9,610_____ $/yr. **Estimate Emissions Reduction:** _____23____tons/yr.

CAC Recommendation

X Recommend by Consensus

☐ Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

☐ Recommend – with Strong Opposition
(Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

☐ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):

No real good fit. Used **CARPOOL** for rough calculations

Assumptions:
229 employees offered incentive (50% total PT+JC)
$3.00/gal gas
8% reduction overall trips
6.49 miles/one way (see 1.2 or below for calc)
19.7/MPG (default)

1,482,508 Total commute miles
12.98 Avg Commute miles (miles/457)/250days))

County Only

From 2005 Inventories:
352 Employess 176
176 offered incentives (50% total employees)
8% reduction in overall trips

1,187,414 Total commute miles
13.49 Avg Commute miles (miles/352)/250days)) 13.49334
6.75 Avg One-way commute 6.745

 # & Description of Potential Measure

1.11 Revise purchasing policies to products with the lowest possible energy footprint and lifecycle emissions, including embedded energy in production and transportation, use and disposal of goods

Current Estimate (impact/cost/benefit/barriers/measurability)

L $? H M

Implementation Scenario

Step:	Lead:	Timing
1. Develop criteria to guide purchasing (define sustainable products/create preferred purchasing guidance (i.e., the rubric of the life cycle). Where practical, include the sustainable practices of prospective vendors, contractors and service providers as evaluation criteria. A formula matrix may have been developed by others (e.g., http://www.icleiusa.org/action-center/learn-from-others/environmentally-preferable-purchasing-guide) Free Life Cycle Analysis (LCA) modeling tool from Carnegie Mellon: www.eiolca.net/index.html Shared product list vetted to meet similar San Francisco green purchase ordinance: www.sfapproved.org/	City/County staff	1 month
2. Adopt policy to use the preferred purchasing guidance	BoCC/City Council	1 month
3. Purchasing departments implement with each purchase	Purchasing staff	Ongoing
4. Monitor and evaluate	Purchasing staff	Ongoing

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- Short term energy savings, Long-term cost savings.
- Impact will be LOW if government only. Include all districts & businesses for M impact.

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Will it undermine desire to buy local?
- Potential cultural barriers – shifting practices and vendors.
- Cost/time to use the formula when purchasing; Unreliability of data.

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Employees may implement similar measures at home and encourage others to do so.
- Other public entities/businesses may follow suit.
- Manufacturers may respond by producing more sustainable products.

Costs	**Anticipated Cost Savings**
Upfront cost: **Annual cost**: ongoing with purchase orders **Potential Funding Source:** EPA, PSE/PUD, Energy Star program	_____ $/yr. **Estimate Emissions Reduction:** _____tons/yr.

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):

No CAPPA worksheet -
From ICLEI Blog: Shared product list
www.icleiusa.org/blog/san-francisco-shares-its-database-for-green-purchasing

From Michael Steinhoff, CAPPA Program Manager, ICLEI
model from Carnegie Mellon
http://www.eiolca.net/index.html

When you open up the model part of the site there are options for "Standard Models" and "Custom Models". The Standard ones are around very broad sectors, and probably of little use to you. The Custom model you can do an analysis around something more like a finished product that you would actually purchase. The output will include GHG impacts (others available as well) from each step along the production process. You could then do some exploratory analyses by posing some hypotheticals like "If we reduced transportation energy by 10%, the impact would be approximately X".
It wouldn't be terribly accurate, but it would at least give you some numbers to work with and you could think about these things in an "order of magnitude" sort of way.

Briangol comments
This is VERY hard to calculate
LCA is just emerging, and getting the embedded cost of one product, let alone a whole suite, is nearly impossible
LEED construction helps identify wood and other products that are better based on LCA
But evaluating this for office products, appliances, transportation, etc is super hard

 # & Description of Potential Measure

1.12 Use wetland wastewater treatment as an alternative to traditional methods, both in City and in other areas of the county where water quality can be preserved

Current Estimate (impact/cost/benefit/barriers/measurability)

M $$? H L

Implementation Scenario

Step:	Lead:	Timing
Research use (costs/results) in other communities	City Public Works or Energy Officer	3 months
If successful elsewhere, local feasibility study	City Public Works or Energy Officer	6 months
If feasible, develop implementation plan	City Public Works or Energy Officer	3 months
Build into budget	City Manager, County Manger	3 months
Implement per plan (longer term if land acquisition required)	City & County Public Works w/Energy Officer	1 – 3 years

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- City has primary wastewater treatment facility, so would be primary candidate.
- CO2 due to reduced electric pump demand?
- Wetlands absorb CO2 (or would decomposition create CO2?)

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Not sure if/where it could be used in County. Land use issues.
- Is there enough property around current treatment plant? Concern about land costs.
- Community concerns: odors, land contamination, health.
- There a point in size that makes this option not practical such as our WWTF.

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Wetland preservation, aquifer regeneration

Costs	**Anticipated Cost Savings**
Upfront cost: $1,000,000 **Annual cost:** 1/10 FTE **Potential Funding Source:**	___23,829_____ $/yr. **Estimate Emissions Reduction:** ____105_____tons/yr.

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):
Digester (Anaerobic digester)

Assumptions:
City only at this time
Population served: 10,000 (until capacity verified)
.0980/kWh
(results in line with email from David Montgomery:
323000 kWh and $22,890 saved)
Simple Payback: 43.2 years
Another Worksheet:
Wastewater Flaring

Population served: 10,000

No other parameters in this worksheet

Est. CO2 reduction: 3,285
Implementation Cost: $10,000
HOWEVER: 3,285 Co2 was not included in our initial inventory (pumps,etc. only).
Therefore: Should either of these be included without adjusting the inventory accordingly??

 # & Description of Potential Measure

1.13 Set goals for government departments and encourage all local businesses to become certified by the Green Business program of Jefferson County Health. (NOTE: This program incorporates many of the measures listed throughout this Climate Action Plan.)

Current Estimate (impact/cost/benefit/barriers/measurability)

L 0 + L L

Implementation Scenario

Step:	Lead:	Timing
Educate and Certify the Gov. dept. on green business program	Gov.	6 months
Campaign to support green business program to community	Green Building Program	6 months
Green business award to business each year	Green Building Program	annual

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- Need to consult with Green Building program to understand emission reductions
- Includes energy-star & enviro-start programs

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Getting people to change habits,
- Cost to upgrade new tech.,
- Reduction in energy costs

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Reduction of other waste and pollution problems

Costs	**Anticipated Cost Savings**
Upfront cost: $2500 **Annual cost:** ¼ - ½ FTE? **Potential Funding Source:**	____28,750_____ $/yr. **Estimate Emissions Reduction:** ____124.25_____tons/yr.

CAC Recommendation

X Recommend by Consensus

☐ Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

☐ Recommend – with Strong Opposition
(Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

☐ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):
Green Business

Assumptions:

Number of Departments participating: 25
All other defaults used
$100 per department implementation cost

4.97 tons per department 124.25
124.25 tons total

 # & Description of Potential Measure

1.14 Purchase Green Energy from the grid.

Current Estimate (impact/cost/benefit/barriers/measurability)

L 0 + L L

Implementation Scenario

Step:	Lead:	Timing
Contact provider to set appropriate level	County Admin	1 Day

Assumptions (e.g. What % of buildings would participate? What is anticipated % kwh savings?)

- The standard green power charge is $0.0125/kilowatt-hour over standard utility charges. In addition, PSE offers a large volume rate of $0.006/kilowatt-hour for green power purchases of 1,000,000 kilowatt-hours or more in a year. The costs & ghg savings listed below assume high-volume rate of .006/kwh.

Barriers/Concerns (e.g. regulatory, resources, technology, adverse environmental impacts, disproportionate effect on low-income households/small business)

- Budget concerns,

Potential Indirect Benefits (Other than GHG reduction or cost savings; e.g., new jobs)

- Partnership opportunities with PSE (see brochure) for effective outreach and leading by example

Costs	**Anticipated Cost Savings**
Upfront cost: $0 **Annual cost:** $13,500 **Potential Funding Source:**	____0_____ $/yr. to businesses **Estimate Emissions Reduction:** ____967_____tons/yr.

CAC Recommendation

X Recommend by Consensus

☐ Recommend – General Agreement (Majority agrees to move recommendation forward, with no strong opposition by subcommittee member(s)

☐ Recommend – with Strong Opposition
(Majority agrees to move recommendation forward, but strong opposition exists by one or more stakeholders – explain)

☐ Recommendation does not move forward

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):
Green Power Purchase

Assumptions:

Percentage of Green Power	Annual Gre	Monthly Cl	Annual Exp	PSE Business Recogniti
4%	96,000 kW	$100	$1,200	Partner
44%	1,000,000 l	$500	$6,000	Leader
100%	2,250,000 l	$1,125	$13,500	100% Leader

Contract for 100% - for high GHG reduction & outreach

Climate Action Committee
Worksheet #2 – Existing Measures

Sector: Jefferson County Department of Community Development

Category: (circle one) City, **County**, Community

Measure: (e.g. Hybrid Fleet – description)
DCD implemented a 36 hour, four day work week effective December 1, 2008.

Contact: Al Scalf

Implementation Status: Current and ongoing

Step:	Lead:	Timing	Barriers (e.g. regulatory, resources, technology)
Work with Board of County Commissioners and union, and notify staff.	Al Scalf	In place and ongoing	Public access to government services.

Estimate Emissions Reduction: /yr.
Emissions due to employee commute reduced by 20%. Emissions due to heating and cooling can be changed to reflect time staff is present with programmable thermostats.

Assumptions: (e.g., this is a voluntary measure, we anticipate 9% reduction)

This action was mandatory based on the current economic climate. May not be a permanent measure, and could change if staff hours are increased to 40 hours per week.

Concerns

Disproportionate effects?
(e.g., low-income households, small business)

Environmental impacts
(e.g., wind turbines and avian impacts)

Number of days DCD is available to the public and other agencies is reduced.

Subcommittee Recommendation:	**Priority:**
□ Support ongoing efforts	H – M - L
□ Provide additional resources, explain:	
□ Address policy/regulatory barriers	

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):
Telecommute (reduce days at work)
worksheet not saved - keep for telecommute
Assumptions:

Number of employees: 20
6.75 Avg One-way commute (see 1.2)

CO2e reduction: 6 Tons
Cost: 0
Cost Recovery: 0
Savings: $48,244 (for employees)

Climate Action Committee
Worksheet #2 – Existing Measures

Sector: Jefferson County Department of Community Development

Category: (circle one) City, **County**, Community

Measure: (e.g. Hybrid Fleet – description)
Traded traditional vehicle (Taurus) for an electric vehicle (Zenn) for in-city trips.

Contact: Al Scalf

Implementation Status: Current and ongoing

Step:	Lead:	Timing	Barriers (e.g. regulatory, resources, technology)
Trade vehicle	Al Scalf	In place	
Train staff to drive vehicle	Al Scalf	In Place	Staff hesitance to drive it. Not used to driving an electric vehicle which has different feel and driving requirements (anticipate hills, no audio feedback for speed.)

Estimate Emissions Reduction: /yr.
Unknown

Assumptions: (e.g., this is a voluntary measure, we anticipate 9% reduction)
Commitment by BoCC

Concerns

Disproportionate effects?
(e.g., low-income households, small business)

Environmental impacts
(e.g., wind turbines and avian impacts)

One fewer vehicle available to staff for out of city trips. Additional coordination and scheduling required.
Not enough battery charge for vehicle to accomplish full day of inspections in the city.
Vehicle cannot always maintain speed limit on hills.

Subcommittee Recommendation:	**Priority:**
□ Support ongoing efforts	H – M - L
□ Provide additional resources, explain:	
□ Address policy/regulatory barriers	

Notes for related CAPPA Worksheet(s)

Worksheet Name(s):
Electric Vehicles
worksheet not saved - keep for long range planning
Assumptions:

Number of vehicles replaced: 1

CO2e reduction: 4 Tons

Cost Recovery: 7.4 years
Savings: $6,758 yr

Appendix F

Portland Climate Action Now's, Climate-friendly Actions At Home & For Your Business

Climate-friendly Actions at Home

Between driving, heating, cooling and powering our homes, Portland residents are responsible for about 50 percent of all local carbon emissions — and that's without counting the contribution of all the things we buy. At a national level, the production and distribution of goods amounts to another 38 percent of carbon emissions.

	TAKE ACTION TODAY!	NEXT STEPS...	START PLANNING FOR CHANGE.
	Most of these actions can be done in less than 20 minutes, for less than $20. Why wait?	With just a little set up time, you can get your household on the right track.	Some changes take time and planning. Start thinking about these goals now.
GETTING STARTED	Calculate your carbon footprint. **Quick:** www.footprintnetwork.org **Thorough:** www.epa.gov/climatechange/emissions/ind_calculator.html	Create a "carbon budget" for your household: identify areas where you can cut back.	Make a plan to reduce your carbon emissions by 5 percent every year.
BUILDINGS & ENERGY	Save energy and costs: replace incandescent light bulbs with efficient compact fluorescent light bulbs (CFL). www.18seconds.org Plug your microwave, stereo, chargers, television and computer equipment into power strips that can be shut off when not in use. Turn down your thermostat three degrees (or 66°F daytime and 55°F night time). If you have air conditioning, turn up your air conditioner three degrees.	Set up a free home energy review with Energy Trust of Oregon: 866-968-7878 www.energytrust.org Get a free water conservation kit from the Portland Water Bureau: 503-823-7439 www.portlandonline.com/water/conservationkits Buy clean energy from your utilities: PGE: 503-228-6322 www.portlandgeneral.com Pacific Power: 1-800-869-3717 www.pacificpower.net NW Natural: 1-800-422-4012 www.nwnatural.com	Fully insulate your home and seal ducts. Replace your furnace and home appliances with ENERGY STAR models that qualify for Oregon tax credits: www.oregon.gov/ENERGY When planning a home renovation project, call the Green Building Hotline for expert advice. 503-823-5431 www.buildgreen411.com Install solar water heating or a solar electric system on your home: 1-877-546-8769 www.solarnoworegon.org
MOBILITY	Maintain your car: properly inflate tires and keep it tuned up for efficient driving.	Shift daily trips to walking, bicycling, transit and carpooling to reduce driving. www.portlandonline.com/transportation	Buy the most fuel-efficient vehicle that meets your needs. If your household has more than one car, try to eliminate a car and borrow or share a second vehicle when you need one.
CONSUMPTION & SOLID WASTE	Recycle right: recycle all paper, metal and glass, as well as yogurt tubs and other plastics accepted at curbside: 503-823-7202 www.portlandonline.com/bps/carts Paper or plastic? No thanks! Take reusable bags with you every time you go shopping.	Compost food scraps in your backyard: www.oregonmetro.gov Shop Local: visit neighborhood shops and keep your dollars in Portland: www.portlandisbettertogether.com	Be a smart consumer: • Make a list. • Cross off any items that can be rented, purchased used or borrowed instead. • Buy long-lasting, durable goods.
FOOD, AGRICULTURE & URBAN FORESTRY	Visit a local farmers market to purchase fresh, local produce: www.portlandfarmersmarket.org	Reduce the number of times you eat beef and pork each week. Use native species and wildlife attracting plants in landscaping your yard.	Plant a vegetable garden or more trees: Portland Parks and Recreation, Community Gardens: 503-823-1612 www.portlandonline.com/parks Friends of Trees: : 503-282-8846 www.friendsoftrees.org

Climate-friendly Actions for Your Business

Did you know that the commercial sector accounts for 25 percent of the total volume of carbon emissions? And that's not counting carbon produced by employee commuting habits. Take action at work and you'll not only being doing your part to slow climate change; you'll also save money, conserve resources and enhance your reputation.

	TAKE ACTION TODAY!	NEXT STEPS...	START PLANNING FOR CHANGE.
	Most of these actions can be done in less than 20 minutes, for less than $20. Why wait?	With just a little set up time, you can get your business on the right track.	Some changes take time and planning. Start thinking about these goals now.
GETTING STARTED	**Contact the BEST Business Center for a free evaluation of your business operations.** Receive ideas on how to reduce energy usage, save money and shrink your carbon footprint. www.bestbusinesscenter.org	**Create a green team:** Write a sustainability plan and keep it fresh: review and evaluate success on a regular basis. Host annual employee sustainability education and engagement events.	**Become a Portland Climate Champion:** www.bestbusinesscenter.org/recognition
BUILDINGS & ENERGY	Minimize energy use when your building is unoccupied: Turn off all lights and computers each evening and turn back heating/cooling settings at night with a programmable thermostat. Convert all incandescent lights to compact fluorescent lights (CFL). Upgrade old T12 lights to T8 lights. If electricity fees are included in your lease, purchase renewable energy credits: www.green-e.org/gogreene.shtml	Buy clean energy from your utilities: PGE: 503-228-6322 www.portlandgeneral.com Pacific Power: 1-800-869-3717 www.pacificpower.net NW Natural: 1-800-422-4012 www.nwnatural.com Add occupancy sensors to infrequently used areas like bathrooms and storage rooms. Attend a free workshop to learn more about solar electric or solar water heating for your business: www.solaroregon.org/workshops	Create an office policy that requires ENERGY STAR certification for new equipment, like computers, printers and refrigerators. www.energystar.gov Install solar panels on your building: www.solarnoworegon.org
MOBILITY	Encourage employees to drive less and save more: www.drivelesssavemore.com Ask employees what would make it possible for them to commute without driving alone. Reduce corporate air travel by substituting web-conferencing or encouraging travel by train: www.webconferencing-test.com	Offer employees pre-tax transit passes. Provide information on nearby bus routes, bike parking and carpooling options: www.trimet.org www.tinyurl.com/pdxbikeparking www.carpoolmatchnw.org Offer incentives for employees to bike, walk, bus or carpool to work; consider $30 per month cash or two extra vacation days per year. Offer employees telecommuting options.	Locate your business near transit facilities. Provide secure bike parking. Remove or significantly reduce free or subsidized parking for employees. Offer employees a car-sharing membership for transportation needs during the day: www.zipcar.com
CONSUMPTION & SOLID WASTE	Follow the five easy steps to setting up a successful workplace recycling system: 2009-10 City of Portland Recycle at Work Certified www.recycleatwork.com/portland	Create a sustainable purchasing strategy for your workplace: identify products that contain recycled content or those that can be easily recycled at the end of use.	Cut your waste in half. Identify products that don't need to be consumed, used, disposed or recycled.

City of Portland Bureau of Planning and Sustainability
Sam Adams, Mayor | Susan Anderson, Director