



City of Homer

Climate Action Plan

Reducing the Threat of Global Climate Change
Through Government and
Community Efforts

December 2007

December 11, 2007

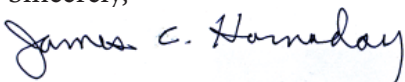
Dear Fellow Citizens:

On behalf of the City of Homer it is my pleasure to introduce the Homer Climate Action Plan. This plan, which reflects a great deal of thoughtful inquiry and public input, was developed in recognition of the serious threat that global climate change poses not only to our beautiful community but to the global community, and the responsibility of governments at all levels to demonstrate leadership in making the transition from “business as usual” to fundamentally new ways of thinking and acting as we confront climate uncertainty, energy uncertainty, and the pressures of human population growth in the coming years.

One of the phrases heard during public testimony in support of the Climate Action Plan is that implementation of the plan is not only the right thing to do, it is also the smart thing to do. Most of the measures recommended in this plan would be prudent even if climate change did not exist. Many of the measures can be expected to save the City (and hence taxpayers) significant money in electricity and fuel costs. Others will help create a healthier, safer, more livable and more self-reliant community.

While the measures in this plan were formulated specifically for implementation by the City of Homer, it is our intent to lead by example and thus encourage all citizens of the community to make changes in their own lives to reduce greenhouse gas emissions. Global climate change is not a problem that can be solved by any single person, household, business, or government. It is only by working with serious resolve in a spirit of cooperation that citizens around the world can change course and avoid a looming crisis. For the sake of current and future generations, we must not wait any longer.

Sincerely,

A handwritten signature in cursive script that reads "James C. Hornaday". The signature is written in black ink and is positioned above the typed name.

Mayor James C. Hornaday

Acknowledgements

GLOBAL WARMING TASK FORCE:

Alan Parks, Chair
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City of Homer Climate Action Plan

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Homer Climate Action Plan

EXECUTIVE SUMMARY

The idea for a local “climate action plan” for Homer began when Mayor Jim Hornaday attended a national climate change conference in Girdwood, Alaska in September 2006. The Homer City Council supported the Mayor’s request to establish a local Global Warming Task Force through approval of Resolution 06-141(A) in January 2007. The 12-member task force began work immediately to solicit ideas and information from the public and other sources and prepare recommendations to forward to the Mayor and Council by the end of the year. In March, Homer joined the International Council for Local Environmental Initiatives (ICLEI), as one of more than 700 local governments participating in the Cities for Climate Protection Campaign. Later, Homer accepted an invitation to participate in the pilot phase of ICLEI’s Climate Resilient Communities program, which focuses on adaptation to climate change.

The impetus for action by the City of Homer was the growing recognition that global climate change is real, it is due primarily to human activities, and it will have catastrophic consequences if immediate action is not taken to curb greenhouse gas emissions.

Soon after the task force began its work, the urgency of the situation was highlighted by the release of the fourth assessment report (AR4) by the Intergovernmental Panel on Climate Change (IPCC), the world’s most expert body on global climate change. In May 2007, the IPCC released a draft Summary Report for Policy Makers that presents compelling evidence to indicate that global greenhouse gas emissions must peak no later than 2015, be 50-85% less in 2050 than they were in 2000, and remain below a concentration of approximately 450 parts per million (CO₂-equivalent) to prevent a global mean temperature increase greater than 2.0 to 2.4 degrees C. Beyond this threshold, “serious or catastrophic” impacts can be expected. (These include sea level rise, widespread flooding, crop failures, water shortages, extreme weather events, and loss of biodiversity.)

On 16 November 2007, just as this Climate Action Plan was being finalized, the IPCC released its “Summary for Policymakers of the Synthesis Report of the IPCC Fourth Assessment Report” in which it concluded with unprecedented language the urgency to initiate meaningful measures within the next two to three years to combat global climate change.

Because high latitude regions of the planet are particularly vulnerable to the impacts of global climate change, Alaska has been described as “ground zero” for global warming. Melting sea ice is one of the most visible changes and one which is threatening northern coastal communities as well as marine mammals that depend on the ice for survival. In addition, Alaska’s forests and fisheries are at high risk from global climate change.

“All too frequently, inaction is motivated by the perceived high cost of reducing greenhouse gas emissions. The costs of not taking on the challenges posed by climate change are frequently neglected and typically not calculated.”

—“The US Economic Impacts of Climate Change and the Costs of Inaction,”
University of Maryland,
October 2007

“It would be irresponsible to ignore emerging information about the contribution of carbon dioxide and other greenhouse gases to climate change and the potential harm to our environment and health if we do nothing.”

—Roderick L. Bremby, Kansas Dept. of Health & Environment, regarding the department’s decision to deny a permit for a coal-fired power plant

“The question of where we get our energy is no longer just an economic issue, nor solely an issue of national security.

Quite simply, we have a moral obligation to be good stewards of this state.”

—Kansas governor Kathleen Sebelius, regarding the same decision

Local governments throughout the United States have also been motivated to address climate change at the local level in part because state governments and the federal government have simply failed to do so. It is hoped that action at the local level will not only have a significant direct effect on CO₂ emissions, it will also help create pressure for meaningful action at the state and federal level, which will in turn help spur the economic and technological changes needed worldwide.

In keeping with the science as presented by the IPCC and other sources and following the example of many other governments, this Climate Action Plan recommends a greenhouse gas emissions reduction target of 12 percent by 2012 and 20 percent by 2020, using 2000 levels as a baseline. Utilizing software tools provided by ICLEI, the task force estimated Year 2000 emissions (using actual data from 2006) and established “business as usual” forecasts through the year 2020 for both local government and the Homer community as a whole (within city limits).

At the same time, the task force began researching possible interventions that could be undertaken by the City of Homer to reduce greenhouse gas emissions. These “mitigation” recommendations are grouped in this plan under the headings of **Energy Management** (which primarily looks at improving energy efficiency in buildings and developing sources of renewable energy to power City facilities); **Transportation** (in relation to the City vehicle fleet, employee driving, and support for non-motorized and public transportation in the community); **Purchasing & Waste Reduction** (includes “thoughtful purchasing” and recycling strategies); and **Land Use** (e.g., “smart growth” strategies that support compact, mixed-use development and thus reduce the need to drive). **Outreach & Advocacy** was included as a separate category in recognition that 1) public education will help bring about community-wide reductions in greenhouse gas emissions; 2) efforts in Homer will be greatly assisted by policy changes at the borough, state, and federal levels and within Homer Electric Association; and 3) action at higher levels of government is urgently needed as part of a global response to mitigate climate change.

Adaptation to global climate change is addressed separately in the plan, to focus attention on the fact that Homer’s climate is changing and will continue to change even if global greenhouse gas reduction goals are met. Recommendations are aimed at creating a resilient local economy, protecting existing infrastructure, being prepared for extreme weather events and wildfires, and adopting wise policies for future development.

Finally, the Climate Action Plan addresses implementation as a separate chapter and proposes the establishment of a “Sustainability Fund” to serve as a repository for money from various sources that would be used to implement the measures recommended in the plan. Implementation strategies reflect concerns heard from many members of the public that the plan must not be allowed to “sit on a shelf.” If Homer’s Climate Action Plan is used as intended, the community will see immediate local benefits and perhaps make a contribution to the global effort to combat climate change far beyond what most small towns have achieved.

BACKGROUND

INTRODUCTION

A scientific consensus based on an overwhelming body of evidence concludes: Global climate change is happening, it is caused in large part by human activities, and unless urgent action is taken at the levels of local communities and state/federal government to both mitigate and adapt to it, people and our environment will experience serious and damaging effects in the decades and centuries ahead.

In September 2006, Homer Mayor Jim Hornaday attended a national conference in Girdwood, Alaska, titled “Strengthening Our Cities: Mayors Responding to Global Climate Change.” During the conference he heard presentations from scientists and policy makers with a strong central theme: Local governments have an urgent and important role to play in addressing global climate change.

Mayor Hornaday returned to Homer and proposed the formation of a Global Warming Task Force (GWTF) to study and make recommendations to the City Council on ways Homer can reduce greenhouse gas emissions and reduce the impacts of global climate change on its environment, economy, infrastructure, and future development. The City Council approved the mayor’s proposal and, in fact, widened it to consider large-scale regional impacts. (City Council Resolution 06-141(A) approved 8 January 2007.) The GWTF held its first meeting on 26 January 2007, with the goal of developing its final report by the end of the year.

The remainder of this section describes 1) the scientific consensus about global climate change, including what is known for state and local levels; 2) examples of various global, regional/state, and local initiatives to combat global climate change; 3) public policy reasons for taking urgent action to combat global climate change; 4) ethical reasons for taking urgent action to combat global climate change; and 5) the need for Homer’s city government and citizens to engage in constructive advocacy with other Alaska communities and with state government to combat global climate change. Additional sections provide information on greenhouse gas emissions in Homer, emissions reduction targets, and strategies to achieve those targets.

SCIENTIFIC CONSENSUS ABOUT CLIMATE CHANGE

Due largely to human activities such as the combustion of fossil fuels primarily and secondarily to changes in land use, humans are changing the global climate system. The reason is because these activities result in emissions of gases such as carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (NO₂) into the earth’s atmosphere that alter the balance of heat stored in the earth-atmosphere. Most visible sunlight passes through the earth’s atmosphere without being absorbed by it and, hence, warms the earth’s surface. The earth’s surface emits infrared radiation (heat energy) back to the atmosphere. Some is absorbed by the aforementioned

“The greenhouse effect has been detected, and it is changing our climate now.”

—James E. Hansen
Chief of NASA’s Goddard Institute for Space Studies, during a U.S. Senate hearing on global warming, 1988

“The median predictions of the world’s climatologists—by no means the worst-case scenarios—show that unless we take truly enormous steps to rein in our use of fossil fuels, we can expect that the globally averaged temperature will rise another four or five degrees before the century is out. If that happens, the world will be warmer than it’s been for millions of years, long before primates appeared on the planet. We don’t know exactly what that world would feel like, but almost every guess is hideous.”

—Author Bill McKibben, in *Deep Economy: The Wealth of Communities and the Durable Future*

gases and some is reradiated back into space. The gases that absorb heat energy in the atmosphere that has been reradiated from the earth’s surface are known as “greenhouse” gases because their buildup in the atmosphere causes warming of the earth-atmosphere system. In turn, this warming causes adverse impacts to natural environments, natural resources on which humans depend, and human health and welfare. Because of the huge amount of carbon dioxide that humans have emitted into the earth’s atmosphere, it is considered to be responsible for most of the observed human-induced warming of the earth-atmosphere system, followed by methane as the second greatest contributor to warming. The basic processes leading to global climate change from increased atmospheric concentrations of greenhouse gases are shown below.

Atmospheric concentrations of greenhouse gases are at a level unprecedented during the past 650,000 years. Current atmospheric levels of carbon dioxide are 380 or more parts per million (ppm) compared to an historical high over the past 650,000 years of around 310 ppm. The atmospheric concentration of carbon dioxide has increased 31 percent since 1750 (Industrial Revolution) and has not been exceeded during the past 650,000 years and likely not during the past 20 million years. Because of the heat trapping capacity of greenhouse gases, the earth-atmosphere system likely is as warm as it ever has been during this

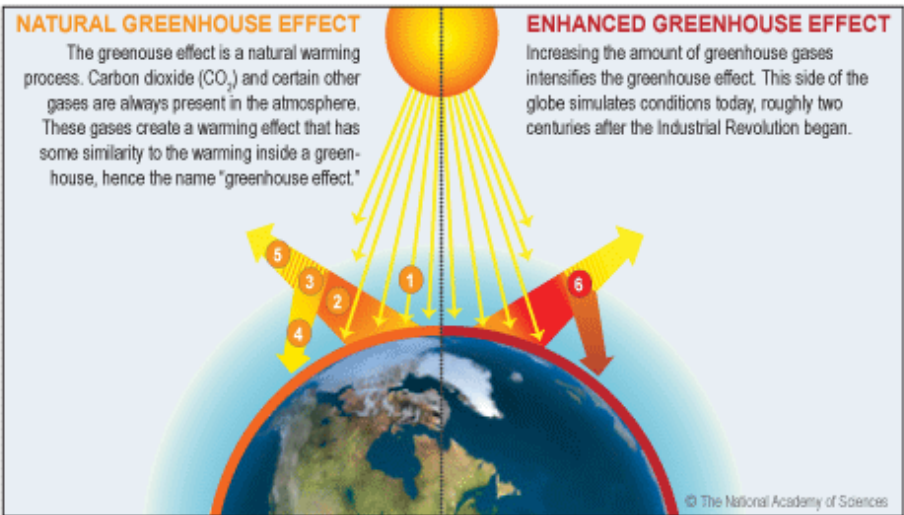
The Greenhouse Effect

NATURAL GREENHOUSE EFFECT

The greenhouse effect is a natural warming process. Carbon dioxide (CO₂) and certain other gases are always present in the atmosphere. These gases create a warming effect that has some similarity to the warming inside a greenhouse, hence the name “greenhouse effect.”

ENHANCED GREENHOUSE EFFECT

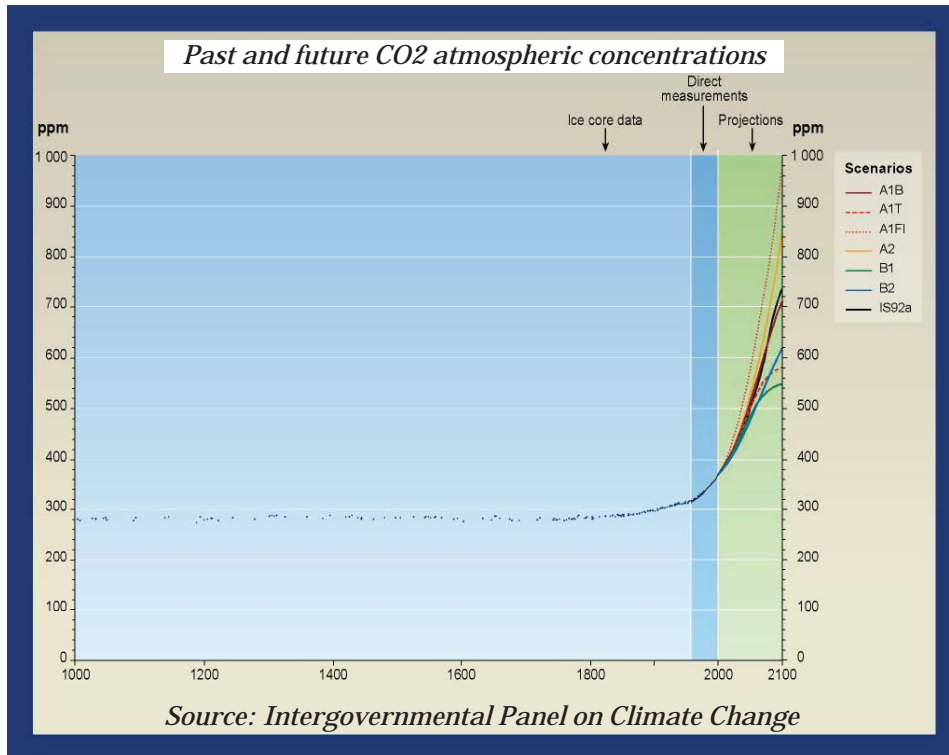
Increasing the amount of greenhouse gases intensifies the greenhouse effect. This side of the globe simulates conditions today, roughly two centuries after the Industrial Revolution began.



© The National Academy of Sciences

Illustration of the greenhouse effect (courtesy of the Marion Koshland Science Museum of the National Academy of Sciences). Visible sunlight passes through the atmosphere without being absorbed. Some of the sunlight striking the earth **1** is absorbed and converted to heat, which warms the surface. The surface **2** emits infrared radiation to the atmosphere, where some of it **3** is absorbed by greenhouse gases and **4** re-emitted toward the surface; some of the heat is not trapped by greenhouse gases and **5** escapes into space. Human activities that emit additional greenhouse gases to the atmosphere **6** increase the amount of infrared radiation that gets absorbed before escaping into space, thus enhancing the greenhouse effect and amplifying the warming of the earth.

Image Source: The National Academy of Sciences



650,000 year period. As will be discussed, this build-up of greenhouse gases is causing and will continue to cause serious damage to natural environments, natural resources on which humans depend, and human health and well-being.

By the end of the 1970s most scientific studies indicated that global climate change would likely be dominated by human-induced greenhouse gases accumulating in the earth-atmosphere system from around 1750 and onwards—primarily from fossil fuel combustion and secondarily from deforestation. In 1991, the conclusion of the world’s most expert body on climate change, the Intergovernmental Panel on Climate Change (IPCC), was “A clear scientific consensus has emerged in the 21st Century that the world’s climate is changing.” The IPCC’s “Second Assessment Report” was issued in 1995, and contained the conclusion that a “balance of the evidence on climate change showed a discernable human influence on climate.” In 2001, the IPCC’s third assessment report was released, and made specific predictions about how human actions would change the global climate and how climate change would affect human health and the environment. The third assessment confirmed and expanded upon previous IPCC reports and concluded that there was additional evidence that human-induced climate change had already become noticeable around the world.

In the spring of 2007, the IPCC’s fourth assessment (AR4) was released and concluded with a confidence greater than 90 percent that human activities are the primary cause of the atmospheric build-up of greenhouse gases and its resultant human health and environmental impacts. The AR4 had over 2500 scientific expert reviewers; over 800 contributing

“The biggest challenge is how to get people to wake up and realize this is a one-shot deal. If we fail, we are witting participants in the biggest experiment that humans have ever done: moving CO2 levels to more than twice their value in the past 670,000 years and hoping it turns out okay for generations to come.”

—Nathan S. Lewis, California Institute of Technology

“We have to deal with greenhouse gases. From Shell’s point of view, the debate is over. When 98 percent of scientists agree, who is Shell to say, ‘Let’s debate the science?’”

—John Hofmeister,
president of Shell Oil Co.

authors; over 450 lead authors; and took six years of work. Over 29,000 long-term datasets were reviewed by IPCC, and 89 percent exhibited changes in the direction expected from global warming.

In 2005, over 15 of the world’s most prestigious national academies of science issued a joint statement wherein they concluded, “There is now strong evidence that significant global warming is occurring... it is likely that most of the warming in recent decades can be attributed to human activities. This warming has already led to changes in the Earth’s climate.” Subsequently, other nations’ academies of sciences have issued the same conclusion. This type of conclusion also has been echoed by numerous studies made by other scientific professional organizations. In fact, there has not been even one major scientific study that has refuted such a conclusion.

Further, since 1850 the mean annual temperature of the earth-atmosphere system has increased over 1.2 degrees C; and in the last century the increase has been about 0.74 degrees C, with most of the increase coming during the past 50 years. This temperature increase has been the largest of any century during the past 1000 years (and likely longer), possibly exceeding the capabilities of most human societies to adapt to the increase without harm or cost, as well as exceeding the capabilities of many plants and animals to adapt to the increase. Almost all of the temperature increase is attributable to human activities and the increase brings us close to the “2-2.4 degrees C” increase that scientists tell us will likely result in serious and/or irreversible impacts.

Global Impacts of Climate Change

Some areas and people already are experiencing the impacts of human-induced global climate change. First, there has been a growing increase in desert areas and the spread of severe drought in regions of Africa, Asia, and our own Southwest. Second, annual average river runoff and water availability are increasing at high latitudes and in some wet tropical areas, and decreasing over some dry areas at mid-latitudes and in already water-stressed dry tropical areas. Third, world-wide most ecosystems are experiencing disturbances such as flooding, drought, changes in wildlife, infestations of insects, and ocean acidification. Approximately 20-30 percent of plant and animal species assessed so far are likely at increased risk of extinction if the global average temperature increase exceeds 1.5 -2.5 degrees C. Fourth, there are regional changes in the distribution and productivity of agricultural crops, forestry products, and fisheries. Fifth, low-lying island nations are affected by sea level rise (resulting in emigration of their people), and high-latitude regions are experiencing coastal erosion and increased intensity of storms. World-wide, millions of people are at risk from even small sea level rise. (Because of its coastal location this has particular relevance for a city such as Homer.) Sixth, health effects are becoming manifest; e.g., increases in malnutrition with implications for child growth and development; increases in deaths and disease due to heat waves; increases in incidences of diarrheal diseases in developing countries; increases in frequency of respiratory diseases; and

increased incidences of tropical diseases spreading northward (e.g., West Nile virus and Dengue fever).

We also note that several studies by the United States Department of Defense and other groups concerned with our nation's security have identified global climate change as a threat to national security because of the risks of geopolitical instability and regional wars that could be fought over, say, declining water or other resources or result from so-called "environmental refugees" emigrating from poor nations to other regions in order to escape the impacts of climate change. (Already, relations between some countries in the Middle East are strained because of disputes over declining water availability, and emigration already has occurred from some low-elevation island nations.)

Impacts of Global Climate Change to Alaska

The recent IPCC AR4 also documents the substantial and disproportionate vulnerability of high latitude regions to the impacts of human-induced global climate change to places such as Alaska. This disproportionate vulnerability stems from the fact that increases in warming are not uniform across the globe: In many arctic and sub-arctic regions (including Alaska), temperatures have increased significantly and disproportionately compared to lower-latitude regions since 1850 and are projected to increase even more unless climate change is mitigated. Presently, arctic and sub-arctic regions are warmer than they have been in the past 400 years, and possibly longer, and are projected to increase another 1-3 degrees C by 2030 and even more by 2100. Global climate change models also project an increase of about 25 percent of current precipitation by 2100 for many areas. Despite this increase, increased evaporation due to higher summer temperatures is likely to exceed the effect of projected increases in precipitation such that soil moisture is expected to decrease throughout the state resulting in direct adverse impacts to forests and other terrestrial and aquatic resources.

Climate changes already are underway in Alaska and these have impacted people and ecosystems of the state. Unless successful programs for mitigating and adapting to global climate change are implemented, the impacts will become more severe in the future. For example, both the "Impacts of Climate Change in the United States" and the "Alaska Climate Impact Assessment" have identified four key types of significant impacts for Alaska: 1) thawing and melting of ice and permafrost; 2) changes to forests; 3) changes to marine ecosystems; and 4) changes to peoples' health and welfare. Important to note is that climate change impacts are projected to cost Alaska up to \$6 billion by 2030 unless climate change mitigation actions are taken.

Sea Ice, Thawing of Rivers, Thinning of Glaciers, and Permafrost

Alaska has a variable climate ranging from the wet coastal areas to the semi-arid northern slopes. Despite this climatic range, permafrost

"There is never certainty in science, but the deniers have it exactly backward. The vast majority of knowledgeable scientists worry that the Intergovernmental Panel on Climate Change conclusions are too conservative, and the consequences for humanity are likely to be more severe than projected."

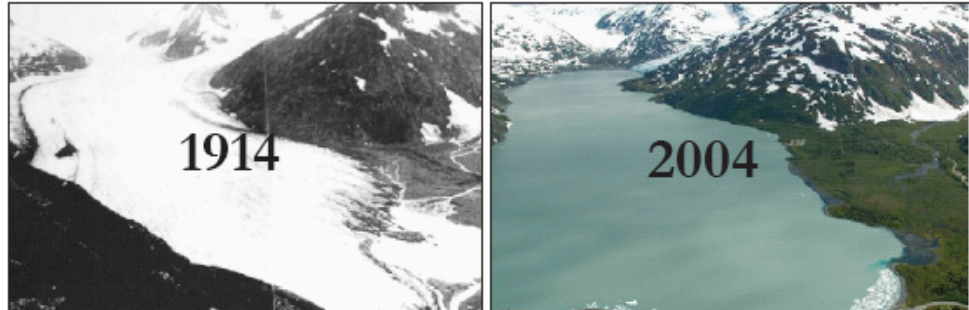
—Paul R. Ehrlich,
Stanford University

“They’re going to drown, they’re going to starve, they’re going to resort to cannibalism, they’re going to become extinct.”

—Kassie Siegel, Center for Biological Diversity, regarding the impact of melting arctic sea ice on polar bears

underlies approximately 85 percent of the state, excepting narrow regions along its southern coast. Thawing of permafrost, retreat and thinning of arctic sea ice (up to a 60 percent reduction since the 1960s with a rate of loss of approximately 3.3 percent per decade with a possible loss of all sea ice by 2100), and reduction of the time in which Alaska’s rivers are frozen already are underway and projected to continue without urgent and deep cuts in greenhouse gas emissions. The changes in thawing of the permafrost are likely to cause widespread alterations to the lifecycles, habitats, and health of terrestrial and marine ecosystems and species, consequently harming subsistence as well as commercial livelihoods. Thawing of the permafrost already has occurred and is estimated to have caused damages of about \$35 million per year. Obviously, the monetary amount of damages will increase without mitigation and adaptation to global climate change. Also important to note is that when permafrost thaws this increases below-ground respiration, resulting in an even

Portage Glacier, Alaska



Photos: NOAA Photo Collection and Gary Braasch – WorldViewOfGlobalWarming.

greater release of greenhouse gases back to the atmosphere. Loss of arctic sea ice lowers the amount of sunlight that is reflected back into space, thereby exacerbating warming from other causes. In addition, loss of sea ice threatens marine mammals such as polar bears and other species.

Forests

The threats to Alaska’s forests from fire and insect infestations brought about by human-induced climate change have increased in recent years. Spruce trees are experiencing heavy infestations of bark beetles. Future climate changes are likely to increase the stresses to forests with a concomitant large-scale landscape transformation as boreal forests advance into present tundra and mixed forests into boreal forests. Other projected impacts from climate change include an increase in forest fire intensity and frequency and an increase in strong winds resulting in more “blow down” of forest trees.

Marine Fisheries and Ecosystems

Alaska’s marine ecosystems are strongly influenced by changes in global and regional climate. Such changes include altered stream flow, nutrient content, water temperature, increased acidification of ocean waters, and the vertical stability of coastal waters. Unless mitigated by actions to

combat global climate change, such changes are projected to bring about large-scale changes in both subsistence and commercial fisheries with concomitant economic impacts. (Already, water temperatures in Kenai Peninsula salmon streams are warming, consistently above state-assigned levels set to protect spawning and migrating fish.)

Other Concerns

Based on the aforementioned scientific studies and assessments, other impacts to Alaska from human-induced global climate change include changes in the freshwater balance and storm surge levels; altered flooding of coastal areas and wetlands; impairment of seabird and shorebird breeding; and increased soil erosion and loss of organic materials that will adversely impact agriculture.

Possible Beneficial Impacts of Climate Change to Alaska

Several possible benefits of global climate change have been identified. These include: 1) enhanced economic activity as additional sea routes become available for longer periods due to melting sea ice; 2) enhanced abundance of salmon near the northern limits of their range; 3) enhanced agricultural production due to warmer temperatures and longer growing seasons; and 4) increased tourism due to more hospitable summer temperatures as compared to those in the Lower 48. However, it is believed that negative impacts of climate change will far outweigh positive impacts, even in northern latitudes.

Impacts of Climate Change to Homer

Generally speaking, state-of-the-art scientific models can project with a high level of certainty global and regional impacts of global climate change. However, most models currently are limited to projections of approximately 1-5 degrees latitude or longitude. Consequently, it is not possible to project with reasonable scientific certainty the exact impacts to a small area such as Homer and its surrounding environs or to quantify them.

Nevertheless, one can extrapolate from the scientific knowledge of global and state/regional impacts of climate change, which are known with reasonable scientific certainty. For example, Homer is a coastal community, and consequently will experience the increasing impacts of sea-level rise to the Homer Spit and to coastal buildings and infrastructure. According to the IPCC, global average sea level rose between 0.1-0.2 meters during the 20th century and is projected to rise by 0.09-0.88 meters by 2100 due to thermal expansion alone (i.e., warming of ocean waters from increased atmospheric temperature). If the contribution of possible or likely melting of ice from the Greenland ice sheet and/or the West Antarctic ice sheet is taken into account, then sea level rise is projected to be in excess of six meters. Further, Homer is very dependent on the health of its fisheries resources, and as mentioned above such resources are at great risk from the impacts of human-induced global and regional climate change. Climate change is expected

“The implications of warming salmon stream temperatures are potentially sweeping... There’s ample documentation showing high water temperatures can increase salmon vulnerability to pollution, predation, and disease.”

—Sue Mauger, stream ecologist, Cook Inletkeeper

“A global effort involving all nations, governments, business, and industry is required to address a problem considered one of the greatest threats to humanity and the future well being of the planet.”

—from the “Declaration on Climate Change by the Financial Services Sector,” United Nations Environment Programme, 2007

to impact local fresh water supplies as a result of increased evaporation and transpiration. Extreme weather events such as the storms of October and November 2002 are likely to become more common. Homer also is surrounded by forests already impacted by increases in bark beetle infestations, and warmer, drier conditions may further increase the risk of wildfires in these areas.

POLICY CONSIDERATIONS

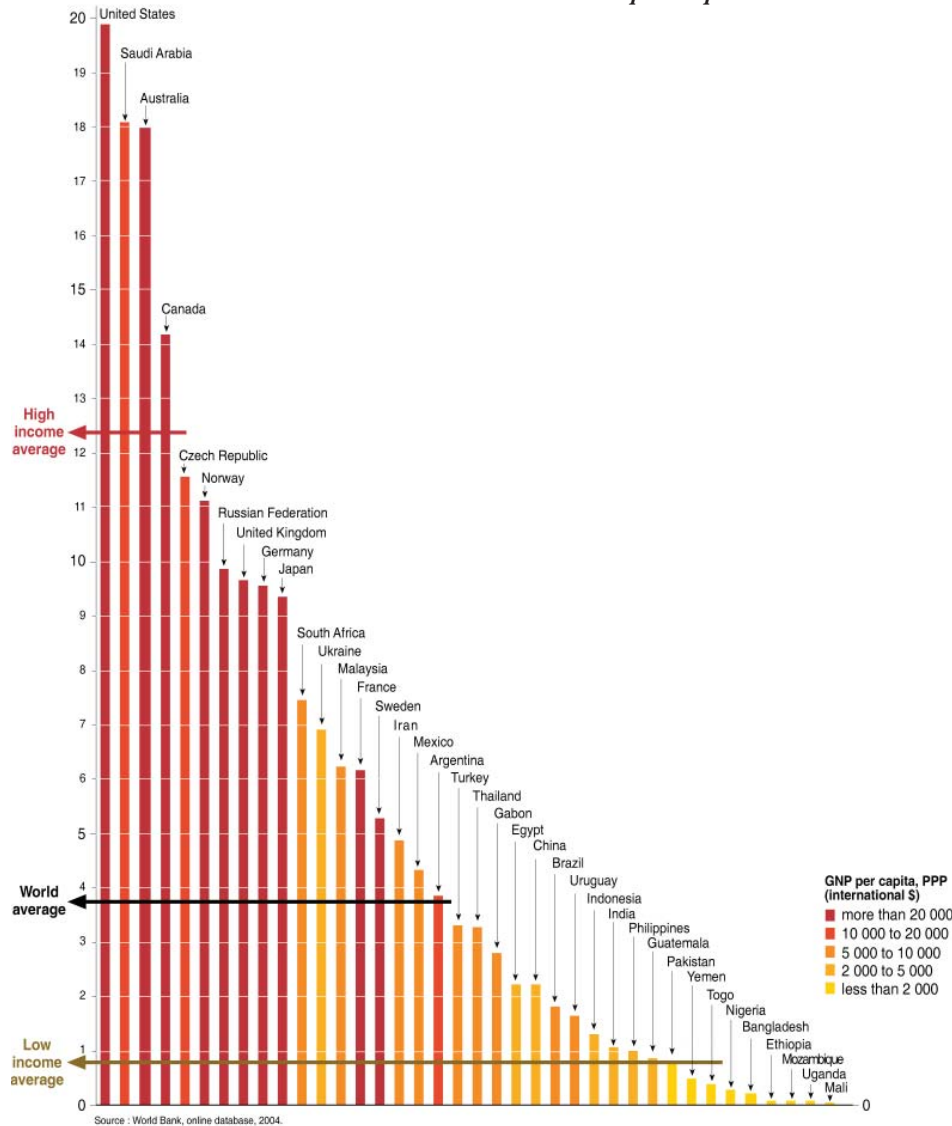
Global Policies

In its recent AR4 Report, the IPCC projected globally averaged temperature to increase by 1.4 to 5.8 C degrees by 2100. It should be noted that this temperature increase is “conservative” insofar as IPCC did not consider the consequences of what are called “positive feedbacks” —events or processes that can make future climate changes nonlinear; i.e., increase faster than expected. One example is that as arctic sea ice melts it increases the amount of radiation absorbed from sunlight by the darker ice-free ocean water which then further warms the earth-atmosphere system above and beyond what would be due to the accumulation of greenhouse gases in the atmosphere. Another example of positive feedback is that with accelerating loss of sea ice and increases in permafrost, large levels of methane will be released that will accelerate global warming to a point where no intervention will be able to mitigate it. This fact alone would seem to require urgent action by all levels of government.

In part, the actual temperature increase of the earth-atmosphere system will depend on the success of nations’ commitments to mitigate greenhouse gas emissions in a timely manner. The IPCC, nations’ national academies of sciences, and other scientific organizations generally conclude (with a 90 percent level of confidence) that if “serious and catastrophic” impacts from human-induced global climate change are to be avoided, then the mean annual temperature of the earth-atmosphere system must not exceed an increase of about 2-2.4 degrees C. In order to avoid such an increase the IPCC concludes that the world must reduce its emissions of greenhouse gases by about 80 percent by the year 2050 and that emissions must peak no later than 2015 and then decline afterward. If policy-makers and decision-makers wish to avoid the serious consequences of global climate change, they need to take this conclusion into account.

One of the first global responses to combat climate change was the 1992 promulgation and subsequent ratification of the United Nations Framework Convention on Climate Change (UNFCCC). With respect to the nations that ratified it, the UNFCCC is a binding international treaty. One of the UNFCCC’s major provisions required of nations the “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to

CO2 Emissions in 2002 - Tonnes per capita



“The United States consumes almost 9 million barrels of gasoline daily—44 percent of total global daily gasoline consumption.”

—Alliance to Save Energy

ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.” Despite this language, the UNFCCC did not impose legally-binding targets to limit or reduce greenhouse gas emissions. The United States ratified the UNFCCC in 1992.

Historical data for the period 1850-2002 indicates that the United States, with about 5 percent of the world’s population, is responsible for about 29 percent of world emissions of carbon dioxide. This compares to the European Union (26 countries) with about 7-8 percent of the world population being responsible for cumulative emissions during 1850-2002 of about 26 percent of total emissions. Following the United States and the European Union is Russia which is responsible for about 8 percent of cumulative emissions. China, with about 20 percent of the world’s population is responsible for about 7.6 percent of historical emissions for 1850-2002. Overall, developed nations of the world, with about 20

“If everyone in the United States stopped driving for one day, we could save about 385 million gallons of gasoline. If everyone in China—the most populous country in the world—did the same, 39.7 million gallons would be saved.”

—Reported in Newsweek, July 2, 2007

percent of the world’s population, are responsible for about 76 percent of the historical emissions of carbon dioxide.

On an annual basis, the United States is responsible for about 24 percent of total worldwide greenhouse gas emissions. On an annual per capita basis, each person in the United States is responsible for the emission of about 22 tons of carbon dioxide to the atmosphere, which significantly exceeds the annual per capita emissions of any other nation. For purposes of comparison, the per capita annual emissions for “high income” countries is about 12.5 tons of carbon dioxide; the world annual average per capita emission level is about 3.7 tons; and the annual per capita emissions for “low income” countries (most of the world) is about 1 ton. Examples of other nations’ annual per capita emissions include: United Kingdom, 9.5; Canada, 14.2; Germany, 9.5; Japan, 9.3; Australia, 18; China, 3.5; India, 1.5. As a point of interest, the average annual level of per capita greenhouse gas emissions for Alaska residents is about four times the United States’ per capita average; this amount is expected to double if and when the proposed natural gas project/pipeline in Alaska is developed.

Because of the fact that the United States and other developed countries are responsible for a disproportionate amount of the historical and current emissions of greenhouse gases, the UNFCCC also mandated that “developed countries should take the lead in combating climate change and the adverse effects thereof.” Importantly, the UNFCCC also adopted the use of the “precautionary principle,” wherein nations “should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures.”

In 1997, the Kyoto Protocol was promulgated to strengthen the UNFCCC by imposing legally-binding targets on developed nations that ratified it to reduce their greenhouse gas emissions by 5-7 percent compared to 1990 levels and to accomplish this by the period 2008-2012. (The Kyoto Protocol entered into force in February 2005.) The Kyoto Protocol has been ratified by 172 nations of the world; the only developed nations of the world that have not ratified it are the United States and Australia. The reason the Kyoto Protocol required developed nations to reduce their emissions by 2008-2012 was because they are disproportionately responsible for the rise in levels of greenhouse gases in the earth-atmosphere system. The Kyoto Protocol expires in 2012 and there always has been the explicit understanding and expectation within the international climate change negotiation framework that in the post-Kyoto regime (i.e., after 2012) new frameworks to limit greenhouse gases would be promulgated and that these would impose obligations to reduce greenhouse gas emissions on countries such as China, India, and other developing nations with large populations and emerging economies.

National/State/Local Community Policies

In addition to addressing the provisions of the UNFCCC and the Kyoto Protocol, many nations are taking strong unilateral actions to mitigate global climate change. For example, the European Union (26 member nations) has made a commitment to reduce greenhouse gas emissions by 20 percent by 2020 compared to 1990 levels (and has agreed to reduce emissions by 30 percent if the United States will agree to binding greenhouse gas reduction limits, even if they are less than those of the European Union.) Although it is part of the European Union, the United Kingdom also has made a commitment to reduce greenhouse gas emissions by over 20 percent by 2010. Canada has developed a “National Climate Change Plan” with mandatory market-based programs designed to reduce greenhouse gas emissions 45 metric tons below 2005 levels in the mining, manufacturing, oil, gas, and thermal electricity sectors. Both Brazil and China have ratified the Kyoto Protocol, but because they are developing nations they are not required to reduce greenhouse gas emissions by 2012 (although they will be expected to do so in post-2012 climate change agreements). Nevertheless, both countries have adopted policies that have slowed their greenhouse gas emissions relative to their economic growth through the use of economic reform, improvements in energy efficiency, renewable energy development, changes in land use practices, and afforestation. Despite other nations’ commitments to reduce greenhouse gas emissions, the United States government has failed to take any meaningful actions to do so. In fact, since 1990 the United States’ emissions of greenhouse gases have increased 17 percent relative to 1990 levels.

In the United States, many states and hundreds of cities are taking action to combat global climate change. For example, over 35 states have prepared or are preparing greenhouse gas emission inventories, and 26 states have initiated greenhouse gas emissions reduction strategies. Although greenhouse gas reduction targets vary between some states, many are setting targets to reduce emissions 20 percent by 2020 compared to 1990 levels.

Many cities such as Homer are working with ICLEI or similar organizations that help them develop and implement climate change action plans. (Approximately 300 cities within the United States are involved with ICLEI and over 700 world-wide are involved.) As of August 31, 2007, 631 mayors in communities representing over 72 million Americans in 50 states had signed the U.S. Conference of Mayors Climate Protection Agreement, wherein participating cities agree to reduce community-wide greenhouse gas emissions by 2012 to at least seven percent below 1990 levels.

Obviously, the actions of states and cities to combat global climate change stem from the increasing concerns of people about the failure of the United States government to develop and implement successful plans to mitigate greenhouse gas emissions. Not only is the United States the largest historical emitter of greenhouse gas emissions and the largest

“Allowing the window of opportunity to close would represent a moral and political failure without precedent in human history.”

—Kevin Watkins, lead author of “Fighting Climate Change: Human Solidarity in a Divided World,” published by the UN Development Programme, November 2007

“Above all, reducing the risks of climate change requires collective action. It requires cooperation between countries, through international frameworks that support the achievement of shared goals. It requires a partnership between the public and private sector, working with civil society and with individuals. It is still possible to avoid the worst impacts of climate change; but it requires strong and urgent collective action.”

—Sir Nicholas Stern
former Chief Economist at
the World Bank

emitter on a per capita basis, it is the only developed country other than Australia that is not part of the Kyoto Protocol and that has not established binding limits to reduce greenhouse gas emissions.

Although a number of states have adopted climate change initiatives to reduce greenhouse gas emissions, the state of Alaska has done relatively little. In July 2002, the Attorney General of Alaska joined the Chief Legal Officers of California, Connecticut, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont in a letter to President Bush requesting him to address global climate change through comprehensive national policies on greenhouse gas emissions. Under Governor Murkowski, the state formed the Alaska Climate Impact Assessment Commission to help assess the impacts of climate change, mostly by soliciting testimony from the private and public sector. However, the commission is not mandated to assess greenhouse gas emissions or recommend reductions. Governor Palin has formed a sub-cabinet on climate change that is chaired by the head of the Department of Environmental Conservation but to date it has had few meetings. On the other hand, some local communities in Alaska are developing initiatives to mitigate and adapt to global climate change, including Anchorage, Juneau, Fairbanks, Sitka, and Kodiak. To our knowledge, no member of Alaska’s state or federal political delegation is on record supporting mandatory reductions in greenhouse gas reductions needed to avoid serious climate change impacts to the state, despite surveys that show that over 80 percent of Alaskans are convinced global climate change is happening; over 70 percent are convinced climate change is a serious threat to the people and environment of Alaska; and over 80 percent favor regulation of greenhouse gases.

On the other hand, an increasing number of members of Congress are taking note of concerns about climate change. Although federal climate change legislation is in a state of constant flux, as of July 2007 lawmakers had introduced more than 125 climate change bills. Bills calling for reduction of greenhouse gas emissions specify reductions of up to 20 percent by 2020 compared to 1990 levels and up to 80 percent by 2050 compared to 2000 levels.

ETHICAL DIMENSIONS OF CLIMATE CHANGE

Often, global climate change is discussed with respect to the relevance of scientific findings for public policy implications. Or, all-too-often discussions focus on the short-term costs of mitigating or adapting to climate change. Further, most economic studies of the costs of climate actions do not include corresponding analyses of the costs of taking no action. When the costs of mitigating and adapting to climate change are compared to the costs of taking no action, the IPCC and other analyses; e.g., the “Stern Report,” conclude that the costs of taking action represent a small percentage of Gross Domestic Product or, more importantly, result in significant economic savings compared to the costs of not taking action. Concerns about costs are legitimate. With respect to economic costs of actions to mitigate global climate change most studies focus

on aggregate costs to national economies; they do not focus on the distribution of benefits and harms and, therefore, tend to ignore costs of climate change imposed on those who will experience disproportionate burdens from climate change.

What most people do not recognize is that fundamentally global climate change and how to resolve it raises important but understudied ethical challenges. We argue that concern about the ethics of climate change should be an essential part of all discussions about whether and how to respond.

Author Bill McKibben has pondered why many Americans have failed to take action to combat global climate change given the present and future harm it imposes on people and the environment.

In an article published in *The New York Times*, he wrote: “I used to wonder why my parents’ generation had been so blind to the wrongness of segregation; they were people of good conscience, so why had inertia ruled so long? Now I think I understand better. It took the emotional shock of seeing police dogs rip the flesh of protestors for white people to really understand the day-to-day corrosiveness of Jim Crow...We need that same gut understanding of our environmental situation if we are to take the giant steps we must take soon.”

Although some might lack the “gut-level” understanding which McKibben says is needed to grasp our environmental situation, Americans do have strong ethical and religious norms that can help inform them about “what is right” in a moral sense.

When we use the term “ethics,” we mean criteria or norms that can be referred to in order to inform us what is right or wrong morally speaking. We also assume that most people desire to live their lives in an ethical manner.

One of the reasons global climate change is an ethical issue is because it raises the problem about the distribution of harms and benefits; this is known as a problem of distributive justice. We now know that climate change is happening and that developed countries, in particular the United States, historically and currently are responsible for a disproportionate share of greenhouse gas emissions relative to developing countries. In obtaining their current standards of living, people from the United States and other developed countries have benefited from their disproportionate consumption of fossil fuels but in so doing have imposed the burdens and costs of adverse impacts on people in poorer developing nations. Further, developed nations are financially and technologically better able to adapt to the adverse impacts of climate change compared to the poorer developing nations. Importantly, the burdens imposed on poorer nations are done so without their consent to be harmed by the actions of developed nations. This violates common standards of decency and ethical conduct because generally speaking most people do not believe that one person has a right to a livelihood

“The idea that we can continue as a nation without exhibiting leadership to the rest of the world in this crisis is simply anathema.”

—Richard Cizik,
Vice President for
Government Affairs,
National Association of
Evangelicals

The benefits of using fossil fuels disproportionately accrue to present generations, wherein the burdens from adverse impacts disproportionately are placed on our children, grandchildren, and future generations. Can we truly say we care about our children and grandchildren if this is the case?

if it imposes risks or harm to others who have not given consent to be harmed. In addition, the benefits of using fossil fuels disproportionately accrue to present generations, wherein the burdens from adverse impacts disproportionately are placed on our children, grandchildren, and future generations. Can we truly say we care about our children and grandchildren if this is the case?

The problems of distributive justice are not confined to relations between countries. For example, in Alaska some people disproportionately benefit from the consumption of fossil fuels whereas others have disproportionate burdens and costs placed on them. In the absence of state actions to mitigate greenhouse gas emissions and provide financial and technological assistance to those most affected by the adverse impacts of climate change, some Alaska residents are disproportionately affected by the adverse impacts of global climate change and, simply put, this is not fair. One example is the impacts currently experienced by indigenous communities within the state that are experiencing coastal erosion from loss of protective sea ice and increased intensity of storms, problems stemming from thawing of permafrost, and loss of subsistence hunting due to reduced sea ice. In addition, subsistence and commercial fisher people are likely to experience greater hardships from adverse impacts of global climate change relative to others who benefit from the use of fossil fuels.

Related to the role of secular ethics in global climate change is the involvement of religious communities. Increasingly, religious communities are making linkages between their teachings and religious perspectives that provide orientations for greater valuing of individual and cultural life that extend beyond mere economic and material consumptive valuing.

In 2001, the United States Conference of Catholic Bishops noted that many of the greatest victims of climate change are likely to be the poor and that a religious duty exists to remedy the burden of the victims. Statements by H.H. Ecumenical Patriarch Bartholomew, David Hallman of the World Council of Churches, the Church of the Brethren, the Coalition on the Environment and Jewish Life, and the National Interfaith Training on Global Warming have made powerful arguments for the United States federal government, state governments, and local communities to take serious action to combat global climate change as a matter of religious duty and obligation.

Another way religious organizations are influencing the shaping of climate change policy is through the organization of educational and outreach campaigns. The Coalition on the Environment and Jewish Life has aided in the organization of the Interfaith Climate and Energy Campaign, an organization that not only strives to educate individuals but also provides a way for persons of faith to have their voices heard among elected officials and other decision-makers. The Eco-Justice Program of the National Council of Churches, The National Religious Partnership for the Environment, and the Evangelical Climate Initiative are other examples

of how the religious community is educating the public about climate change.

Some churches are undertaking initiatives that encourage their members to make more sustainable life choices such as utilizing energy from green sources. Ferment is now underway within individual churches and some denominations to encourage members to manifest their own faith commitment by becoming “climate neutral,” reducing their energy use, and buying offsets for their remaining greenhouse emissions. Recently, the Vatican has committed to becoming a carbon-neutral city.

If similar fervor builds about the moral importance of averting serious and catastrophic climate change and the threats it poses to vulnerable humans and countless species, political leaders in the United States may soon be vying to show that the world’s leading generator of greenhouse emissions will also be the leader in promoting solutions.

THE NEED FOR POLITICAL ADVOCACY

It is important to understand that political advocacy by members of local, state, and federal government and civil society is necessary to combat global climate change. The reasons are fourfold.

First, as previously noted, the United States has failed to adequately address global climate change despite the overwhelming scientific evidence of the problems and despite the fact that the United States has been the greatest emitter of greenhouse gases. In order to bring about meaningful change, people in government and civil society must persuade policy-makers and decision-makers of the urgent need to take actions to combat global climate change. Phrased differently, because of the failure of the federal government and many states to take meaningful action to reduce greenhouse gas emissions, local city governments and communities are taking initiative and this is beginning to have an influence on state governments and some members of the United States Congress. Often, the efficacy of a local community’s efforts to combat global climate change is enhanced through networking with other local communities working on the same issue.

Second, small communities such as Homer can take actions to reduce greenhouse gas emissions and adapt to the impacts of climate change to an extent. However, sometimes there is reluctance for city governments or community residents to invest money in such efforts despite the fact that many such investments will be repaid in relatively short time frames. Consequently, those concerned about climate change must try to persuade policy-makers and decision-makers to make the investments needed.

Third, some local governments are reluctant to consider tax increases of any kind. However, others have imposed a “climate tax” on electricity consumption or fuel consumption to finance greenhouse gas reduction programs. Political advocacy is required to demonstrate the need for “climate taxes” to help finance climate change mitigation and adaptation, especially if there is an absence of state/federal support.

“Everyone can see today that humanity could destroy the foundation of its own existence, its earth, and therefore we can’t simply do whatever we want... This obedience to the voice of the earth is more important for our future happiness than the voices of the moment, the desires of the moment.”

—Pope Benedict XVI,
July 24, 2007

California has passed legislation to cut greenhouse gas emissions in new cars by 25 percent and in SUVs by 18 percent beginning in 2009. However, the carbon dioxide emissions from one medium-size coal-fired power plant, in just eight months of operation, would negate the reductions of carbon dioxide emissions resulting from the legislation.

Fourth and most importantly, political advocacy by local city governments and communities is needed to influence state and federal energy policies. Consider the following examples. 1) Wal-Mart, the largest private sector purchaser of electricity in the world is investing a half billion dollars to reduce energy consumption and greenhouse gases 7 percent over the next seven years. However, the carbon dioxide emissions from only one medium-sized coal-fired power plant will negate this entire effort in only one month of operation. 2) If every household in the United States changed a 60-watt incandescent light bulb to a compact fluorescent bulb the carbon dioxide emissions of just two medium-size coal-fired power plants each year would negate the reduction in carbon dioxide emissions from changing to fluorescent bulbs. 3) California, which makes up over ten percent of the country's new vehicle market, passed legislation to cut greenhouse gas emissions in new cars by 25 percent and in SUVs by 18 percent beginning in 2009. If every car and SUV sold in California in 2009 met this standard, the carbon dioxide emissions from one medium-size coal-fired power plant, in just eight months of operation, would negate the reductions of carbon dioxide emissions resulting from the legislation.

The aforementioned examples illustrate that one of the most important contributions that local communities can make to combat global climate change is to develop grassroots or bottom-up political pressure for state/federal government to take action.

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“The full impacts of climate change won’t be experienced for 100 years or more, but the window of opportunity is only about a decade—not a decade to ponder, not a decade to debate whether we need to dramatically reduce our greenhouse gas emissions, but to do it.”

—Timothy Beatley,
University of Virginia

“What we do in the next two to three years will determine our future. This is the defining moment.”

—Rajendra Pachauri, chair of the Intergovernmental Panel on Climate Change, November 17, 2007

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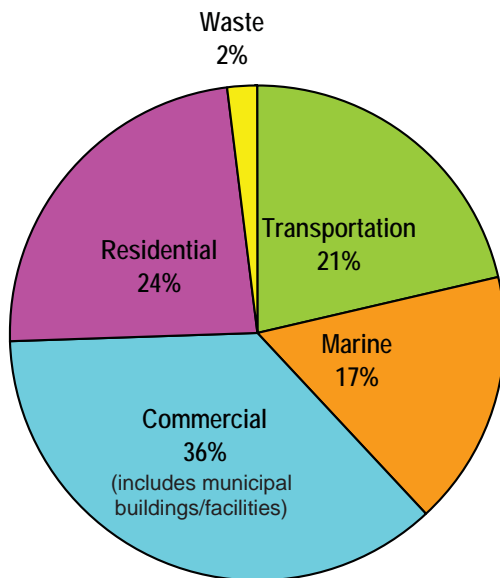
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Greenhouse gas emissions in Homer

In preparing Homer greenhouse gas emissions inventories and forecasts, the Global Warming Task Force used the Clean Air and Climate Protection (CACP) software currently used by more than 300 cities in the U.S. to monitor emissions of carbon dioxide and other greenhouse gases. Raw data provided by Homer Electric Association Inc., the City of Homer, local fuel dealers, the Alaska Department of Transportation, and the Kenai Peninsula Borough were entered in the program, which then converted the figures into tons of CO₂ (or CO₂ equivalent*). The CACP software is designed to generate reports and charts depicting community-wide emissions (defined in this case as within Homer city limits) and those of municipal government separate from the rest of the community.

The pie charts below illustrate primary sources of community (all-inclusive) and government greenhouse gas emissions in Homer.

Homer Community Greenhouse Gas Emissions by Sector in 2006 in Equivalent CO₂ (%)



Note: The community "Transportation" sector includes surface transportation only, based on Vehicle Miles Traveled (VMT) data provided by AK DOT. The "Marine" sector reflects fuel sales at the two fuel stations in the Homer Small Boat Harbor. "Waste" emissions are an estimate of methane released at the Homer Baling Facility operated by the Kenai Peninsula Borough. "Residential" and "Commercial" emissions are estimated based on electrical use (and the proportion of electricity in the Railbelt grid generated from the burning of fossil fuels) and on estimates of other fuel use; e.g., heating oil and propane.

**CO₂ equivalent (or CO₂ eq) is a measure used to compare the global warming potential from various greenhouse gases based upon the amount of carbon dioxide that would have the same global warming potential measured over a specified timescale.*

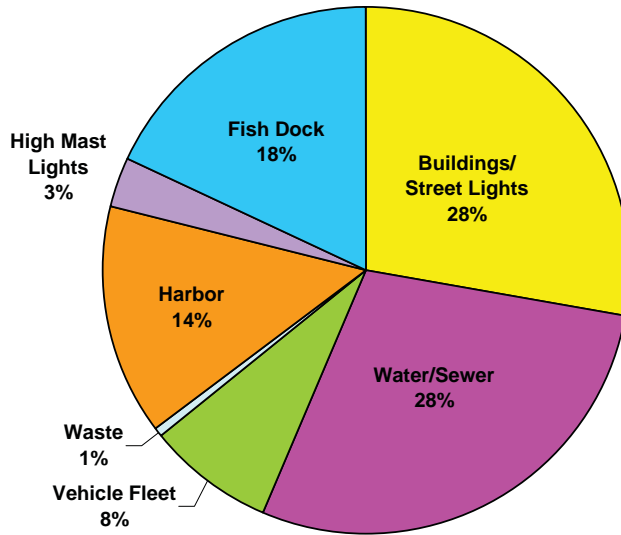
*"You can't manage
what you don't
measure."*

—Christa Koehler,
Clean Cities-Cool Planet

“We are the ones building roads, designing mass transit, buying the police cars and dump trucks and earth-movers. We’re the ones lighting up the earth when you look at those maps from space. Together we have huge purchasing power, and if we invest wisely, that can have huge implications for the environment.”

—Mayor Patrick McCrory
Charlotte, North Carolina,
on the collective power
of local governments to
combat climate change

**City of Homer Greenhouse Gas Emissions in 2006
in Equivalent CO2**



Note: Street lights were combined with “Buildings” because they make up less than 1 percent of total COH emissions. “Harbor” emissions include electric and fuel use at all Port and Harbor buildings (including bathrooms) and other facilities except the Fish Dock. “Buildings” does not include any City buildings on the Homer Spit.

A more detailed report of community and government emissions is included in this plan in the Appendix.

Greenhouse gas emissions reduction targets

The Homer Global Warming Task Force recommends that the City of Homer adopt greenhouse gas reduction targets of 12 percent by 2012 and 20 percent by 2020, using emissions estimates from the year 2000 as a baseline. The following rationale supports this recommendation:

1. The current atmospheric concentration of greenhouse gases is equivalent to about 425 parts per million (CO₂ eq). The IPCC and many other climate change scientists and organizations conclude that in order to avoid temperature increases of 2-2.4 C by 2100, above which “serious and irreversible” changes are very likely to occur, the atmospheric concentration of greenhouse gases must be stabilized at or below 445–490 ppm CO₂ eq. Further, in order to achieve the stabilization concentration and avoid serious and irreversible impacts, greenhouse gas emissions need to (i) peak no later than 2000–2015; (ii) be substantially reduced below present levels within a decade or two; and (iii) be reduced 50–85 percent of 2000 year levels by 2050.

2. In order to meet such a target many nations, states, and local communities have made significant commitments to reduce greenhouse gas emissions.

A. The 26 member nations of the European Union have agreed to reduce emissions 20 percent by 2020 compared to 1990 levels. (Although it is part of the European Union, the United Kingdom also has made a commitment to reduce greenhouse gas emissions by over 20 percent by 2010.)

B. Over 35 states have prepared or are preparing greenhouse gas emissions inventories, and 26 states have initiated greenhouse gas emission reduction strategies. Although greenhouse gas reduction targets vary between some states, many are setting targets to reduce greenhouse gas emissions 20 percent by 2020 compared to 1990 levels.

C. As of August 31, 2007, more than 663 mayors in communities representing over 72 million Americans in 50 states have signed the U.S. Conference of Mayors Climate Protection Agreement, wherein participating cities agree to reduce community-wide greenhouse gas emissions by 2012 to at least 7 percent below 1990 levels.

D. Although federal climate change legislation is constantly in a state of flux, as of July 2007 lawmakers had introduced more than 125 climate change bills. Bills calling for reduction of greenhouse gas emissions specify reductions of up to 20 percent by 2020 compared to 1990 levels and up to 80 percent by 2050 compared to 2000 levels.

3. The proposed targets represent a compromise between real or perceived problems of implementing greenhouse gas reductions for

“Now therefore be it resolved that the City of Homer recognizes that local action is one of the best tools available to address the threat of global climate change, and that we have a responsibility to do our part to reduce the use of non-renewable fossil fuels and reverse the trend of global warming for the well-being of current and future generations.”

—City of Homer Resolution 07-42(A)

“This is a very simple idea. You know, when I go into my 9-year-old daughter’s bedroom and tell her that she made a mess and it’s her job to clean it up, she understands that logic. And it’s precisely the same thing with the atmosphere.”

—Jeff Goddell, author of *Big Coal: The Dirty Secret Behind America’s Energy Future*

the city of Homer and the more stringent targets adopted by many other nations, states, local communities, and pending climate change legislation.

Municipal government goals vs. community goals

This Climate Action Plan has been prepared for adoption and implementation by the City of Homer. It does not specifically instruct ordinary citizens, households, or private businesses. The measures and strategies contained in the plan are directed specifically at City operations and have been formulated to help the City meet greenhouse gas emissions reduction targets of 12 percent by 2012 and 20 percent by 2020 as compared to 2000 levels. Some of the measures will also help reduce emissions community-wide. For example, City land use policies can help reduce the need to drive, thus addressing a major source of greenhouse gas emissions. Likewise, the City can engage in public outreach efforts aimed at helping residents and business owners reduce their “carbon footprint.” The City can also encourage changes in state and federal law that would reduce greenhouse gas emissions in Homer and beyond. It is hoped that local government leadership will encourage all members of the Homer community to set ambitious greenhouse gas reduction goals and implement strategies to reach those goals.

“Business as usual” forecasts

The CACP software was used to estimate 2000 baseline emissions (extrapolating backward from 2006 energy use data and using 2000 census data for Homer) and project future emissions using an assumption of 4.5 percent annual population growth in Homer between 2005 and 2015, and 3 percent annual growth from 2016 to 2020. These assumptions are consistent with those in the City of Homer Water and Sewer Master Plan (2005).

Community emissions in 2006 totaled 135,621 tons of CO₂ eq. (From this, the 2000 baseline was estimated at 98,123 tons.) A “business as usual” (BAU) forecast predicts 175,700 tons of CO₂ eq generated by the Homer community in 2012, based on a population estimate of 7,339 residents. This represents a 79 percent increase over the 2000 baseline. (Emissions in 2006 were estimated to be 38 percent higher than in 2000.)

City of Homer (municipal government) CO₂ eq. emissions in 2006 were 5,369 tons. BAU emissions are based on an assumption of 1.8 percent annual growth as the City builds new facilities to replace existing cramped buildings and hires additional staff. (Typically, governments grow at a slower rate than the populations they serve.)

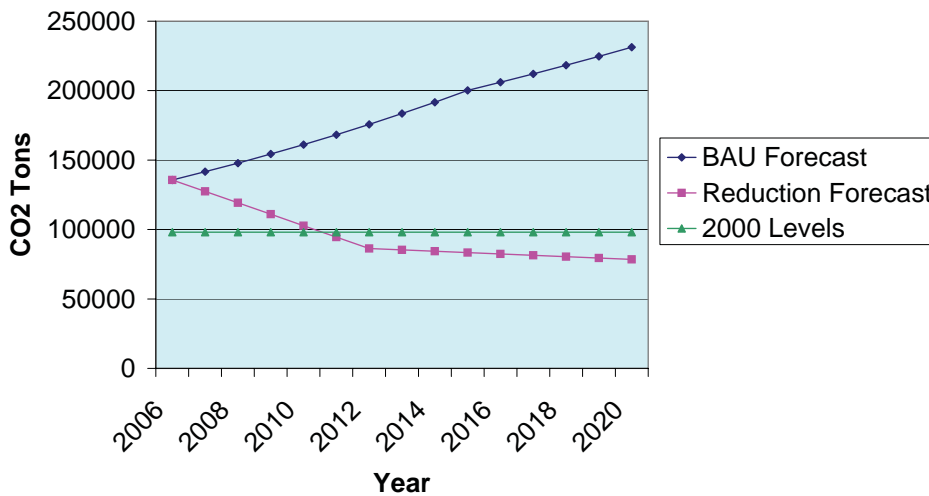
BAU forecasts for the Homer municipal government predict that emissions will grow 11 percent by 2012 and 28 percent by 2020, compared to 2006.

Emissions forecasts with target reductions met

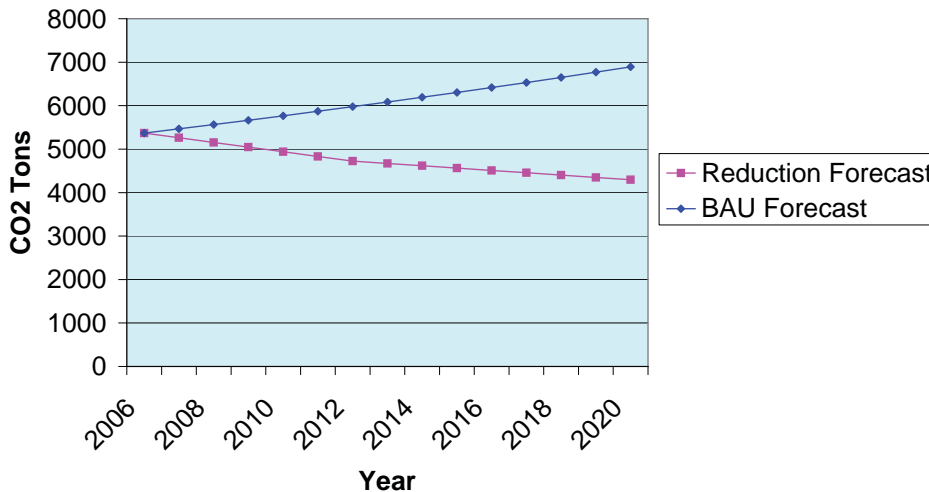
The CACP software was used to generate emissions estimates based on successful implementation of measures to reduce greenhouse gas emissions to the target levels (12 percent below 2000 baseline by 2012 and 20 percent below baseline by 2020).

If the Homer community is to meet these goals, CO2 eq emissions will need to be reduced by 89,370 tons as compared to the BAU forecast for 2012. Likewise, they will need to be reduced by 152,779 tons as compared to the BAU forecast for 2020. BAU estimates and reduction targets for the Homer community are shown here.

Homer Community BAU Forecast w/ Proposed 2012 and 2020 Reduction Goals



City of Homer BAU Forecast w/ Proposed 2012 and 2020 Reduction Goals



“Higher temperatures, melting permafrost, a reduction in polar ice and increased flooding are expected to raise the repair and replacement cost of thousands of infrastructure projects as much as \$6.1 billion for a total of nearly \$40 billion—about a 20 percent increase—from now to 2030, according to a study by the Institute for Social and Economic Research at the University of Alaska Anchorage.”

—as reported in The New York Times, 6/28/07

FIVE PRINCIPLES FOR THE LONG TERM:

1. Deal with transportation and land use (or you may as well stop now).

2. Tackle private energy consumption.

3. Attack the problems piece-by-piece and from many angles.

4. Plan for fundamental changes... and make fundamental changes happen.

5. Build a sense of community.

*—Daniel Lerch, author of
Post Carbon Cities: A
Guidebook on Peak Oil
and Global Warming for
Local Governments*

MEETING THE TARGETS

Numerous analyses by scientists and economists have concluded that meeting ambitious greenhouse gas emissions reduction targets (e.g., 20 percent by 2020 and 80 percent by 2050) can be done and must be done to avoid the enormous costs to human societies and the planet as a whole if emissions continue to rise. Furthermore, it has been estimated that targets can be met without impacting global gross domestic product more than 1-3 percent. (The impact on GDP will be far greater under business-as-usual scenarios.)

One analysis by Princeton University economists Robert Socolow and Stephen Pacala groups emissions reduction strategies into 15 “wedges.” Each wedge would avoid the release of 25 billion tons of CO₂. Socolow and Pacala argue that the world needs to deploy any 7 of the 15 wedges (or sufficient amounts of all 15) to stabilize emissions at 2005 levels. Examples of wedges include replacing 1,400 large coal-fired plants with gas-fired plants; increasing the fuel economy of two billion cars from 30 to 60 miles per gallon, and cutting electrical use in homes, offices, and stores by 25 percent.

From these examples, it is apparent that while solutions exist to address global warming, implementing these strategies on the scale needed and at the pace needed to meet targets will require a major commitment to change. The Global Warming Task Force confronted similar challenges in developing measures to reduce greenhouse gas emissions at the local level.



Modern wind turbines offer potential for replacing electricity generated from burning fossil fuels with clean, renewable energy. The Skystream 3.7 is shown here.

Using the CACP software to estimate the tons of CO2 eq that would be reduced through various measures, the task force experimented with different strategies. Examples of measures and reductions are shown below.*

Measure	Reduction in CO2 eq (tons)
Install a Skystream 3.7 wind turbine for each of the Homer Spit bathrooms (5 total).	16
Reduce use of stationary diesel (heating fuel) by 25% by increasing energy efficiency of City buildings.	184
Reduce electricity use by 25% in City buildings by increasing energy efficiency.	240
Install a UEK-type tidal power generation system, generating 500,000 kwh of electricity per year.	335
Replace two of the smaller police SUVs (driven a total of 60,000 miles in 2006) with Ford Escape hybrids.	27
Install hydroelectric micro-turbines in the water lines that drop from the water treatment plant into town. Power generation from these turbines is estimated to be 75% of that needed to pump the water up to the treatment plant from the reservoir.	119
Reduce the amount of paper used at City Hall by 30%, by increasing the use of digital filing.	14
Increase the portion of electricity generated from renewable energy sources to 30 percent of total power generation in the Alaska Railbelt grid.	791

* The above examples are for illustrative purposes only.

Actual measures proposed for implementation by the City of Homer begin on page 28 of this Climate Action Plan.

It is understood that the measures described on the following pages are seen as worthy goals. Actual implementation will depend on the availability of funding and other resources.

“The message is not to give up because the changes appear overwhelming, but instead the message should be the longer we wait to do something, the worse the consequences.”

—Gerald A. Meehl, National Center for Atmospheric Research

“If we’re going to survive global warming, there are two things we must do. We have to move in the direction of renewable energy, such as wind and solar power, and we have to improve energy efficiency.”

—Arthur H. Rosenfeld, Ph.D.
California Energy Commission

Mitigation measures

Mitigation measures are those which reduce greenhouse gas emissions. In this plan they are grouped into the categories of Energy Management, Transportation, Purchasing & Waste Reduction, and Land Use/Planning & Zoning. Another section makes specific recommendations for outreach and advocacy efforts, most of which indirectly address mitigation. All measures are formulated for implementation by the City of Homer.

ENERGY MANAGEMENT

Recommendations in this section look both at energy production (e.g., electrical generation) and conservation, especially in relation to heating, cooling, and lighting buildings and powering equipment within buildings.

The 2006 Homer greenhouse gas emissions inventory shows that 24 percent of community emissions are from residential buildings and another 36 percent are from commercial facilities. (For purposes of the inventory, City of Homer buildings are included under “commercial facilities.”) The primary source of emissions is from electrical use.* Heating oil represents another major component of emissions from these two sectors.

Municipal government (City of Homer) emissions reveal heavy use of fossil fuels to heat and operate City buildings and facilities. Total electrical consumption in 2006 was 6.22 million kwh, releasing 4,176 tons of CO₂ eq into the atmosphere and costing the City \$729,000. City buildings alone (not counting those on the Spit) produced almost 28 percent of total municipal emissions. Port & Harbor facilities produced an additional 35 percent of total emissions.

A recent Homer Electric Association survey (May 2007) found that a majority of HEA customers would like to see greater emphasis placed on renewable energy sources in electrical power generation. The City of Homer cannot mandate changes within HEA; however, the City can and should advocate for change. Recommendations of this nature can be found under the Outreach & Advocacy heading in this plan.

The City of Homer will research, develop and utilize renewable/alternative energy. Possibilities include:

1. Install hydroelectric turbines in the water lines below the municipal water storage tanks to generate electricity that can be used to power the pumps that fill the storage tanks.

**Approximately 88 percent of power generation in the Alaska Railbelt grid, which includes Homer, is from burning natural gas. The remainder is from hydroelectric generation (Bradley Lake and Bernice Lake). While natural gas produces far less CO₂ than coal, it is still a significant source of greenhouse gas emissions.*

2. Develop one or more pilot projects for wind and/or solar power generation in City facilities.
3. Develop ocean current power generation capability at the Deep Water Dock.
4. Use captured methane at the sewer treatment plant as heating fuel.
5. Produce biofuel from fish oil or from wastewater sludge.

The City of Homer will reduce energy use by at least 25 percent through conservation and improved energy efficiency.

1. Establish policies and mechanisms for City employees to reduce energy use in their daily work environments.
2. Install metering and monitoring devices and provide monthly reports to track energy consumption in relation to City facilities and activities.
3. Ensure that all interior and exterior lighting utilizes energy-efficient technology (e.g., Energy Star bulbs and fixtures, LED lights). Modify the Port & Harbor lighting system to increase energy efficiency.
4. Integrate energy efficiency as a requirement in City contracts.
5. Conduct energy audits for all City buildings and implement recommendations for weatherization and other measures to reduce energy use.
6. Establish an energy efficient purchasing/leasing policy for new office equipment, appliances, etc. Replace the most inefficient equipment immediately.
7. Build all new City buildings to LEED (Leadership in Energy and Environmental Design) standards.
8. Limit heating thermostat setpoints to 68 degrees and cooling thermostat setpoints to 75 degrees in City buildings.
9. Reduce energy consumption associated with ice-making equipment at the Fish Dock by incorporating a smaller, more energy efficient ice-making machine and/or by contracting with a private ice provider for meeting needs during periods of less demand.



The Homer Public Library, completed in September 2006, was constructed as a LEED-Silver building.

“In the year 2035, three quarters of the built environment in the U.S. will be either new or renovated. This transformation over the next 30 years represents a historic opportunity for the architecture and building community to reverse the most significant crisis of modern time, climate change.”

—Architecture 2030 Project
(architecture2030.org)

At today's gas prices (\$3.30 per gallon), U.S. households driving SUVs can expect to spend \$3700 on fuel in one year, while U.S. households driving hybrid-electric vehicles will only spend between \$1000 and \$2200 per year.

—based on information from Alliance to Save Energy

TRANSPORTATION

Transportation accounts for a much greater proportion of community greenhouse gas emissions than City of Homer emissions. Community-wide, surface transportation produces 21 percent of total greenhouse gas emissions and marine transportation (as estimated from fuel sold at the two harbor fuel stations) produces an additional 17 percent.

The City of Homer's vehicle fleet accounts for 8 percent of total local government emissions. (It should be noted, however, that City of Homer transportation emissions did not include fuel used by employees to get to and from work in private vehicles.)



The measures below seek to reduce greenhouse gas emissions both in local government operations and in the broader community, through actions to be undertaken by the City of Homer.

The City of Homer will reduce vehicle emissions in its fleet of cars, trucks, and heavy equipment.

1. Develop program to retire older less efficient vehicles and replace with more fuel-efficient vehicles; e.g., gas-electric hybrids.
2. Institute policies to match vehicles with uses to ensure that City employees drive only when necessary and use the most fuel-efficient vehicle possible for any particular task.
3. Establish creative programs for City departments to reduce their travel-related carbon footprint.
4. Establish anti-idling policies for City vehicles/drivers.

The City of Homer will encourage its employees to reduce their commute-related emissions.

1. Establish creative programs to encourage carpooling and non-motorized transportation.

The City of Homer will reduce transportation emissions community-wide through development of a public transportation system.

1. Establish a public transportation system that includes park-and-ride lots, beginning with downtown-to-Spit shuttle service during high traffic months.
2. Greatly expand pay-for-parking areas on the Homer Spit, to encourage use of public transportation and help cover the costs.

The City of Homer will facilitate bicycling as a form of transportation in the Homer community.

1. Promote development of a “free bike” program.
2. Establish a “bike library” program that allows local residents and visitors to pay a refundable fee to “check out” a bicycle at different locations in town.
3. Provide bike racks at all City buildings and parks.

See Land Use section for other recommendations to reduce traffic and encourage non-motorized transportation.

PURCHASING & WASTE REDUCTION

Purchasing and waste go hand-in-hand, since almost everything that’s tossed as garbage was at one time acquired through deliberate purchase. While it is not always practical to reduce the quantity of purchased goods, selecting recyclable, durable, or re-usable products will lead to less landfilling and less methane and carbon dioxide emissions. In this way, thoughtful procurement guidelines will lead to greenhouse gas reductions.

Waste reduction strategies primarily seek to prevent or reduce the release of methane at landfills and other facilities by diverting recyclable and compostable material from the waste stream. As a greenhouse gas, methane is more than 20 times more powerful than carbon dioxide. (It is also the primary ingredient in natural gas, and if it is burned, it is far less harmful than other fossil fuels, such as coal.) In some cities, methane capture at landfill sites serves not only to reduce greenhouse gas pollution, it also provides a relatively efficient fuel source.

Using Kenai Peninsula Borough and City of Homer estimates, the 2006 Homer greenhouse gas emissions inventory found that waste accounts for 2 percent of community emissions and 1 percent of local government emissions. It should be noted, however, that these estimates do not include “upstream” emissions. Consider the following example: To produce high-grade office paper, a paper manufacturer uses gasoline-powered machinery to cut down trees (which store carbon), diesel trucks to carry the lumber to the paper mill, fossil fuels or wood products to power the mill, and more diesel trucks to distribute the product to customers.

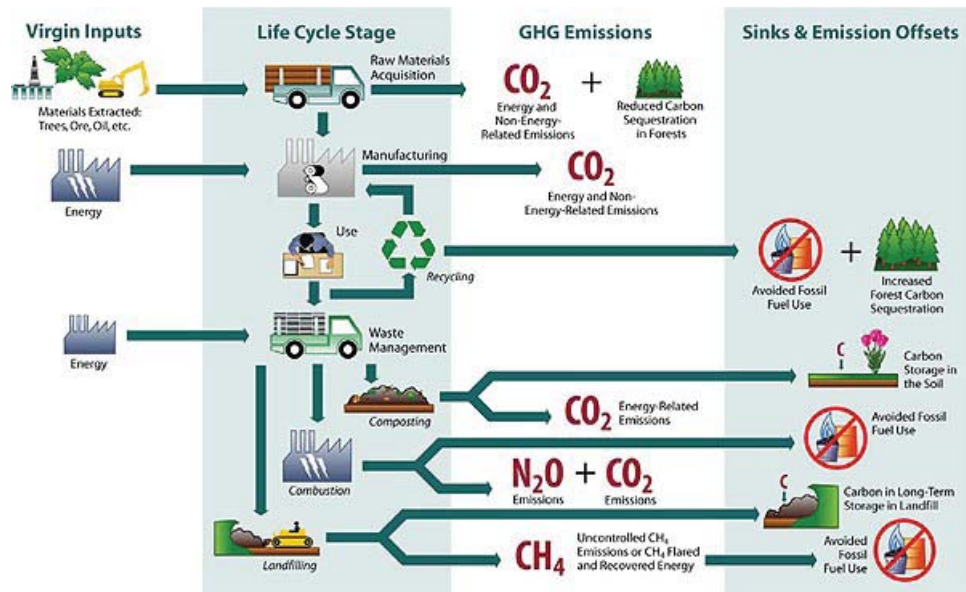
Recycling leads to CO₂ reductions at the material extraction and manufacturing levels, as well as methane reductions at the landfill. (See diagram on page 32.) Similarly, composting leads to methane reductions and produces a product that can be used in place of manufactured chemical fertilizers. An emphasis on waste reduction also helps promote a culture of conservation and sustainability with broad environmental and economic benefits.

“Every stage of a product’s life cycle—extraction, manufacturing, distribution, use, and disposal—indirectly or directly contributes to the concentration of greenhouse gases in the atmosphere and affects global climate.”

—US Environmental Protection Agency

“But our waste problem is not the fault only of producers. It is the fault of an economy that is wasteful from top to bottom—a symbiosis of an unlimited greed at the top and a lazy, passive, and self-indulgent consumptiveness at the bottom—and all of us are involved in it.”

—Wendell Berry



LIFE CYCLE OF WASTE—This image illustrates the four main stages of product lifecycles, all of which provide opportunities for greenhouse gas emissions and/or offsets. The stages are raw material acquisition, manufacturing, recycling, and waste management. The primary greenhouse gases are carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O).

The City of Homer will improve purchasing policies, reduce waste, and promote conservation in its own facilities.

1. Establish a comprehensive user-friendly recycling program involving all City departments and facilities.
2. Adopt EPA’s Comprehensive Procurement Guidelines (CPG)—a key component of the government’s “buy-recycled” program, which offers guidelines covering office paper to construction materials to vehicles. (See Appendix.)
3. Undertake measures necessary to achieve a Green Star award. (See Appendix.)

The City of Homer will implement programs to facilitate community waste reduction.

1. Establish a program aimed at greatly increasing the percentage of households that routinely recycle materials.
2. Continue to co-sponsor community-wide electronic recycling events.
3. Encourage commercial waste haulers to offer recycling pickup along with garbage pickup in city limits.
4. Form an advisory group to work with the Kenai Peninsula Borough to help develop a comprehensive plan for improvements at the Homer Baling Facility as it approaches capacity.

LAND USE/PLANNING & ZONING

Through land use planning, including transportation planning, local government has enormous influence over community energy use and greenhouse gas emissions. Development that reduces the need to drive and encourages non-motorized and public transportation will significantly reduce the use of fossil fuels.

Many of these same strategies (often referred to as “smart growth”) help reduce costs in providing services. Denser “cluster development,” for example, reduces taxpayer expenditures for water and sewer lines, road construction and road maintenance, and street lights. These reductions are tied directly to reductions in energy use and greenhouse gas emissions. Another benefit of more compact development is that less soil is disturbed, which helps prevent the release of CO₂ stored in the soil.

In September 2007, the Urban Land Institute and the National Center for Smart Growth Research and Education at the University of Maryland published *Growing Cooler: The Evidence on Urban Development and Climate Change*. After reviewing dozens of empirical studies, the authors predict that if sprawling development continues to fuel growth in driving, the increase in total miles driven will overwhelm expected gains from vehicle efficiency and low-carbon fuels. Lead author Reid Ewing stated, “The research shows that one of the best ways to reduce vehicle travel is to build places where people can accomplish more with less driving.”

Depending on several factors, from mix of land uses to pedestrian-friendly design, compact development reduces driving from 20 to 40 percent, and more in some instances. Typically, Americans living in compact urban neighborhoods where cars are not the only transportation option drive a third fewer miles than those in automobile-oriented suburbs, the researchers found.

At the same time, the book documents market research showing a shift in future housing demand to smaller homes and lots, townhouses, and condominiums in neighborhoods where jobs and activities are close at hand. Homer planners and developers would be wise to recognize the benefits of such development and encourage these trends.

The City of Homer will develop and implement land use plans that explicitly recognize the urgent need to reduce greenhouse gas emissions.

1. Support current (or stronger) language in the draft Homer Comprehensive Plan Update that calls for denser, more compact development and increased emphasis on developing infrastructure for non-motorized transportation.
2. Update City planning and zoning regulations to promote land use strategies that include compact, mixed-use development, higher density development, and infill.

“Planners in local government...are planning things that will be here in 50 and 100 years. Every single thing should be demonstrating sustainability. Every single one should have significant reductions in greenhouse gases, particularly in transportation, built in. If not, planners will be seen as absolute pariahs by their children and grandchildren. They’ll say ‘How could you have done that when everyone knew?’ ”

—Urban planner and author
Peter Newman

“Compact development provides an insurance policy against the worst effects of climate change and oil price spikes. In the worst case, current or future residents of compact development will have a variety of viable transportation options, while the residents of sprawl will not.”

*—from Growing Cooler:
The Evidence on Urban
Development and Climate
Change*



Compact mixed-use development that includes sidewalks and trails creates a pleasant environment and encourages residents and visitors to walk instead of drive. (Photo from “Growing Cooler: The Evidence on Urban Development and Climate Change”)

3. Implement the City of Homer Non-Motorized Transportation and Trails Plan, including construction of specific trails, sidewalks, and safe crossings recommended in the plan, and revisions to Homer City Code, Title 21, to require non-motorized circulation systems.
4. Institute traffic calming measures and “complete street” designs to make bicycling and walking safer and more pleasant. (“Complete streets” are those which are designed to encourage and safely accommodate pedestrians, bicyclists, and transit users as well as automobiles. A number of cities and states have passed complete-street legislation.)
5. Develop Homer’s “Town Center” in line with the guiding principles in the Homer Town Center Development Plan and use this as a model for future development as Homer grows.

The City of Homer will make use of the permitting process to encourage development that helps reduce greenhouse gas emissions.

1. Provide assistance to developers and builders in evaluating plans to increase energy efficiency and promote non-motorized transportation.
2. Adopt building codes and incentives to increase energy efficiency in all new residential and commercial development.
3. Keep abreast of new LEED (Leadership in Energy and Environmental Design) standards for neighborhood development and building remodeling and consider adopting these standards in the permitting process.

OUTREACH & ADVOCACY

The success of efforts by the City of Homer to address global warming in a meaningful way will be greatly assisted through public outreach and education at the local level and advocacy on policy issues outside the City's direct control. The measures listed here reflect the reality that citizens, businesses, and governments at all levels around the world must work together to solve the looming climate crisis if it is to be solved at all.

The City of Homer will work with other organizations to educate the broader community about global warming and encourage changes that will help meet greenhouse gas emissions reduction targets.

Provide leadership and staff support for a community-wide partnership to implement a broad, ongoing, multi-faceted campaign aimed at raising awareness of global warming and its risks and encouraging policies and behaviors to reduce greenhouse gas emissions.

The campaign will target all segments of the population, including heads of households, children and teens, boat owners, and business owners.

Potential partners in the campaign include Homer Electric Association, Homer Chamber of Commerce, Kenai Peninsula Borough, local schools, and local environmental organizations. Outreach efforts could include a website, printed materials, advertising, and sponsorship of specific events.



Homer area residents participated in the national "Step It Up" campaign in April 2007, urging Congress to adopt mandatory greenhouse gas reduction targets to meet the goal of 80% reduction by 2050. (Photo courtesy of the Homer News)

"What we need is a new ethic in which every person changes lifestyle, attitude and behavior."

—Achim Steiner, head of the United Nations Environment Programme

“Localities, like the states, are offering lessons in what works to protect the climate. However, as is the case with action by the states, a patchwork of local policies is no substitute for economy-wide action at the federal and international level.”

—Pew Center on Global Climate Change

The City of Homer will seek to influence policies within other political bodies and government agencies, as well as the local electric utility, to help meet greenhouse gas emissions reduction targets.

1. Representing the City of Homer, the Mayor will join more than 670 other mayors from around the country in signing the U.S. Conference of Mayors Climate Protection Agreement.
2. The City of Homer will urge support of programs and legislation at the state level to reduce global warming in Alaska and facilitate adaptation to climate change. These might include:
 - Alaska’s participation in The Climate Registry and a multi-state greenhouse gas emissions reduction (e.g., cap-and-trade) program;
 - legislation to establish renewable energy portfolio standards for electric utilities, provide opportunities for net metering, and prohibit development of new coal-fired power plants;
 - upgrades of state-owned roads in Homer to encourage non-motorized transportation;
 - programs to provide funding to local governments to implement climate change mitigation and adaptation plans.
3. The City of Homer will keep abreast of proposed federal legislation and policies to address global warming and will voice its support for specific measures. These might include:
 - increased fuel efficiency standards for trucks and automobiles;
 - funding for renewable energy research and development and for local programs aimed at climate change mitigation and adaptation;
 - full participation and cooperation in international efforts to meet mandatory greenhouse gas emissions reduction goals.
4. The City of Homer will encourage the Kenai Peninsula Borough to address global warming through measures that might include:
 - programs aimed at increasing community recycling;
 - adoption of policies to reduce greenhouse gas emissions from borough buildings, facilities, and transportation fleet;
 - development and implementation of a borough-wide climate mitigation/adaptation plan.
5. The City of Homer will encourage Homer Electric Association to adopt institutional reforms aimed at increasing conservation and use of renewable energy and avoiding electrical generation from coal-fired power plants. Specific programs which HEA should consider include offering a “green pricing” option for members, net metering options, and a low interest loan program to support renewable energy projects.
6. The City of Homer will seek alliances with other communities in Alaska and elsewhere to lend strength to our advocacy efforts.

Adaptation measures

Recognition is increasing that the combination of continued increases in global greenhouse gas emissions and the inertia of the climate system means that some degree of climate change is inevitable. Thus, adaptation is now seen as an essential risk-management strategy aimed at reducing the level of damage that might otherwise occur. (Recognizing a role for adaptation does not, however, diminish or detract from the importance of mitigation in reducing the rate and likelihood of significant climate change.)

This section includes recommendations for steps that the City of Homer can take to prepare the community for unavoidable climate change. Possible or likely impacts in Homer include disruption of commercial fisheries due to ocean acidification and warming waters, damage to infrastructure from more frequent and severe storms, water shortages resulting from changes in surface water availability due to reduced snowpack and increased evaporation, increased coastal erosion from rising sea levels and storm events, increased risk of flooding from extreme weather events, and increased wildfire risks due to hotter, drier conditions and continued bark beetle infestations.

In Alaska, researchers at the University of Alaska-Fairbanks Center for Climate Assessment and Policy are collaborating with other scientists to better understand likely climate change impacts and communicate these to policy makers. The adaptation recommendations in the Homer Climate Action Plan should be updated as new information becomes available.

The City of Homer will be proactive in helping to create a resilient local economy.

1. Work with other groups and individuals to encourage local economic self-reliance, so that community needs are met by locally owned businesses and locally produced products as much as possible.
2. Encourage a culture of “entrepreneurial spirit” and seek to provide resources to encourage sustainable business development through such measures as a community-wide Wi-Fi system and establishment of a “green business” incubator.
3. Encourage and support a curriculum at the UAA-Kachemak Bay campus specific to climate change and sustainability.
4. Anticipate and promote new opportunities in local agriculture.
5. Support green economic growth by promoting policies that encourage businesses to employ sustainable energy practices.
6. Anticipate population increases resulting from an influx of “climate refugees” and institute growth management policies to maximize benefits and minimize adverse impacts.

“Civilization developed, and constructed extensive infrastructure, during a period of unusual climate stability, the Holocene, now almost 12,000 years in duration. That period is about to end.”

—James Hansen, Makiko Sato, Pushker Kharecha, and Gary Russell, Goddard Institute for Space Studies; David Lea, University of California, Santa Barbara; Mark Siddall, Lamont-Doherty Earth Observatory, Columbia University

“Sustainable development itself brings diversification, flexibility, and human capital which are crucial components of adaptation. Indeed much adaptation will simply be an extension of good development practice.”

—Sir Nicholas Stern
former Chief Economist at
the World Bank



The Homer seawall was battered by waves during a winter storm when the wall was still under construction. (Photo by Carl Schoch)

The City of Homer will take steps to protect existing infrastructure from the impacts of climate change.

1. Keep abreast of information regarding projected sea level rise, storm surges, coastal/bluff erosion, etc. within the city and take proactive measures to protect or relocate at-risk infrastructure.
2. Develop management plans specific to Port & Harbor facilities on the Homer Spit (construction, maintenance, dredging, etc.) that take into account climate change impacts.

The City of Homer will undertake emergency preparedness measures to reduce risks related to climate change.

1. Inventory the storm water runoff system and identify problem areas. Ensure that storm water infrastructure is constructed to handle anticipated increases in extreme weather events.
2. Increase fire fighting capability, for both wildfire and structural fires.
3. Take steps to protect the capacity of wetlands and watersheds to store water, as protection against extreme weather events.

The City of Homer will adopt wise policies for future development.

1. Enact restrictions against development on erosion-prone slopes and bluffs.
2. Assess the City’s future drinking water needs and options for addressing those needs. Encourage water conservation.
3. Take climate change into consideration in all long-range planning efforts (e.g., transportation, land use, Homer Spit, emergency management, economic development).

Implementation

Elected officials and government employees have all heard complaints about plans that are formulated with a great deal of thought, research, and public involvement and then just seem to “sit on a shelf.” Recommendations in this section are intended to ensure that the City of Homer Climate Action Plan achieves its goals.

The City of Homer will establish and promote a “Sustainability Fund” which will be used to help cover the costs of implementing the Climate Action Plan.

Possible sources of revenue for the Sustainability Fund include:

1. grant funding from state and federal programs and private foundations.
2. a Climate Action Plan tax modeled after Boulder, Colorado’s innovative program. The CAP tax in Boulder, approved by voters, involves an agreement with the local investor-owned electric utility to assess a tax for residential, commercial, and industrial customers based on electricity usage. The tax is collected as part of the utility’s normal billing process.
3. a per-gallon tax on all fuel transferred within the City of Homer.
4. voluntary “offsets” contributed by individuals and businesses who wish to reduce their carbon footprint by supporting projects aimed at reducing greenhouse gas emissions in the community at large.



GWTF chair Alan Parks listens to ideas presented at a public meeting sponsored by the task force on September 15, 2007. More than 100 people attended the meeting. Reaction to the draft Climate Action Plan was overwhelmingly positive.

“Although there may be temporary benefits from a changing climate, the costs of climate change rapidly exceed benefits and place major strains on public sector budgets, personal income and job security. Because of the economic costs of climate change, we conclude that delayed action (or inaction) on climate change will likely be the most expensive policy option.”

—“The US Economic Impacts of Climate Change and the Costs of Inaction,”
University of Maryland,
October 2007

“So-called ‘global warming’ is just a secret plot by wacko tree-huggers to make America energy independent, clean our air and water, improve the fuel efficiency of our vehicles, kick-start 21st century industries, and make our cities safer and more livable. Don’t let them get away with it!”

—Chip Giller, grist.org

5. Funds contributed by the City of Homer to offset employee travel (calculated as \$X per ton of travel-related CO₂).
6. Savings resulting from increased energy efficiency/conservation as CAP measures impacting City operations are implemented.
7. Homer Spit parking fees.

Utilizing revenues from the Sustainability Fund, the City will provide staff to accomplish a variety of tasks, such as:

1. Compile data on energy use and associated costs in all City buildings, facilities, and vehicles and utilize software tools to track changes.
2. Prepare requests-for-proposals for energy audits of City buildings, supervise the work, and implement the changes necessary to improve energy efficiency.
3. Investigate possible sources of renewable energy to be developed by the City of Homer; e.g., hydroelectric generation, solar/wind power, biofuels, and tidal power.
4. Develop specific recommendations for upgrading the City vehicle fleet, instituting other changes in fleet operations to reduce the use of fossil fuels, and establishing a public transportation system.
5. Develop creative incentive or challenge programs aimed at encouraging employees to reduce their greenhouse gas emissions (energy/fuel use) on the job and in commuting to and from work.
6. Work with Planning Department staff to address issues related to land use and transportation planning as they relate to global warming.
7. Produce an Employee Sustainability Handbook with policy measures to reduce energy/fuel use in day-to-day work operations.
8. Act as a liaison between the City Manager’s office, other City departments, City advisory bodies, community and statewide organizations, and national/international organizations in efforts to address global climate change and sustainability.
9. Assist in the sponsorship of community events and campaigns that address global warming, renewable energy, “green business,” etc.
10. Draft correspondence, reports, news releases, brochures, fact sheets, opinion pieces, advertising, etc. to aid in the implementation of CAP measures, particularly those related to outreach and advocacy.
11. Maintain up-to-date information on climate change issues on the City of Homer website.
12. Prepare and submit grant applications for funding to implement CAP measures, and provide oversight of grant-funded projects.

Conclusion

Scientists have confirmed that the earth is warming and that greenhouse gas emissions from cars, power plants, and other manmade sources are the primary cause. Scientists predict that if the increase in greenhouse gas emissions continues unabated, temperatures will continue to rise, causing dramatic—and irreversible—changes to the climate. The consequences will have profound ramifications for humanity and the world as a whole.

Across the country, city and county governments are implementing policies aimed at reducing greenhouse gas emissions while simultaneously preparing for unavoidable climate change. Cities have a strong history of climate action and many are working together to achieve their goals through involvement with ICLEI and the U.S. Mayors Climate Protection Agreement, both of which are experiencing dramatic growth in participation.

Leadership at the local level makes a difference by supporting programs and policies that reduce greenhouse gas emissions within the community, by setting a good example for other communities to follow, and by helping to build a groundswell of support for meaningful change at the state level and at national and international levels. By adopting and implementing this Climate Action Plan, the City of Homer will play an important role in addressing one of the most urgent issues facing humanity today.



Global Warming Task Force member Dan Lush drives to task force meetings in his Toyota Prius gas-electric hybrid. (Other examples of sustainability in this photo: Kyra Wagner's bicycle and Homer's LEED-certified public library.)

“It’s extremely hard to imagine a world substantially different from the one we know. But our current economies are changing the physical world in horrifying ways. It’s our greatest challenge—the only real question of our time—to see whether we can transform those economies enough to prevent some damage and to help us cope with what we can’t prevent.”

*—Author Bill McKibben, in *Deep Economy: The Wealth of Communities and the Durable Future**

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