

Climate Change

An analysis of climate change policy issues in Montana

A report to the 61st Montana Legislature
September 2008

DRAFT



*Legislative
Services
Division*

Environmental Quality Council
2007-2008 Interim

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Environmental Quality Council

P.O. Box 201704
Helena, MT 59620-1704
Phone: (406)444-3742
Fax: (406) 444-3971
Website: <http://leg.mt.gov/eqc>

This report is a summary of the work of the Environmental Quality Council, specific to the council's 2007-08 climate change study. The Council received volumes of information and public testimony on the subject, and this report is an effort to highlight key information and the processes followed by the Council in reaching its conclusions. To review additional information, including written minutes, exhibits, and audio minutes, visit the EQC Website:
www.leg.mt.gov/eqc

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Introduction

The Environmental Quality Council (EQC) dedicated the largest portion of its time during the 2007-2008 interim to a study of issues related to climate change. The council was not assigned the study in the form of a bill or resolution, but instead took up the topic as a member suggested study, authorized in 75-1-324, MCA - General Oversight Authority. As outlined in the EQC work plan, the study required examination of the overall subject of climate change, how other state's are addressing the issue, and a review of the Montana Climate Change Advisory Committee (MCCAC) report. The interim study tasks and EQC responses are included in [Appendix A](#).

In conducting the study and gathering public opinion on the subject, the EQC hosted a climate change survey, inviting the public to rank and comment on the MCCAC's 54 recommendations to reduce greenhouse gas emissions to 1990 levels by 2020. The survey garnered nearly 2,000 responses, and using that information the EQC selected 15 of the recommendations for further study and discussion.

After a thorough review of the 15 recommendations, EQC members reached a consensus on a series of topics to review even more in-depth. EQC members focused on topics including enhancing solid waste recovery, or recycling opportunities; promoting local food and fiber; improving transportation system management, or efforts to enhance mass transit and ensure adequate transportation planning; providing additional opportunities for low income and rental housing energy efficiency and weatherization; expanding biomass opportunities; and reviewing requirements that new state buildings exceed current building codes or standards.

The EQC reviewed a series of bill drafts, letters, and information compiled on the topics above during their July 2007 meeting and modified those bill drafts. The Council then agreed to put the drafts out for public comment in advance of the September 8-9, 2008 meeting.

Public comment on the proposals and this report will be collected during the month of August. The draft legislation that is now available for public comment is included in [Appendix B](#).

This report provides an overview of how the EQC conducted its interim study of issues related to climate change. Climate change is expected to remain a difficult topic contemplated by the Montana Legislature. The EQC offers this report as a tool to assist lawmakers and the public in those continuing conversations.

Findings and Recommendations

Study task: Examine the overall subject of climate change.

Draft Finding: Climate change is a complex issue with many facets, including scientific, economic, and political.

Draft Finding: While the causes of climate change continue to be a point of discussion, conservation measures that are economically feasible, while reducing greenhouse gas emissions, should be examined.

Draft Finding: The state should encourage technological advances that can reduce the emission of greenhouse gases and promote conservation while increasing the economic vitality of Montana.

Study task: Review how other state's are addressing climate change.

Draft Finding: A growing number of states are setting goals to reduce greenhouse gas emissions. Mechanisms for implementing those goals and related policies must be individually tailored to meet the unique needs of individual states, including Montana. Considerations should include the costs and benefits of such policies.

Draft Finding: As federal climate change policies unfold, it will be imperative that Montana be proactive in protecting its resources, including the economy and quality of life enjoyed by all Montanans.

Draft Finding: There are currently policies in Montana that encourage energy conservation, the use of renewable energy sources, and the protection of agriculture and forest lands. These policies may serve as a framework for future climate change discussions.

Study task: Evaluate the Montana Climate Change Action Plan: Report of the Governor's Climate Change Advisory Committee (MCCAC).

Draft Finding: The MCCAC reached a consensus on 54 policy recommendations to achieve the MCCAC's goal of reducing greenhouse gas emissions to 1990 levels by 2020. Some of the recommendations may be implemented administratively, while others would require the support of the Montana Legislature.

Draft Finding: There is considerable variation in the costs and benefits of implementing each of the 54 recommendations. The potential long-term economic impacts of some recommendations remains unclear.

Draft Finding: Many recommendations in the MCCAC report considered under "state lead by example" can be achieved through implementation of the 20x10 initiative to reduce energy use in state government facilities and operations by 20% by the end of the calendar year in 2010.

Draft Finding: Montana has joined the Climate Registry and Western Climate Initiative

(WCI). The Climate Registry will assist in measuring, tracking, and verifying emissions of greenhouse gases in Montana. The WCI is a collaborative effort to develop regional strategies to address climate change. This serves to implement aspects of the MCCAC "cross-cutting issues" recommendations, including CC-3 and CC-7.4.

Draft Recommendations:

(These are the recommendations from the July 2008 meeting, based on the legislation currently available for public comment. Based on the outcome of the September meeting, these recommendations will be revised.)

1. Legislation to increase funding for Montana Manufacturing Extension Center (through Coal Severance) and request additional funds be used to promote and develop recycling technologies.
2. Legislation creating a loan program to assist political subdivisions of the state, including local and tribal governments, in developing recycling technologies and equipment at local landfills.
3. Legislation to eliminate sunsets on tax incentives for recycling. This includes the recycled materials tax deduction (Dec. 2011 sunset) and the credit against air permitting fees for certain uses of post-consumer glass (Dec. 2009 sunset). It also includes the tax credit for investments in property or equipment used to collect or process reclaimable materials. (Dec. 2011 sunset)
4. Legislation that assists in creating more markets for recycled materials through research and education.
5. Legislation to eliminate sunset on funding (through Coal Severance) for Growth through Agriculture program and Montana Cooperative Development Centers.
6. Receive a report on potential legislation being pursued by the Economic Affairs Interim Committee concerning S.J. 13, a study of methods and recommendations to add value to Montana agricultural products through redevelopment of a food processing industry.
7. Legislation to provide tax incentives or tax credits to use Montana raw materials for production of food in Montana.
8. Send a letter to the Commissioner of Higher Education encouraging Montana universities to track, as economically as is feasible, the amount of locally grown food produced and consumed in Montana.
9. Legislation requiring the Department of Transportation to provide a report to the Revenue and Transportation Interim Committee on measures that the Department is taking to conserve energy in the transportation sector and conservation measures specific to city street design each interim.

10. Legislation to update and remove any restrictive statutes related to mass transit.
11. Legislation providing additional funding for weatherization programs. Funding would come from a percentage of the increased oil and gas revenues realized in Montana.
12. Legislation to expand tax credits (similar to those proposed in S.B. 210 in 2007) to create incentives for low-income property owners, landlords and/or renters to weatherize.
13. Send a letter to the Commissioner of Higher Education asking Montana's universities to provide a report and recommendations on biomass, specifically the feasibility of the collection, processing, transportation, storage, and distribution of forestry and agricultural residues, as well as market development or expansion for these materials.
14. Study bill requiring the EQC during the 2009-2010 interim to study biomass and provide specific direction on issues including, but not limited to, expanding the Alternative Energy Revolving Loan Program, better utilizing the Renewable Resource Grant Program, promoting pilot projects, source reduction, emissions research and characterization, and a spectrum of tax incentives.
15. Resolution in support of the National Association of Counties stand in support of Congress enacting legislation granting a Governor authority to declare a crisis when the severity of fire danger from fuels on identified federal lands within that state pose a significant threat to public health and safety. Upon a declaration, responsible federal agencies would fast-track a mitigation plan to reduce forest fuels. The plan would be excluded under the NEPA appeal process, and any claimant filing a court action against the plan would be required to post a damage bond.
16. Legislation to require all new state buildings to exceed current building codes or standards, potentially through an expansion of the State Building Energy Efficiency program.

Climate Change: Background

The EQC started the interim with an introduction to the science of climate change and an overview of local, state, and national actions related to climate change. A resource list was provided to council members and the public as a tool to find more information on the complex issue of climate change. That resource list is included in [Appendix C](#).

Climate change is a term that includes any significant change in measures of climate, such as temperature, precipitation or wind that lasts for several decades or longer. Climate change may result from:

- natural factors, such as changes in the sun's intensity or slow changes in the earth's orbit around the sun;

- natural processes within the climate system such as changes in ocean circulation; and
- human activities that change the atmosphere's composition, including the burning of fossil fuels, or changes to the land surface such as deforestation, reforestation, urbanization, or desertification.¹

Greenhouse gases are central to the climate change debate. Visible light from the sun passes through the atmosphere and is absorbed by the Earth's surface - some of that energy is then emitted back to the atmosphere as heat. Greenhouse gases trap that heat, which would otherwise be released into space, raising the temperature of the atmosphere and, subsequently, the Earth's surface. This is called the greenhouse effect. Primary greenhouse gases include:²

- Water vapor contributes the most to the greenhouse effect and occurs in the atmosphere as a result of the natural cycle of water.
- Carbon dioxide also cycles naturally between the atmosphere and living organisms. Plants and algae remove CO₂ from the atmosphere via photosynthesis, while all living things release CO₂ via respiration (i.e., breathing). Carbon dioxide also cycles back and forth between water on the Earth's surface (freshwater and the oceans) and the atmosphere. In addition to these natural processes, humans release large quantities of CO₂ to the atmosphere by burning fossil fuels, deforestation, and other industrial processes.
- Methane is a natural byproduct of decomposition, but significant quantities are also produced by agriculture and animal husbandry as well as by fossil fuel production.
- Nitrous oxide (N₂O) - Nitrous oxide is released naturally from terrestrial soils and oceans, but substantial quantities are also generated from the use of nitrogen fertilizers in agriculture and through some industrial processes.
- A number of other natural and man-made gases also contribute to the greenhouse effect, including tropospheric ozone, and industrial gases such as halocarbons.
- Aerosols are airborne particles within the atmosphere. Some aerosols, such as sulfate aerosols and black carbon aerosols are also produced by fossil fuel combustion. Sulfate aerosols tend to reflect incoming solar radiation, cooling the Earth's surface. Black carbon aerosols absorb, rather than reflect, solar radiation, which shades the Earth's surface, but warms the atmosphere.

While the greenhouse effect is necessary for the planet to be warm enough to be livable, there are concerns that an increasing accumulation of greenhouse gases are causing an increase in global temperatures.

¹ Environmental Protection Agency. www.epa.gov/climatechange/basicinfo.html

² Pew Center on Climate Change.
www.pewclimate.org/global-warming-basics/faq_s/glance_faq_science.cfm

During the past century, global surface temperatures have increased at a rate near 0.11 degrees F per decade. But this trend has increased to a rate approximately 0.32 degrees F per decade during the past 25 to 30 years, according to the National Climatic Data Center.³ There have been two sustained periods of warming, one beginning around 1910 and ending around 1945, and the most recent beginning about 1976.⁴

Since the beginning of this century, each year has ranked among the 10 warmest years of the observational period ranging from 1850 to the present.⁵

In May 2008, the U.S. Climate Change Science Program (CCSP) released “Synthesis and Assessment Product 4.3: The Effects of Climate Change on Agriculture, Land Resources, Water Resources, and Biodiversity in the United States.” The CCSP combines the research efforts of 13 agencies on climate and global change, with the U.S. Department of Agriculture as the lead agency for the report. The report provided one of the most extensive examinations of climate impacts on U.S. ecosystems.⁶

The report finds that climate change is affecting U.S. water resources, agriculture, land resources, and biodiversity. "Specific findings include:

- Grain and oilseed crops will mature more rapidly, but increasing temperatures will increase the risk of crop failures, particularly if precipitation decreases or becomes more variable.
- Higher temperatures will negatively affect livestock. Warmer winters will reduce mortality but this will be more than offset by greater mortality in hotter summers. Hotter temperatures will also result in reduced productivity of livestock and dairy animals.

³ <http://www.ncdc.noaa.gov/oa/climate/research/2007/feb/feb07.html>

⁴ National Climatic Data Center, 2006.
<http://lwf.ncdc.noaa.gov/oa/climate/research/2006/ann/global.html>

⁵ World Meteorological Association, 2006.
http://www.wmo.ch/pages/themes/wmoprod/documents/WMO_1016_E.pdf

⁶The report was written by 38 authors from the universities, national laboratories, non-governmental organizations, and federal service. It underwent expert peer review by 14 scientists through a Federal Advisory Committee formed by the USDA. The National Center for Atmospheric Research also coordinated in the production of the report.
<http://www.climatescience.gov/Library/sap/sap4-3/default.php>

- Forests in the interior West, the Southwest, and Alaska are already being affected by climate change with increases in the size and frequency of forest fires, insect outbreaks and tree mortality. These changes are expected to continue.
- Much of the United States has experienced higher precipitation and streamflow, with decreased drought severity and duration, over the 20th century. The West and Southwest, however, are notable exceptions, and increased drought conditions have occurred in these regions.
- Weeds grow more rapidly under elevated atmospheric CO₂. Under projections reported in the assessment, weeds migrate northward and are less sensitive to herbicide applications.
- There is a trend toward reduced mountain snowpack and earlier spring snowmelt runoff in the Western United States.
- Horticultural crops (such as tomato, onion, and fruit) are more sensitive to climate change than grains and oilseed crops.
- Young forests on fertile soils will achieve higher productivity from elevated atmospheric CO₂ concentrations. Nitrogen deposition and warmer temperatures will increase productivity in other types of forests where water is available.
- Invasion by exotic grass species into arid lands will result from climate change, causing an increased fire frequency. Rivers and riparian systems in arid lands will be negatively impacted.
- A continuation of the trend toward increased water use efficiency could help mitigate the impacts of climate change on water resources.
- The growing season has increased by 10 to 14 days over the last 19 years across the temperate latitudes. Species' distributions have also shifted.
- The rapid rates of warming in the Arctic observed in recent decades, and projected for at least the next century, are dramatically reducing the snow and ice covers that provide denning and foraging habitat for polar bears."⁷

Climate Change: The Issues

Debates about climate change are scientific, economic, political, and rife with complexities. That said, major points of contention include to what degree are human-produced greenhouse gases affecting the climate and what are those effects?

A 2001 report prepared by the National Academy of Sciences at the request of President George W. Bush concluded, "Greenhouse gases are accumulating in Earth's atmosphere as a

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http://www.usda.gov/wps/portal/!ut/p/_s.7_0_A/7_0_1OB?contentidonly=true&contentid=2008/05/0136.xml

result of human activities, causing surface air temperatures and subsurface ocean temperatures to rise. Temperatures are, in fact, rising. The changes observed over the last several decades are likely mostly due to human activities, but we cannot rule out that some significant part of these changes is also a reflection of natural variability." ⁸

Citing the report, the president called for a reduction in the production of greenhouse gases.⁹

Today, statements about human produced greenhouse gases affecting the climate are even stronger than those issued by the National Academy of Sciences in 2001. This statement on the EPA web site is reflective of others:

"Scientists know with virtual certainty that:

- Human activities are changing the composition of Earth's atmosphere. Increasing levels of greenhouse gases like carbon dioxide (CO₂) in the atmosphere since pre-industrial times are well-documented and understood.
- The atmospheric buildup of CO₂ and other greenhouse gases is largely the result of human activities such as the burning of fossil fuels.
- The major greenhouse gases emitted by human activities remain in the atmosphere for periods ranging from decades to centuries. It is therefore virtually certain that atmospheric concentrations of greenhouse gases will continue to rise over the next few decades.
- Increasing greenhouse gas concentrations tend to warm the planet."

A working group of the Intergovernmental Panel on Climate Change (IPCC) recently concluded, "Most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations."¹⁰

⁸Climate Change Science: An Analysis of Some Key Questions (2001).
http://books.nap.edu/openbook.php?record_id=10139&page=1

⁹ Presidential statement, 2001. www.climatevision.gov/statements.html

¹⁰ The World Meteorological Organization and the United Nations Environment Programme established the Intergovernmental Panel on Climate Change (IPCC) in 1988. Its role is to assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts and options for adaptation and mitigation. The IPCC does not carry out research nor does it monitor climate related data or other relevant parameters. It bases its assessment mainly on peer reviewed and published scientific/technical literature.

"Discernible human influences now extend to other aspects of climate, including ocean warming, continental-average temperatures, temperature extremes and wind patterns." ¹¹

However, conclusions about climate change are not unanimous, and this was an issue discussed at length by the EQC in conducting its interim work.

Richard S. Lindzen, a meteorology professor at the Massachusetts Institute of Technology, was a member of the panel that wrote the 2001 National Academy of Sciences report. At the time, he wrote that the summary passage quoted above was a "zinger" that overshadowed the report's caveats, mainly, according to Lindzen, "Our primary conclusion was that despite some knowledge and agreement, the science is by no means settled."¹²

At a 2005 conference on climate change at Yale University, Lindzen said there is basic agreement on three points:¹³

- The global mean surface temperature is always changing. It has increased and decreased over the last 60 years. Over the last century, it has increased, meaning there has been some global warming.
- Carbon dioxide is a greenhouse gas and its increase should contribute to warming. It is increasing, and a doubling would increase the greenhouse effect (mainly due to water vapor and clouds) by about 2%.
- There is good evidence that humans are responsible for the recent increase in CO₂, though climate itself (as well as other natural phenomena) can also cause changes in CO₂.

However, Lindzen contends that models used by the IPCC fail to correctly take into account the effect of water vapor and clouds. "Even if we attribute all warming over the past century to man made greenhouse gases (which we have no basis for doing), the observed warming is only about one-third to one-sixth of what models project," Lindzen said.

"At this point, it is doubtful that we are even dealing with a serious problem. If this is correct, then there is no policy addressing this non-problem that would be cost-effective," Lindzen

¹¹ IPCC, 2007: Summary for Policymakers. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.

¹² Wall Street Journal, 2001. <http://eaps.mit.edu/faculty/lindzen/OpEds/LindzenWSJ.pdf>

¹³ Global Warming: Looking Beyond Kyoto, Yale, 2005.
<http://www.ycsg.yale.edu/climate/forms/LindzenYaleMtg.pdf>

said. "Even if we believe the problem to be serious, we have already reached the levels of climate forcing that have been claimed to be serious."¹⁴

The validity of the models used in the IPCC working group report cited above also are criticized by the George C. Marshall Institute. "The models have systematic flaws, the input data is unreliable prior to 1970 at the earliest, and the historical record of climate is incomplete and flawed."¹⁵

The Science and Public Policy Institute in 2008 released a series of reports examining climate change issues, listing the costs of federal mitigation legislation, and listing state scientists who have signed a petition urging the U.S. to reject the Kyoto agreement and noting their belief that human activity is not responsible for climate change. The Montana report notes 143 Montana scientists have signed the petition and are joined by more than 31,000 Americans with university degrees in science who believe climate change is "without scientific validity."¹⁶

To learn more about the issues and complexities of climate change, in September 2007 the EQC hosted a climate change discussion panel that included:

- Steven Running - University of Montana- Missoula ecology professor;
- Phillip Farnes - retired civil engineer, Soil Conservation Service;
- Joseph Caprio - retired Montana State University-Bozeman professor, agricultural climatology; and
- James Taylor - attorney, editor, Environment and Climate News.

Running discussed the implications of climate change for the Northern Rockies. His presentation included information on the IPCC, and the panel's most recent reports and findings. Running was a lead author of the 2007 United Nations IPCC report. In October 2007 the Nobel Peace Prize was awarded to Al Gore and the IPCC.

¹⁴ Ibid.

¹⁵ Working Group I Contribution to the IPCC's Fourth Assessment Report (AR4): A Critique, 2007. www.marshall.org/pdf/materials/515.pdf. The Marshall Institute, a nonprofit corporation, conducts technical assessments of scientific issues with an impact on public policy, and provides a critical examination of the scientific basis for global climate change policy.

¹⁶ "Observed Climate Change and the Negligible Global Effect of Greenhouse-gas Emission Limits in the State of Montana," Science and Public Policy Institute, page 15. http://scienceandpublicpolicy.org/images/stories/papers/originals/chip_montana.pdf

Farnes presented information about climate change in Montana, including a snowcap hydrology report. He discussed average temperatures and variability, average annual precipitation and variability, mountain snowpack, and runoff. Caprio covered information on the atmosphere and atmospheric change and biological, water, and climate changes. He also discussed the extremes of climate.

Taylor, a senior fellow for the Heartland Institute, presented his findings on the science of the Earth's changing climate. He discussed the issue of "consensus" on climate change, human's contribution, short-term weather patterns, and economic considerations. He is the author of "What Climate Scientists Think about Global Warming," published by the Heartland Institute in 2007.

Climate Change: Greenhouse Gas Emissions in Montana

The Center for Climate Strategies, a nonprofit organization discussed more in-depth below, prepared a greenhouse gas inventory under a contract with the Department of Environmental Quality. The inventory provides a thorough look at emissions in Montana and was offered to the Montana Climate Change Advisory Committee to assist the group in its efforts.

The inventory includes carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Aerosol emissions, including "black carbon" from fossil fuel combustion, also were included. Emissions inventoried in the report do not solely include carbon dioxide but instead include a common metric, CO₂ equivalent.

Montana's gross greenhouse gas emissions are rising at about the same rate as the nation on the whole.¹⁷ Montana's emissions per capita are higher, primarily because of the state's fossil fuel production industry, agricultural industry, large distances for transportation, and low population density. Forestry activities are estimated to be net sinks for emissions, and agricultural soils are estimated to sequester additional gases.

The inventory shows that activities in Montana account for about 37 million metric tons of carbon dioxide equivalent emissions or 0.6% of all greenhouse gas emissions in the United States. Electricity use, transportation, and agriculture are the principal emissions sources. The combustion of fossil fuels for generating electricity used in Montana combined with the

¹⁷*Montana GHG Inventory and Reference Case Projections 1990-2020*, Center for Climate Strategies, principal authors: Alison Bailie, Stephen Roe, Holly Lindquist, Alison Jamison, page 4, September 2007.

Figure ES-2. Montana gross GHG emissions by sector, 1990-2020: historical and reference case projection

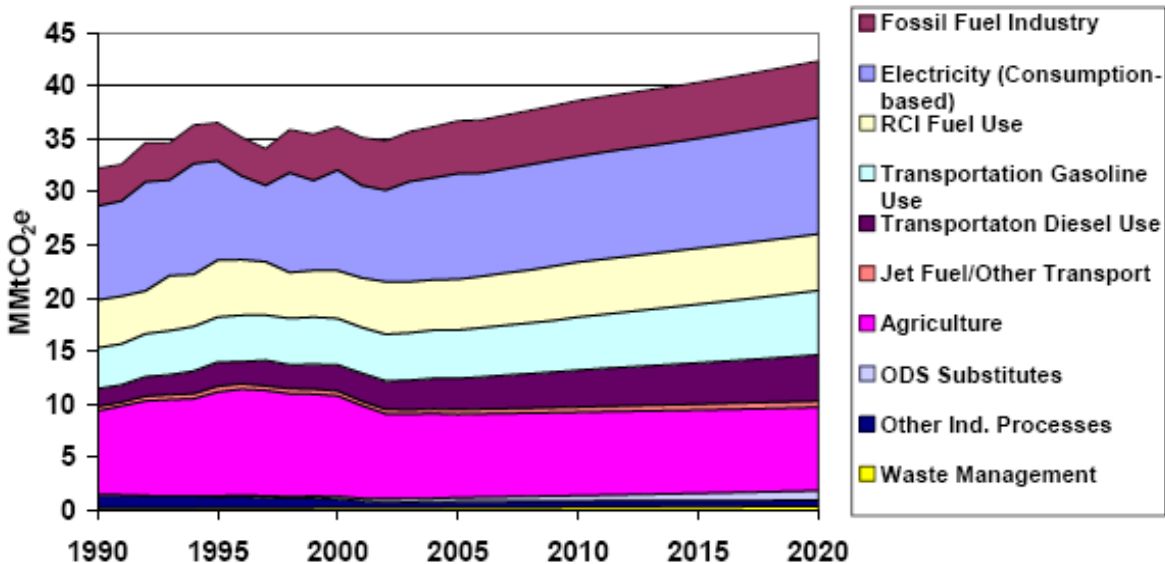


Figure 1

Source: *Montana Climate Change Action Plan: Report of the Governor's Climate Change Advisory Committee.*

transportation sector account for about 50% of the gross greenhouse gas emissions in the state.¹⁸ Agricultural emissions are primarily methane and nitrous oxide from manure management, fertilizer use, and livestock. Other types of emissions are from households, large industry, commercial business, wastewater treatment operations, and the oil and gas industry. A look at greenhouse gas emissions by sector is included in **Figure 1**.

The inventory includes projections that show reference case emissions increasing to 42 million metric tons by 2020, about 30% above 1990 levels. The majority of the increase is expected to come from the transportation sector. The report also reviewed carbon sinks or sequestration, like forests and soil, decreasing the gross estimates annually by about 25 million metric tons of CO₂ equivalent. With the sinks calculation, the net increase by 2020 is estimated at 16.3 million metric tons, in the reference case projections.¹⁹

¹⁸Ibid. page 5.

¹⁹ *Montana Climate Change Action Plan: Report of the Governor's Climate Change Advisory Committee*, page 1-6.

It also is noteworthy that the 54 MCCAC policy recommendations do not reduce greenhouse gas emissions from electricity that is generated in Montana and exported out of state. Reductions based on consumption show the following reductions:

- 34.5% would come from the energy supply sector;
- 29% of the reductions would come from the residential, commercial, industrial and institutional sector;
- 26.9% would come from the agriculture, forestry, and waste sector; and
- 9.6% would come from the transportation and land use sector.²⁰

Climate Change: Players and Programs

Various public and private organizations at the national, regional, state, and local levels are addressing climate change.

The national climate change policy has three main goals:²¹

- Slowing the growth of emissions.
- Strengthening science, technology, and institutions.
- Enhancing international cooperation.

In 2002, the United States pledged to reduce the greenhouse gas intensity of the American economy by 18 percent over the 10-year period from 2002 to 2012. Voluntary, public-private programs focus on energy efficiency, renewable energy, methane and other non-carbon dioxide gases, agricultural practices and implementation of technologies to achieve greenhouse gas reductions.²²

Greenhouse gas emissions aren't restricted by the federal government, however the U.S. Supreme Court ruled that the Environmental Protection Agency (EPA) has failed to use its authority to regulate carbon in automobile exhaust as a pollutant. In April 2008, officials in 18 states filed a petition taking the EPA back to court, claiming the agency has largely ignored the Supreme Court ruling and has not taken an active role in addressing the issue of climate change.

In the absence of federal laws on the subject of greenhouse gas emissions, states also are forming individual and regional tracking and reductions programs. A breakdown of climate change activities in a handful of Western states is included in [Appendix D](#).

²⁰ Ibid. page EX-4.

²¹ www.epa.gov/climatechange/policy/index.html

²² Ibid.

Regional Programs

Montana is a member of the Western Climate Initiative that also includes Arizona, California, New Mexico, Oregon, Utah, and Washington. The Canadian provinces of British Columbia, Quebec, and Manitoba also joined. States will identify, evaluate, and implement ways to reduce greenhouse gas emissions. The initiative requires an overall regional goal to reduce emissions.²³

The Regional Greenhouse Gas Initiative (RGGI) includes Connecticut, Delaware, Maine, Maryland, New Hampshire, New Jersey, New York, and Vermont. Starting in 2009, carbon emissions from power plants in those states will be capped at current levels--about 121 million metric tons annually. The cap remains until 2015 when the states then incrementally reduce emissions by 10% by 2019. It establishes the first cap-and-trade program for carbon dioxide. It is the first mandatory cap and trade program for emissions in the U.S.²⁴

Thirty-one states, including Montana, are part of the Climate Registry, a national initiative to track greenhouse gas emissions. The registry, a nonprofit organization, will be used to track, measure, verify, and publicly report greenhouse gases. The registry accepted data starting in January 2008. State agencies, corporations, and educational institutions will be invited to report emissions under the voluntary program. Some states also have specific sources and facilities that are required to report under regulatory programs. In Montana, facilities are not required to report carbon emissions, although a number of facilities report emissions.

Thirty states, including Montana, have completed or are working on climate action plans.²⁵ In 2006, the Western Governor's Association stated their support for local, state, regional, and national programs that would "reduce anthropogenic greenhouse gas emissions in a manner that is consistent with scientific research and will not significantly harm the U.S. economy."²⁶

The mayors of Billings, Bozeman and Missoula also have signed on to the U.S. Mayors Climate Protection Agreement, in which mayors commit to reduce emissions in their cities to 7 percent below 1990 levels by 2012.²⁷

Organizations

²³<http://www.westernclimateinitiative.org/>

²⁴ Model Rule and Amended Memorandum of Understanding, Regional Greenhouse Gas Initiative.

²⁵ Climate Change: Action by States to Address Greenhouse Gas Emissions, by Jonathan Ramseur, Congressional Research Service, January 2007, page 6.

²⁶ www.westgov.org/wga/press/plenary1-pr.htm

²⁷ www.usmayors.org/climateprotection/

In the private sector, members of the American Petroleum Institute formed a climate challenge program to reduce greenhouse gas emissions. Companies are using cogeneration, also known as combined heat and power technology, to turn waste heat into energy and have been working around the world to reduce natural gas flaring, another source of greenhouse gas emissions. Companies also are researching alternative fuels and other technologies.²⁸ Everyday new efforts are developing to examine various aspects of the climate change issue.

Here is a snapshot of a few Montana-based programs:

- The **Big Sky Carbon Sequestration Partnership**, led by Montana State University, is one of the U.S. Department of Energy's seven regional partnerships. Researchers are developing a framework to address carbon dioxide emissions and are working with stakeholders to create a "vision for a new, sustainable energy future."²⁹
- The **National Carbon Offset Coalition, Inc.**³⁰ is made up of seven Montana nonprofit corporations. It allows landowners, corporations, tribes, and state and local governments to participate in a market-based conservation program. The program is geared at reducing the impacts of greenhouse gases and explores the concept of transferring carbon sequestration units as a new commodity.
- **Montanans for a Healthy Climate**³¹ is a nonprofit organization focused on protecting Montana's outdoor heritage. The **Montana Climate Challenge**³² is operated through the **National Wildlife Federation**. The organization **GlobalWarmingSolution.org** is made up of 35 member organizations representing 320 groups from throughout the United States and is based in Missoula. Other conservation-based organizations like the **Montana Environmental Information Center**³³ and **Montana Trout Unlimited**³⁴ offer climate change information.
- The **Montana Coal Council**, the **Montana Petroleum Association** and the **Western Environmental Trade Association**³⁵ each recently featured programs on climate change issues. In March 2008 the **Montana Chamber of Commerce** hosted

²⁸ www.api.org/ehs/climate/new/companiesaddress.cfm

²⁹ www.bigskyco2.org

³⁰ www.ncoc.us

³¹ www.mthealthyclimate.com

³² www.mtclimatechallenge.org

³³ www.meic.org

³⁴ www.montanatu.org

³⁵ www.montanacoalcouncil.com; www.montanapetroleum.org; www.weta-montana.org

- a Climate Change conference in Billings.³⁶
Regional efforts include the **Rocky Mountain Climate Organization** and the **Western Regional Climate Action Initiative**.³⁷

Climate Change: State Level Activity

The issue of climate change also is being discussed in various other forums of Montana state government.

Montana Board of Environmental Review

In January 2008 the Montana Board of Environmental Review (BER) considered an appeal of an air-quality permit issued for a proposed coal-fired power plant based in part on whether carbon dioxide emissions should be treated as a regulated air pollutant. The BER voted 5-1 that it did not have the authority to regulate carbon dioxide emissions from the proposed plant. The decision has since been appealed to state district court. A memo provided to the EQC offering an overview of the matter is included in [Appendix E](#).

Past Legislation

During the 2007 Legislative session, lawmakers debated several greenhouse gas and climate change-related bills. There were additional bills considered that examined fuel efficiency standards, building efficiency requirements, overall energy efficiency and energy auditing, renewable energy, and energy conservation related to climate change. The bills listed in [Appendix F](#) focus specifically on carbon sequestration and greenhouse gas regulation.

Montana Climate Change Advisory Committee

Gov. Brian Schweitzer in 2005 asked Montana's Department of Environmental Quality (DEQ) to form a Climate Change Advisory Committee (MCCAC) to thoroughly study the impact of climate change in Montana.

The MCCAC included 18 members who represented industry, environment, local and tribal governments, transportation, and agriculture. The DEQ contracted with the Center for Climate Strategies to develop a comprehensive inventory and forecast of greenhouse gas emissions in Montana from 1990 to 2020, referred to earlier in this report, as well as to develop policy options for reducing greenhouse emissions.

The Center for Climate Strategies is a nonprofit organization that works with groups like the MCCAC to design and implement policies that address climate mitigation. The Center for Climate Strategies has teamed with 14 other states and a handful of other organizations to

³⁶ http://www.montanachamber.com/ws/aboutus3.php?page_id=123711

³⁷ www.rockymountainclimate.org; www.westernclimateinitiative.org

develop greenhouse gas reduction plans.³⁸ During the EQC's March 2008 meeting, Tom Peterson, executive director of the Center for Climate Strategies, spoke via conference call to members. He discussed how the Center for Climate Strategies is funded, how planning processes such as those undertaken in Montana are initiated, and how the collaborative planning process worked in Montana. His presentation is included in [Appendix G](#).

The Center is a policy center of Enterprising Environmental Solutions, Inc. Mr. Peterson indicated that the Center for Climate Strategies assisted the MCCAC in identifying a range of greenhouse gas mitigation options, using a combination of more than 250 existing state actions from across the country and Montana specific actions, as determined by the MCCAC. He described the process as a "deliberative democracy," and outlined how MCCAC members evaluated and decided on the proposals that advanced. The processes and outcomes in other states where the Center for Climate Strategies has assisted in developing climate action plans were discussed, and the differences in those plans were highlighted.

The DEQ had a \$50,000 contract with the Center for Climate Strategies and the center provided about \$320,000 in foundation funding to assist in developing the climate change action plan. DEQ also indicated MCCAC expenses were about \$12,000. A series of legislative information requests and responses by the Legislative Audit Division on the subject of the DEQ's contract with the Center are included in [Appendix H](#).

The MCCAC concluded its work in 2007 and final recommendations were released in November 2007. The MCCAC offered 54 recommendations. In the report, the 54 recommendations are broken down into five categories: Residential, Commercial, Institutional, and Industrial (RCII); Energy Supply (ES); Transportation and Land Use (TLU); Agriculture, Forestry, and Waste Management (AFW); and Cross-Cutting Issues (CC). Some of the recommendations can be implemented administratively, and some would require legislation. The summary and complete report can be reviewed online at <http://www.mtclimatechange.us/> A list of the policy options recommended by the MCCAC is included in [Appendix I](#).

20x10

Following the release of the MCCAC's final report, Governor Schweitzer announced the 20x10 Initiative, asking all state agencies to reduce their energy use by 20 percent by 2010.³⁹ Reductions in electricity, natural gas, propane, and fuel oil use are expected. In addition to the 20x10 initiative, agencies also are asked to apply Montana Corporate Average Fuel Economy (CAFE) standards so state vehicle fleets can achieve an average of 30 miles per gallon or better. This effort is in addition to legislation approved by the 2007 Legislature that

³⁸http://www.climatestrategies.us/Our_Track_Record.cfm

³⁹<http://governor.mt.gov/20x10/default.asp>

requires 27 miles per gallon or better for the state fleet. A question and answer document prepared by Tom Livers of the DEQ, outlining some of the major issues related to the initiative is included in [Appendix J](#).

Climate Change: EQC review

As part of its interim work, the EQC reviewed all 54 recommendations included in the “Montana Climate Change Action Plan: Final Report of the Governor’s Climate Change Advisory Committee.” In January 2007, EQC members all received copies of the final report, a summary of the report, and appendices used in creating the report. DEQ Director Richard Oppen and Lou Moore, bureau chief for the DEQ's Energy and Pollution Prevention Bureau, offered an overview of the process and the 54 recommendations. Those involved in development of the recommendations, including CCAC members, members of the scientific advisory panel, and technical working group members also were invited to comment. The invitation sent to interested persons is included in [Appendix K](#).

In an effort to invite public comment and better understand how Montanans feel about the recommendations included in the MCCAC's final report, the EQC conducted a survey during the month of February 2008. Members themselves also participated in the survey. Using the survey, the public was invited to rank the 54 MCCAC recommendations on a scale of 1 to 5, with 1 being do not support and 5 being fully support.

While the survey was lengthy, EQC members commented that it was imperative that the public have as much opportunity as possible to weigh in on the individual recommendations as well as the subject of climate change.

The online survey garnered 1,979 online responses and seven additional responses, submitted as hard copies. Of the total, 962 people signed their survey. Of the 16 EQC members, 13 members submitted surveys. Along with the rankings, participants were invited to comment on the individual recommendations. More than 600 pages of public comment were submitted, which are available on the EQC Website at http://leg.mt.gov/css/lepo/2007_2008/environmental_quality_council/climatesurvey/climatesurvey.asp. A hard copy of the public comment collected is available in the Legislative Environmental Policy Office located in Room 171 of the State Capitol. Public participation in the climate change survey was record-breaking for the division.

The survey was not scientific, and participation was not limited in anyway. There were no controls requiring participants to leave a name or affiliation. And there was no limit on the number of times an individual could take the survey. Because it was not a scientific survey and did not have a controlled sample, it can't be viewed as a scientifically accurate gauge of public opinion on climate change or on the individual MCCAC recommendations. An analysis of the survey was provided to the EQC as an information tool.

Two survey synopsis forms were compiled in an effort to look for trends in support or lack of support for particular recommendations. The synopsis showed that there were a few recommendations that received both public support and EQC support, as based on the survey. Three recommendations were in both the EQC and the public's top 10 including:

- **AFW-11** Programs to Promote Local Food and Fiber (75% of participating EQC members voting 4 or 5 and 59% of the public voting 4 or 5)
- **AFW-12** Enhanced Solid Waste Recovery and Recycling (75% of participating EQC members voting 4 or 5 and 63% of the public voting 4 or 5)
- **TLU-10** Transportation System Management (69% of participating EQC members voting 4 or 5 and 61% of the public voting 4 or 5)

In the top 20 there were additional similarities. Those that rose to the top, as indicated by percentage voting 4 or 5, include:

- **RCII-13** Metering Technologies w/Opportunity for Load Management and Choice
- **RCII-2** Market Transformation and Technology Development and Programs
- **RCII-8** Support for Renewable Energy Applications
- **RCII-10** Industrial Energy Audits and Recommended Measure Implementation
- **CC-4** State Climate Public Education and Outreach
- **TLU-9** Procurement of Efficient Fleet Vehicles
- **AFW-8** Afforestation/Reforestation Programs -- Restocking

In looking at those that received the least support, there also were trends between the EQC and the public responses. One recommendation was in the bottom 10 of the EQC and the public (as indicated by percentages voting 1 and 2):

- **RCII-9** Carbon Tax (46% of participating EQC members voting 1 or 2 and 46% of the public voting 1 or 2)

In the bottom 20 of the public and EQC, or those receiving the least support, as indicated by percentage voting 1 and 2, there are more similarities:

- **RCII-1** Demand side Management Programs, Efficiency Funds and Requirements
- **ES-10** Generation Performance Standards or GHG Mitigation Requirements for New (and/or existing) Generation Facilities, with/without GHG Offsets
- **ES-7** Demand side Management
- **ES-8/9** Market Based Mechanisms to Establish a Price Signal for GHG Emissions (Cap and Trade or Tax)
- **ES-5** Incentives for Advanced Fossil Fuel Generation and Carbon Capture and Storage or Reuse, including Combined Hydrogen and Electricity Production with Carbon Sequestration
- **ES-13** CO₂ Capture and Storage or Reuse in O&G Operations, including Refineries and Coal-to-Liquids Operations

- **TLU-4** Financial and Market Incentives for Low GHG Vehicle Ownership and Use
- **TLU-12** Off-road Engines and Vehicles GHG Emissions Reduction
- **TLU-6** Low Carbon Fuels
- **CC-7.3** Require Evaluation of GHG Emissions in Environmental Studies
- **CC-6** Options for State GHG Goals or Targets
- **CC-7.4** Join WCI and Consider Joining Chicago Climate Exchange

The EQC also reviewed an analysis prepared by EQC member Sen. Bob Hawks. Sen. Hawks compiled the combined (5 and 4) ranking scores for EQC and public responses totaling over 50%. His analysis can be viewed in [Appendix L](#).

With the survey information and analysis, the EQC voted to take a closer look at 15 of the 54 recommendations. By looking at the 15 recommendations, the council members stressed that they were not endorsing those 15 recommendations or dismissing any of the others. Members requested the following information on the 15 recommendations:

- Conservation considerations
- What is currently being done in this area/What is the executive doing in this area
- What potential new legislation in this area could be considered

The complete list of 15 recommendations that were further investigated includes:

- **AFW-12** Enhanced Solid Waste Recovery and Recycling
- **AFW-11** Programs to Promote Local Food and Fiber
- **TLU-10** Transportation System Management
- **RCII-2** Market Transformation and Technology Development Programs
- **RCII-13** Metering Technologies/Load Management and Choice
- **AFW-8** Afforestation/Reforestation Programs-Restocking
- **CC-4** State Climate Public Education and Outreach
- **TLU-9** Procurement of Efficient Fleet Vehicles
- **RCII-10** Industrial Energy Audits and Implementation
- **RCII-8** Support of Renewable Energy Applications
- **AFW-7** Expanded use of Biomass Feedstocks for energy use
- **AFW-4** Incentives for Enhancing GHG Benefits/Farm Bill Conservation
- **CC-7.1** Target for Reducing the State's Own GHG Emissions
- **RCII-11** Low Income and Rental Housing Energy Efficiency Program

- **RCII-6** Consumer Education Programs

An analysis of the 15 recommendations is included in [Appendix M](#). EQC members reviewed the information during the May 2008 meeting, and further refined their options requesting discussion drafts, reports and letters as outlined in the draft recommendations, outlined on page 4 of this report. The requested information discussed in the recommendations was outlined in a memo provided to the EQC in July 2008 included in [Appendix N](#).

During the EQC's July meeting, members modified the bill drafts, temporarily labeled LC 6000 through LC 6011. Those drafts, as well as this report, are available for a 30-day public comment period.