

Wild Idaho Rising Tide
P.O. Box 9817, Moscow, Idaho 83843
Phone: 208-301-8039
Email: wild.idaho.rising.tide@gmail.com
Website: wirisingtide.wordpress.com



Comments to the City of Moscow Sustainable Environment Commission
Concerning the Ultimate Potential Impacts of Over-Sized Tar Sands
Equipment Transports Utilizing Highway 95 through Moscow, Idaho

Wednesday, June 15, 2011

Outline of Comments

- Introductory statements
- Atmospheric concentrations of carbon dioxide are already dangerously high.
- Tar sands add to an inventory of fossil fuel reserves that are far larger than can be safely burned.
- Tar sands endanger international agreements to combat global warming.
- Amplifying feedback loops increase the urgency for emissions reductions.
- Tar sands development is inordinately destructive to the environment.
- Tar sands development is destructive to First Nations communities.
- The economics that allow tar sands development are flawed.
- Tar sands use prolongs oil addiction while preventing sustainable energy solutions.
- State and local governments are now the important agents of change.
- The consequences of climate change for the City of Moscow (and the rest of the world) are ominous.
- In Conclusion

To: Members of the City of Moscow Sustainable Environment Commission
From: Wild Idaho Rising Tide
Subject: Recommendation to City Council on Megaloads Permit Applications
Date: Wednesday, June 15, 2011

We are writing this letter to assist you in responding to Mayor Nancy Chaney's request for a recommendation on how the city should respond to permit applications to the Idaho Transportation Department proposing the transport of large, oversized loads through the city along Highway 95, on their way to the Kearl Oil Sands Project in northern Alberta.

We are proud of the City of Moscow -- proud of its beautiful tree-lined streets, handsome historic buildings, embrace of the arts, economically vibrant downtown, and strong community spirit. We are proud that the City of Moscow has demonstrated its enlightened vision of a healthy future through its creation of the Sustainable Environment Commission. A popular definition of sustainability is "meeting present needs without compromising the ability of future generations to meet their needs."¹ Sustainability is primarily an ethical proposition, certainly not a narrowly pragmatic one.

We have come to understand through unofficial channels that the City Council President has requested that there be a "clear local connection" to justify any recommendation that the Commission provides to the City Council. We believe this back-channel guidance should in no way diminish the attention you give to the ethical dimension of ExxonMobil's proposal, as ethics are fundamental to your mission. Sadly, we believe that the "local connection" between tar sands development and the adverse consequences to the ability of future generations of Moscovites to meet their needs is now brutally clear for anyone willing to look at the evidence.

This letter contains a brief review of key climate science facts and a summary of ongoing and projected climate change impacts, particularly those affecting our town and bioregion. One cannot fully understand the significance of the Kearl Oil Sands Project to Moscow and to future generations of Moscovites without understanding these facts. We also discuss the economic and political context in which tar sands development is taking place, and why, if it continues, there is no realistic possibility for a sustainable environment for anyone.

For those who have followed these developments closely, there is nothing surprising or controversial in the information we present. However, mainstream news channels have been lax in their coverage of climate change issues, and corporate interests opposed to effective public policies to mitigate climate change have invested heavily in efforts to confuse the public. It is for these reasons that we include numerous references and explanatory footnotes in this letter.

¹ This definition of sustainability can be traced to a 1987 United Nations conference. Robert Gillman, editor of *In Context* magazine, extends this goal oriented definition by stating "sustainability refers to a very old and simple concept (The Golden Rule)...do unto future generations as you would have them do unto you" [<http://www.arch.wsu.edu/09%20publications/sustain/defnsust.htm>].

Atmospheric concentrations of carbon dioxide are already dangerously high.

As of May 2011, the concentration of carbon dioxide (CO₂) in the Earth's atmosphere stood at 394.35 parts per million (ppm).² Carbon dioxide is the most important greenhouse gas associated with human-caused global atmospheric warming. Other important greenhouse gases include water vapor, methane, nitrous oxide, and ozone. CO₂ concentrations have increased by approximately 40 percent from their pre-industrial level of 280 ppm. This elevated level is primarily caused by human activities and is principally due to the combustion of fossil fuels.³

The properties of greenhouse gases that make them important regulators of global atmospheric temperature are that they are transparent to incoming solar radiation but opaque to long-wave thermal radiation that transmits heat back into space. Scientists first recognized the important role that CO₂ plays in regulating the Earth's atmospheric temperature more than 100 years ago.⁴

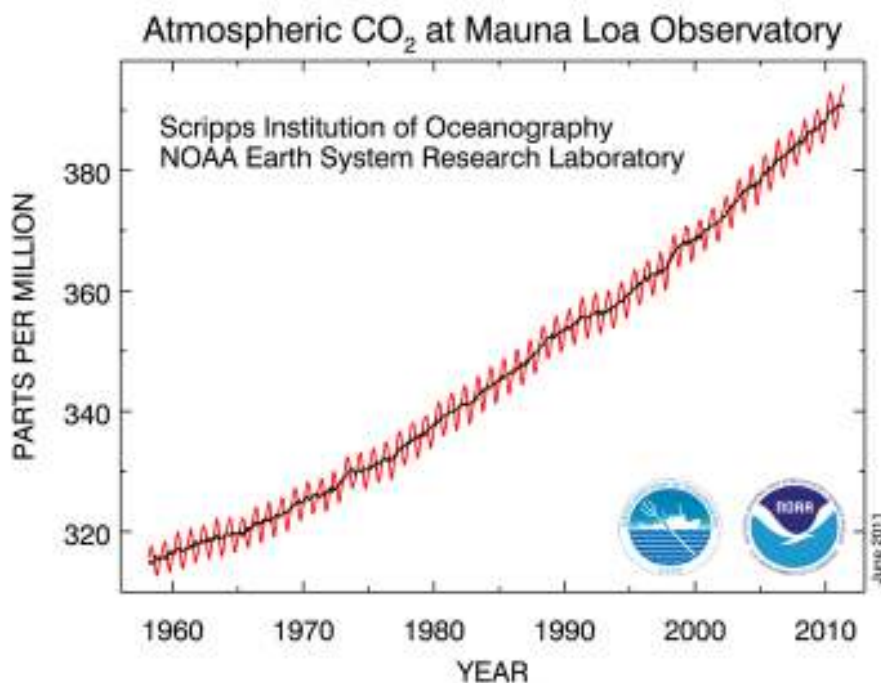


Figure 1 - Atmospheric concentrations of CO₂ from 1958 to 2010⁵

² From CO₂Now.org [<http://co2now.org/>] based on data from the Mauna Loa Observatory.

³ Intergovernmental Panel on Climate Change, The IPCC Third Assessment Report, Climate Change 2001 [http://www.grida.no/publications/other/ipcc_tar/?src=/climate/ipcc_tar/].

⁴ Swedish scientist Svante Arrhenius published an article in 1896, explaining the basic mechanism of anthropogenic global atmospheric warming resulting from the burning of fossil fuels [http://en.wikipedia.org/wiki/Svante_Arrhenius]. Arrhenius' predictions have proven surprisingly accurate, although he dramatically underestimated the rate at which the burning of fossil fuels would increase and was overly sanguine in his evaluation of the impacts on humans of these climate changes.

⁵ From National Oceanic and Atmospheric Administration, Energy System Research Laboratory, Global Monitoring Division [<http://www.esrl.noaa.gov/gmd/ccgg/trends/>].

Figure 1 shows measured changes in the concentration of atmospheric carbon dioxide, which have taken place since 1958. Fossil fuel production and use are tracked by the International Energy Agency, by national governments, and by industry. These data enable scientists to determine the impact that the burning of fossil fuels is having on atmospheric CO₂ levels and to track what happens to the carbon after it enters the atmosphere. In the short term, approximately 40 percent of the CO₂ emitted into the atmosphere ends up in the world's oceans, where it dissolves in seawater and forms carbonic acid, contributing to ocean acidification.⁶ If humans completely stopped burning fossil fuels tomorrow, the curve in Figure 1 would flatten, and CO₂ concentrations would be expected to drop over the course of several hundred years to a new equilibrium somewhat above the pre-industrial level.⁷

The most concerning aspect of Figure 1 is that the curve is upwardly concave. After more than two decades of concerted international efforts to control carbon emissions, we still appear to be moving in a destabilizing direction at an accelerating pace.

Much attention has been given to the question of what constitutes a safe level of atmospheric CO₂. At the December 2009 Copenhagen Summit,⁸ an accord to limit the overall atmospheric temperature rise to 2° Celsius (3° Fahrenheit) was introduced and eventually signed by 138 countries. It is believed that limiting CO₂ concentrations to 450 ppm would constrain average global temperature increases to 2°C.⁹ Scientists suggest that temperature increases above 2°C would significantly increase the risk of triggering positive feedback responses.

Growing understanding of positive feedback mechanisms has raised concerns that there may be a 'tipping point' beyond which humans lose the ability to prevent further warming. Dr. James Hansen¹⁰, the nation's most well-known and widely respected climate scientist, asserts that the "safe" level for atmospheric carbon concentration is 350 ppm. Numerous climate stabilization efforts around the world now focus on that target level.

Tar sands add to an inventory of fossil fuel reserves that are far larger than can be safely burned.

Figure 2 shows global fossil fuel estimates, including both the quantities humans have already burned and the quantities available to be burned in the future. The figure includes conventional

⁶ Over the past 250 years, the world's oceans are estimated to have become approximately 30 percent more acidic. Ocean pH is estimated to have decreased from approximately 8.25 to 8.14. While ocean acidification may be beneficial to humans by buffering CO₂ emissions, it has negative impacts for calcifying organisms, such as corals and crustaceans [http://en.wikipedia.org/wiki/Ocean_acidification].

⁷ This statement assumes little of no amplifying feedback. We discuss concerns related to feedback mechanisms below.

⁸ The 2009 United Nations Climate Change Conference was the Fifteenth Conference of the Parties (COP 15) to the United Nations Framework Convention on Climate Change. These meetings represent the most important forum for international cooperation on climate change.

⁹ Meeting the European Union 2°C climate target: Global and regional emission implications. "For achieving the two degree target with a probability of more than 60 percent, greenhouse gas concentrations need to be stabilized at a 450 ppm CO₂-equivalent or below."

[http://unfccc.int/essential_background/library/items/3599.php?rec=j&preref=4965]

¹⁰ Director of the NASA Goddard Institute for Space Studies in New York City and Adjunct Professor, Department of Earth and Environmental Science at Columbia University.

fossil fuels (oil, natural gas, and coal), a category representing carbon stored in plant matter, and Canadian tar sands. The units on the left-hand scale of the chart are gigatons (billion metric tons) of carbon, while the units on the right-hand scale are CO₂ parts per million and relate to the potential impact that burning the reserves would have on atmospheric CO₂ concentrations.

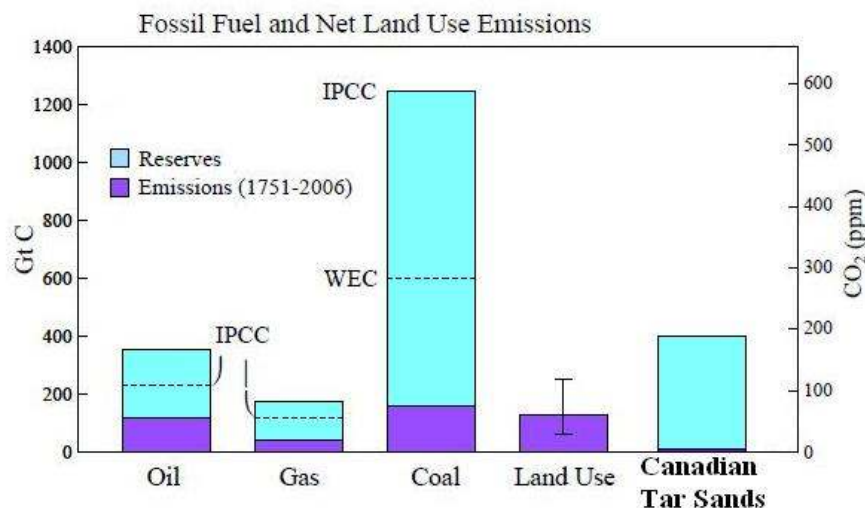


Figure 2 - Estimated reserves and emissions through 2006 for conventional fossil fuels, land use changes, and Canadian tar sands in gigatons of carbon and parts per million of CO₂. The dotted lines identify estimated reserves based on different sources. IPCC stands for Intergovernmental Panel on Climate Change. WEC stands for World Energy Council.¹¹

The figure conveys a classic ‘good news, bad news’ message. The good news is that enormous fossil fuel reserves remain. Even assuming geometric rates of growth in consumption (like those that have occurred in the past), we could power civilization in our current fashion for at least several more decades. The bad news is that we cannot burn even a small fraction of these remaining reserves if we want a planet “similar to the one on which civilization developed and to which life on Earth is adapted.”¹²

Significant, worrisome changes are now evident after a 40 percent increase in atmospheric CO₂. The consequences of tripling or quadrupling CO₂, which this chart suggests would be the result of continuing on our ‘business as usual’ path, are truly frightening.

Tar sands endanger international agreements to combat global warming.

Once a carbon-based fuel has been burned, the carbon dioxide released to the atmosphere becomes indistinguishable from carbon dioxide from any other source. Global atmospheric warming is a result of the cumulative behavior of people from many nations whose energy consuming activity put carbon dioxide into the atmosphere that all nations share. Managing

¹¹ Sources are from James Hansen, *Storms of My Grandchildren*, 2009, page 174, and from James Hansen, *Silence is deadly: I’m speaking out against the Canada-U.S. tar sands pipeline*, Energy Bulletin, June 4, 2011. Also, found here: [<http://benthamsience.com/open/toascj/articles/V002/Supplementary%20Material.pdf>].

¹² This phrasing is frequently used by Bill McKibben.

atmospheric carbon to prevent catastrophic changes to the Earth is inherently a global challenge; international cooperation is the only plausible route to ensuring climate stability.

To meet this challenge, the United Nations convened the Earth Summit in Rio de Janeiro in 1992. A major achievement of the summit was the creation of the *Framework Convention on Climate Change*, a treaty to stabilize greenhouse gas concentrations in the atmosphere at safe levels. The agreement contained no binding limits on emissions, leaving that task for later ‘protocols.’ The treaty provides the organizational framework for international cooperation to combat climate change and included ‘voluntary’ commitments for industrialized nations to stabilize greenhouse gas emissions at 1990 levels by the year 2000. With bi-partisan support, the United States Senate gave its consent to ratification, and President George H.W. Bush signed the treaty on October 13, 1992.¹³

The follow-up agreement, known as the Kyoto Protocol, established binding limitations for the greenhouse gas emissions of industrialized nations. The Kyoto Protocol took effect on February 16, 2005, and has been ratified by 191 countries, including all advanced industrial nations except the United States. By signing the Kyoto Protocol, Canada committed to reducing its emissions by 6 percent below its 1990 level. Canada’s 2008 emissions were more than 30 percent above their treaty level under Kyoto.¹⁴ Greenhouse gas emissions from the tar sands increased by 20 percent in 2009 and now exceed the emissions from all cars driven on Canadian highways.¹⁵ Canada has announced its intention to not participate in the successor protocol to Kyoto, which expires in 2012.¹⁶ Other nations are unlikely to continue vigorously pursuing their commitments while Canada and the United States ramp up activities that negate their hard work.

Amplifying feedback loops increase the urgency for emissions reductions.

Recent paleoclimatic evidence has revealed that the world’s climate is considerably more sensitive to atmospheric CO₂ concentrations than previously believed.¹⁷ A recent study published in the journal *Science* found that you would need to go back 15 million years to find a time when the concentrations of atmospheric CO₂ were as high as they are today. Global temperatures were then five to ten degrees Fahrenheit higher, and sea level was approximately 75 to 120 feet higher.¹⁸

Climate scientists have discovered that numerous mechanisms serve to increase atmospheric warming beyond what would be expected from an increase in CO₂ alone. One example of such a

¹³ [http://en.wikipedia.org/wiki/Climate_Change_Convention].

¹⁴ Environment Canada, A Summary of Trends: 1990-2008 [<http://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=F1CA74A6-1>].

¹⁵ Mike De Souza, Canada leaves oil sands pollution rise from UN report, Postmedia News, May 30, 2011 [<http://www.canada.com/Canada+leaves+rise+oilsands+pollution+from+climate+report/4859956/story.html>].

¹⁶ Jenny Uechi, Canada to reject Kyoto Protocol extension, Vancouver Observer, June 9th, 2011 [<http://www.vancouverobserver.com/politics/news/2011/06/09/canada-reject-kyoto-protocol-extension>].

¹⁷ The prefix *paleo* means early or ancient, hence *paleoclimatology* is the study of changes in climate from the perspective of the entire history of Earth. Paleoclimatology uses evidence from rocks, sediments, fossils, ice sheets, tree rings, etc.

¹⁸ University of California - Los Angeles (October 9, 2009), Last Time Carbon Dioxide Levels Were This High: 15 Million Years Ago, Scientists Report. *ScienceDaily*. Retrieved June 4, 2011, from [<http://www.sciencedaily.com/releases/2009/10/091008152242.htm>].

feedback loop is that a warmer world has less snow and ice, which means that less of the sun's energy is reflected back into space as light and more is absorbed as heat. The polar ice cap, a highly reflective surface nearly the size of the continental United States, will be replaced in the not very distant future by open water, which is much more absorptive of solar energy.

A second amplifying feedback loop is triggered by the warming of arctic soils. Methane, a potent greenhouse gas, is released as permafrost thaws. Large quantities of frozen methane (or methane hydrates) are also found in the deep oceans. These will eventually be released to the atmosphere if the oceans warm sufficiently.

Our growing understanding of these positive feedback mechanisms has heightened calls for prompt actions to limit CO₂ emissions. Amplifying feedback loops indicate that we have less time than we thought we had to take remedial action on global atmospheric warming, if it is to be stopped and eventually reversed. They also explain why recent projections are much more dire than those from only a few years ago. For example, scientists at the Massachusetts Institute of Technology (MIT) published a study in late 2009 that found that global atmospheric warming this century could be twice as extreme as they estimated just six years earlier.¹⁹ Based on MIT's Integrated Global System Model, the study predicted warming by 2095 of 10°F and CO₂ increases to 866 ppm.

These and other alarming developments prompted 17 Nobel laureates, who gathered in Stockholm this May, to issue and publish an unusual and remarkable memorandum, requesting “fundamental transformation and innovation in all spheres and at all scales, in order to stop and reverse global environmental damage.”²⁰ They wrote:

Science makes clear that we are transgressing planetary boundaries that have kept civilization safe for the past 10,000 years. ... We can no longer exclude the possibility that our collective actions will trigger tipping points, risking abrupt and irreversible consequences for human communities and ecological systems. We cannot continue on our current path. The time for procrastination is over. We cannot afford the luxury of denial.

Tar sands development is inordinately destructive to the environment.

The Alberta tar sands are the second largest oil deposit in the world, after Saudi Arabia. They cover an area of approximately 54,000 square miles and are predominately concentrated in the northeast corner of Alberta, Canada. If fully developed, an area the size of Florida would be clear-cut, bulldozed, roaded, mined, and ultimately destroyed.

Alberta tar sands extraction projects are considered to be the second largest source of deforestation on the planet, after Amazon rainforest logging. In order to reach these oil deposits, the native forest is cleared so that the soil can be exposed. Canada's boreal forest represents one-

¹⁹ Sokolov, A. P., et al., Probabilistic forecast for twenty-first-century climate based on uncertainties in emissions (without policy) and climate parameters, *Journal of Climate*, October 2009.

²⁰ Third Nobel Laureate Symposium on Global Sustainability, The Stockholm Memorandum, May 18, 2011 [<http://globalsymposium2011.org/wp-content/uploads/2011/05/The-Stockholm-Memorandum.pdf>].

quarter of the planet's remaining intact forests and is considered to be the second largest carbon sink on the planet, after the Amazon rainforest. Instead of protecting this vast and irreplaceable resource, tar sands development is decreasing the planet's ability to absorb atmospheric carbon dioxide.²¹

Canada's boreal forest contains the largest area of wetlands of any ecosystem in the world, serving as an annual breeding ground for over twelve million waterfowl and millions of migratory land birds. It is estimated that ten thousand of these same waterfowl and birds are dying each year when they mistake for wetlands the toxic tailing ponds created by tar sands processing and attempt to use them for habitat. The highly toxic residues in these ponds are absorbed by the birds, rendering them powerless to fly and function and ultimately killing them. Currently, tar sands tailing ponds are so large that they can be seen from space.

Refining of Alberta tar sands oil now uses more freshwater on an annual basis than the city of Calgary. For every barrel of oil produced from the tar sands, four barrels of water are consumed. Over ninety percent of that water becomes so contaminated that it cannot be returned to the Athabasca River, thus huge tailing ponds continue to expand. A 2006 report by the Alberta government warned that there may not be enough available water to meet the needs of all the planned oil sands projects while still maintaining adequate stream flows. As citizens of the planet, we are faced with deciding whether our addiction to oil is more important than the freshwater we need to survive.

Alberta tar sands development is the largest single point of origin for carbon emissions on the planet. It annually spews more carbon dioxide into the atmosphere than all of Canada's vehicles combined. Greenhouse gas emissions are predicted to triple over the coming decades if the tar sands are further developed. It would then be impossible to reduce our atmospheric carbon emissions to 350 ppm and avoid climate catastrophe.²²

Tar sands development is destructive to First Nations communities.

The exploitation of the Alberta tar sands is an environmental justice issue and a human rights issue. Activist Naomi Klein has called the tar sands an act of genocide against indigenous peoples. A majority of the Metis, Dene, and Cree First Nations people of Canada, who reside in the Athabasca River basin, still subsists on a diet of wild fish and game. Poisoning of the surrounding air, water, and land by tar sands development has rapidly infiltrated the food web, causing fish and other wildlife to develop tumors, mutations, and lesions. People who have had fish, moose, deer, etc. as part of their diet, like their ancestors over thousands of years, are now afraid that, if they eat from the land and water, they too will grow sick and die.

Cancer rates among nearby First Nations people have skyrocketed since the development of the Alberta tar sands. Dr. John O'Connor, a physician for the Fort Chipewyan community, has documented occurrences of a rare and lethal bile duct cancer five times over the past ten years. Approximately twelve hundred people live in Fort Chipewyan. The normal incidence for this very rare cancer is no more than one case per one hundred thousand people. O'Connor has also

²¹ [<http://www.greenpeace.org/canada/en/recent/tarsandsfaq/>].

²² [<http://oilsandstruth.org/>].

observed similarly disturbing rates of leukemia, lymphoma, lupus, colon cancer, and Graves' disease in the people of Fort Chipewyan.²³

The toxic tailing ponds pose serious health and environmental risks from the migration of cancer causing pollutants through the groundwater system to the surrounding soil and surface water. The tailing ponds contain polycyclic aromatic hydrocarbons, many of which are considered probable carcinogens by the United States Environmental Protection Agency, as well as other toxins including naphthenic acids and heavy metals. The levels of these carcinogens in sediments and waterways around the tar sands are steadily rising and are contributing to an increasingly 'life and death situation' for many adjacent First Nations communities.

The economics that allow tar sands development are flawed.

In 2005, the British government chartered a major study to look at the economic impacts of global atmospheric warming and at the economics of policy options for mitigating it. They selected the country's most eminent economist, Sir Nicholas Stern, to conduct what would be the largest and most widely known study of its kind. The study's 700-page report, known as the Stern Review, concluded that policies to mitigate climate change would be very cost effective. Its summary of conclusions reads, "...the benefits of strong and early action far outweigh the economic costs of not acting."²⁴ The United States government has not chartered a comparable study, but to date, we have chosen what is clearly the most costly path of climate change -- inaction.

There currently is no practical, cost effective method for sequestering carbon once it has been extracted from the Earth. 'Clean coal' remains a concept, not a proven, economical technology. Sequestering carbon from tar sands is far less practical than from coal because tar sands oil is mostly used for transportation in millions of mobile internal combustion engines, while coal is burned to make electricity in large centralized plants. Plants and soils offer the potential to sequester some fraction of the excess carbon, but necessary changes to agricultural and forestry practices would require economic incentives, which are not yet even under discussion.

In contrast, carbon can be permanently and cost effectively sequestered in tar sands deposits by simply preventing tar sands development. On a cost per metric ton of carbon basis, there is no remedial process that is remotely as cost effective. The highest and best use for tar sands is as a secure and permanent carbon sink.

Most economists favor the use of taxation to address pollution problems.²⁵ When polluters pay nothing for the harm they cause, they pollute more than necessary and ignore cleaner alternatives. The most efficient and effective measure for addressing climate change would be to implement a tax on carbon,²⁶ an idea currently stalled in the U.S. Congress. Ironically, the

²³ [<http://foresthethics.org/downstream-from-the-tar-sands>].

²⁴ Stern Review final report, Summary of conclusions, 2006

[http://webarchive.nationalarchives.gov.uk/+/http://www.hm-treasury.gov.uk/stern_review_report.htm].

²⁵ Greg Mankiw, *The Pigou Club Manifesto*, October 20, 2006 [<http://gregmankiw.blogspot.com/2006/10/pigou-club-manifesto.html>].

²⁶ Senators Cantwell (D-WA) and Collins (R-ME) have introduced The Carbon Limits and Energy for America's Renewal (CLEAR) Act [<http://cantwell.senate.gov/issues/CLEARAct.cfm>], which would impose a carbon tax while

twentieth century's most prominent and effective advocate for free market solutions, economist Milton Friedman, advocated taxing pollution.²⁷

If a carbon tax is imposed, oil from the tar sands will be uncompetitive, as associated CO₂ emissions are significantly higher from this source than from conventional oil, and cleaner alternatives will prevail. Conversely, if investments in tar sands equipment, pipelines, and refineries continue, these sunk costs will create additional impediments to the adoption of the climate policy of taxing carbon, the solution most economists favor and believe will work.

Tar sands use prolongs oil addiction while preventing sustainable energy solutions.

Approximately 72 percent of the oil consumed in the United States is used for transportation.²⁸ In his State of the Union Address in 2006, President George W. Bush said, "America is addicted to oil." What Americans really need is not tar sands oil but efficient and affordable carbon-free transportation services. Tar sands offer us only the ability to prolong our oil addiction, while forestalling the policies that would enable long-term, sustainable solutions.

Those who see tar sands development as a path to lower prices at the gas pump will be seriously disappointed. Gas prices are driven primarily by world oil markets, and future oil production will increasingly come from lower quality resources extracted from increasingly inaccessible places at ever higher environmental costs. Aside from brief periods of slack demand, oil in the future will not be cheap.

Saudi oil officials have for decades made no secret of their plan to manage oil production to prevent prices high enough to cause oil consumers to switch to alternatives.²⁹ The low-carbon transportation alternatives that oil industry interests would like to forestall include electrification of our transportation system, high-speed rail, public trams, buses, and trolleys, hybrid vehicles, battery electric vehicles, rebuilding of the nation's freight rail system, bike lanes and trails, walkable communities, revitalized urban cores, and buy-local movements.

These strategies and technologies are all available today. Their potential remains largely untapped because they compete against fossil fuels, whose price reflects only a fraction of their true cost. In a nation that put a price on climate destroying carbon emissions, these would be the low-cost alternatives that could flourish. Further technical innovation in these and other low-

refunding most of the tax revenues to taxpayers. Many taxpayers would see their taxes reduced if the bill is passed. The 'no new taxes/anti-regulation' mantra of Congressional Republicans makes near-term enactment unlikely.

²⁷ Milton Friedman, *Population and Ecology*, 1977 [http://www.youtube.com/watch?v=KH0O_JjH06k: 3:15 – 3:40] and Milton Friedman on The Donahue Show, January 5, 1979 [<http://www.youtube.com/watch?v=E1IWk4TCe4U&feature=related>: 3:29 - 4:45].

²⁸ U.S. Energy Information Agency, U.S. Primary Energy Flow by Source and Sector, 2009 [http://www.eia.gov/emeu/aer/pecss_diagram.html].

²⁹ In a recent, surprisingly candid statement, Saudi Prince Alwaleed bin Talal said, "We don't want the West to go and find alternatives, because clearly, the higher the price of oil goes, the more you have incentive to go and find alternatives." [<http://thinkprogress.org/security/2011/05/31/231253/saudi-prince-alternatives-oil/>].

carbon technologies is coming, but most of that innovation is likely to take place in other countries, where there are greater incentives for climate-friendly solutions.³⁰

State and local governments are now the important agents of change.

The Montreal Protocol, which phased out the use of chlorofluorocarbons, took effect on January 1, 1989.³¹ It was ratified by all members of the United Nations, the Cook Islands, and the Holy See. It stands as a success story and clear evidence that international cooperation can work in solving global environmental problems.

In 1992, the United State Senate ratified the *Framework Convention on Climate Change* with a two-thirds majority and bi-partisan support. By April 2010, the Kyoto Protocol had been ratified by 191 nations, including all industrialized nations except the United States. In spite of this auspicious beginning, international cooperation to combat climate change is now in grave jeopardy. Figure 3, an image captured from a recent online publication, goes a long way toward providing explanation of the reasons behind this setback.

Rather than shifting their business focus to supplying low-carbon and carbon-free energy products, the fossil fuel industry has invested heavily in donations to politicians and phony science designed to confuse the public about climate change and forestall action to control carbon emissions.³² Although oil companies are not required to publicly disclose their investments in these activities, evidence of such connections has been well documented.³³ These efforts have used many of the same tactics that tobacco companies used to deny tobacco related health effects and have employed some of the same individuals and public relations firms.

The United States federal government has become completely ineffective in implementing sound public policy on climate change. The prospects for near-term improvement are not good, given the inordinate political influence of fossil fuel interests that favor inaction. However, positive steps in combating climate change are being made by state and local governments and by governments at all levels around the world. For example, California's Assembly Bill 32 will

³⁰ Kate Gordon, *Out of the Running? How Germany, Spain, and China Are Seizing the Energy Opportunity and Why the United States Risks Getting Left Behind*, March 4, 2010 [http://www.americanprogress.org/issues/2010/03/out_of_running.html]. Another example of the United States' loss of leadership in low-emission industries is solar energy equipment. In 1997, the US produced 40 percent of the world's solar energy equipment. Ten years later, that amount was 8 percent [<http://solarpowerrocks.com/solar-legislation/turning-back-the-clock-on-energy-policy-remember-jimmy-carter/>].

³¹ In 1973, chemists Frank Rowland and Mario Molina discovered that chemical compounds used as propellants and refrigerants were very effective catalysts in breaking down the Earth's ozone layer that protects the Earth from the sun's ultraviolet radiation. Industry vigorously opposed regulation of these chemicals but ultimately relented after a hole in the layer was discovered over the South Pole in 1985. The ozone layer is slowly repairing itself, and full recovery is expected by 2050 [http://en.wikipedia.org/wiki/Montreal_Protocol].

³² ExxonMobil contributed thousands of dollars during the 2008 and 2010 election cycles to the campaigns of politicians in Idaho and Montana, including Mike Crapo, Jim Risch, Mike Simpson, Max Baucus, Denny Rehberg, and Bill Sali, according to Rick Bass and David James Duncan (*Heart of the Monster*, 2010, page 31) and based on data from OpenSecrets.org.

³³ For example, see Naomi Oreskes and Erik Conway, *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Smoking to Global Warming* [<http://www.merchantsofdoubt.org/>]. Also see Ross Gelbspan, *The Heat Is On: The Climate Crisis, The Cover-Up, The Prescription*, September 22, 1998.

require that California greenhouse gas levels be rolled back to 1990 levels by 2020. During its last legislative session, Washington State passed legislation that will close the state's last coal-fired power plant, TransAlta's Centralia power plant. A year ago, Bellingham's city council unanimously passed a resolution to eliminate tar sands oil from their vehicle fleet.³⁴

Nine Out of Ten Climate Denying Scientists Have Ties to Exxon Mobil Money

May 9, 2011 · 2:30 pm PDT 942 responses Recommend 28



If you spend any time at all browsing comments on articles about climate change (and bless you if you've managed to avoid it), you've likely read the same handful of long-debunked arguments against the reality of anthropogenic global warming (or 'man-made' global warming).

Figure 3 - This recent headline and graphic is an example of investigative work exposing the link between climate science denial and oil industry funding. “Global warming is a hoax” is the mantra of Senator James Inhofe (R-OK), who is a major recipient of oil industry campaign contributions. He is widely known as “the Senator from Exxon.”

It is now imperative that government entities at all levels use whatever levers they have to encourage rational public policy, if we are to mitigate the worst impacts of climate change. The air conditioning industry stalled responsible public policy on ozone depleting refrigerants long after their damaging effects were settled science. Shocking scientific findings on the ozone hole eventually caused them to relent. We must not allow fossil fuel industry intransigence and dysfunctionality at our federal government level to diminish our commitment to a sustainable environment and a decent life for our children and grandchildren. A tectonic shift in climate policy may be as close as the next election or the next extreme weather event. Local action can be a potent catalyst.

³⁴ Bellingham, Washington first municipality to shun tar sands oil [<http://castlegarsource.com/node/6004>].

The consequences of climate change for the City of Moscow (and the rest of the world) are ominous.

Let's first look at the impacts that climate change will be having on our local environment, including the forests and rivers that Moscow residents use for recreation. Climate models predict that in the future our area will be experiencing warmer winters with less snow but more precipitation overall. Summers will be hotter and more humid.³⁵ Reduced winter snow pack will have negative impacts on winter recreation, hydroelectric power generation, fisheries, and whitewater recreation.

Warm air holds more moisture than cool air. Global atmospheric warming is increasing the concentration of water vapor in the atmosphere, leading to the increased precipitation rates that have been recently experienced in many locations. Global atmospheric warming makes downpours more intense and also makes droughts more prolonged. Likely local consequences include increased erosion of steeply sloped Palouse soils and increased risks of flooding.

Decreasing snow packs and increasing summer temperatures will increase the incidence and severity of fire during fire season. The clear summer skies and crisp, clean air that we have enjoyed in the past will likely become increasingly rare. Haze and smoke will become the norm, arising from forest and range fires that will both become more common and more difficult to control.

Climatic instability poses numerous threats to the agricultural economy and economic base of Latah County. Agriculture on the Palouse is highly adapted to current climatic patterns, which provide reliable levels of soil moisture, suitable temperatures for grain production, and predictable schedules for planting and harvest.

Cold winter temperatures serve an important role in determining the ranges of plant and animal species and in controlling pest and disease vectors. The loss of cold winter temperatures will create new challenges for agriculture, forest communities, and human health. For example, a recent study from Oregon State University predicts that our predominant sub-alpine conifer, lodgepole pine, will be nearly extinct in Idaho by 2100. Pine bark beetle outbreaks are expected to become more common in Idaho forests, in response to predicted warming.³⁶ Dr. Tim Takaro of Simon Fraser University predicts that malaria, a mosquito-borne disease once limited to tropical climates, may make its appearance in British Columbia by 2025.³⁷

Climate models have consistently predicted that extreme weather events will increase as a result of global warming. Elevated levels of CO₂ capture more of the sun's energy, hence more energy is available to drive weather phenomena. Strong correlations have long been recognized between water temperatures and the intensity of storms, for example, stronger hurricanes

³⁵ U.S. Fish and Wildlife Service, *Climate Change in the Pacific Northwest*

[<http://www.fws.gov/pacific/climatechange/changepnw.html#TemperaturePrecipitation>].

³⁶ *Risk of beetle outbreaks rise, along with temperature, in the warming West*, Science News, September 8, 2010

[<http://esciencenews.com/articles/2010/09/08/risk.beetle.outbreaks.rise.along.with.temperature.warming.west>].

³⁷ Dr. Tim Takaro, Local and global challenges for public health: Water resources and disease in a world of shifting populations, March 2011. Link to lecture: [<http://www.sfu.ca/climatechange/Archived%20Lectures.html>].

crossing the Gulf of Mexico. Global warming is expected to create instabilities and disruptions to normal weather patterns resulting in unusual weather, such as heavy snowfall in locations that normally do not get snow.

The scale of the threat from extreme weather events can be seen in this small sample of weather headlines from 2009 and 2010.³⁸

- “Strongest storm ever recorded in the Midwest smashes all-time pressure records: ‘Weather bomb’ hits Midwest with power of major hurricane” - October 26, 2010
- “Preparing for Frankenstorms: The most powerful low pressure system in 140 years of record keeping slams the Southwest” - January 21, 2010
- “Rain like this happens once every 1,000 years... Britain sees record rain, ‘biblical’ flooding” - November 20, 2009
- “Coastal North Carolina’s suffered its second 500-year rainfall in 11 years” - September 30, 2010
- “Rainfall records weren’t just broken, they were obliterated” - December 21, 2010
- “One-fifth of Pakistan is under water” - August 13, 2010

Our region is not immune to severe weather events, and many recent damage producing storms around the world are unprecedented for affected locations. We live in what has historically been the most benign region of the country for rainfall intensity and design wind speeds.^{39,40} Ironically this may leave our buildings and infrastructure, designed to current codes, at greater risk should normal weather patterns become destabilized.

In the past, when meteorologists were asked about the connection between a particular storm and climate change, they would routinely say something like, “Well, you can’t attribute a single event to climate change.” According to Kevin Trenberth, head of the National Center for Atmospheric Research’s Climate Analysis Section, “It’s not the right question to ask if this storm or that storm is due to global warming, or is it natural variability. Nowadays, there’s always an element of both.”

A recent report by the Massachusetts Institute of Technology Joint Program on the Science and Policy of Climate Change doubled its 2095 projection for warming to 10°F and 866 ppm atmospheric CO₂.⁴¹ Severe weather events are likely to become much more common and dangerous in the future if such predictions based on high emissions paths come to pass. In the past, climate studies frequently used the year 2100 as the target year, making it easy for us all to dismiss the results as someone else’s problem. Today, we know these projections describe the likely future for the youngest members of our community. We don’t need to invoke the abstract

³⁸ Links to most of these news reports can be found here: [<http://thinkprogress.org/romm/2010/12/23/207216/the-year-of-living-dangerously-masters-weather-extremes-climate-change/>].

³⁹ *Architectural Graphic Standards*, Seventh Edition, page 370.

⁴⁰ Uniform Building Code, 1982 Edition, Section 23-4, Basic wind speed in miles per hour.

⁴¹ American Meteorological Society’s *Journal of Climate* [<http://journals.ametsoc.org/doi/abs/10.1175/2009JCLI2863.1?journalCode=clim>]. Also Reuters, Global warming’s effects this century could be twice as extreme as estimated just six years ago, scientists reported on Tuesday [<http://www.reuters.com/article/2009/05/19/us-climate-warming-idUSTRE54I6PF20090519?feedType=RSS&feedName=environmentNews>].

concept of sustainability to discern what is ethical conduct -- just look at the children and treat them as well as you would expect to be treated.

It appears that, at least in the early stages, Moscow may be less adversely affected by climate change than many other parts of the world. We submit that it would be profoundly unethical for the City of Moscow to support destructive tar sands development, knowing that climate damage costs are likely to be disproportionately borne by others.

One consequence of tar sands development certain to have no direct adverse impact on Moscow is sea level rise. At 2,579 feet above sea level, we're safe. The same cannot be said for the approximately 17 million residents of Bangladesh who live within 1.5 meters of sea level. Storm surges in the past have caused damages up to 100 kilometers (62 miles) inland.⁴² Sea level rise in combination with increasingly powerful storms are likely to be a lethal mix for many people and result in myriad environmental refugees. Surely, we must be willing to assist these refugees and/or relocate them to Moscow, if we knowingly choose to support an industry whose actions will deprive them of a place to live.

Estimates for sea level rise by 2100 now range up to 1.5 meters (5 feet). The initial sea level response to global warming is mostly due to the melting of glaciers. Warming and expansion of the oceans produces a much slower but much larger effect. Some of the world's largest and most culturally significant cities will be at risk from sea level rise in this century, among them London, New York, Los Angeles, New Orleans, Calcutta, Dhaka, and Venice. James Hansen worries that once sea level rise is in full swing, shore lines will no longer be stable but will be moving continuously inland. This dynamic will create costly challenges for port infrastructure and perhaps even threaten the viability of global trade.⁴³ While sea level rise will not directly impact Moscow, the cultural and economic losses that it will incur to the youngest members of our community, our nation, and our world are likely to be incalculable.

Perhaps the most alarming reports on the consequences of climate change pertain to potential impacts on food production. In 2010, Russia experienced its hottest summer on record and suffered from hundreds of wildfires that ravaged the countryside. July temperatures were 9°F above normal, and the crop damage caused Russia to cancel grain exports for a year. A study using an ensemble of climate models found that weather this hot will likely occur once every ten years by 2060 and once every five years by the end of the century. Had such extreme weather hit the U.S. Midwest, impacts on world food supplies and world hunger would have been much larger.

A study that appeared in the *Proceedings of the National Academy of Sciences* in 2009 found that production of three of this nation's most important crops -- soy beans, cotton, and corn -- is predicted to "fall off a cliff" if temperatures rise as predicted by climate models. Researchers at North Carolina State University and Columbia University predict yield decreases of 30 to 46 percent by the end of this century, under their slowest warming scenario, and between 63 and 82

⁴² [<http://maps.grida.no/go/graphic/potential-impact-of-sea-level-rise-on-bangladesh>].

⁴³ James Hansen, *Storms of My Grandchildren*, 2009.

percent under the most rapid warming scenario.⁴⁴ Recent reports indicate that we are currently at or above the trajectory for the most rapid warming scenario.

While it difficult to imagine a future in which Idahoans would be unable to feed themselves, these and other studies suggest that global warming poses a grave threat to our ability to feed the roughly nine million humans expected to inhabit the Earth by the end of this century. We find it profoundly immoral to pursue such a dubious enterprise as tar sands development when the enormity of the risks to human well-being has been so thoroughly documented.

In Conclusion

We ask the Sustainable Environment Commission to recognize the full magnitude of the threat posed by tar sands development and to take a principled stand against use of the city's streets as a tool in that exploitation. In an article published earlier this month, Dr. James Hansen put it this way:

An overwhelming objection is that exploitation of tar sands would make it implausible to stabilize climate and avoid disastrous global climate impacts...if the tar sands are thrown into the mix, it is essentially game over.”⁴⁵

The tar sands offer us only continued oil addiction, carbon emissions on steroids, and dirty energy at an unacceptably high ethical price. Future generations of Moscovites, whose interests are your mission to protect, will have their own needs that include a stable climate, a healthy environment, efficient carbon-free transportation, and a tradition of courageous and enlightened civic leadership. Please deliver them that tradition.

Thank you for giving our concerns your thoughtful consideration.

⁴⁴ *U.S. Crop Yields Could Wilt in Heat*, August 24, 2009 [<http://news.ncsu.edu/releases/crop-yields-could-wilt-heat/>].

⁴⁵ James Hansen, *Silence is deadly: I'm speaking out against the Canada-U.S. tar sands pipeline*, Energy Bulletin, June 4, 2011.