Climate Crisis: Energy Solutions for BC

The world's top climate scientists recently stated their heightened concern over the threats caused by global warming. Governments and industries have repeatedly promised solutions to the crisis, but consistently failed to deliver. This is unfortunate for two reasons. First, it means the climate problem is not being addressed. Secondly, it leaves BC without a clear energy plan.

This is at a time when growth and lifestyle patterns are impacting our quality of life, prices are rising and the natural environment is under increasing stress. The core of a sound climate policy is a wise energy policy – one that takes into account the full consequences of our addiction to fossil fuels and the automobile, and proposes a range of conservation and renewable energy options.

Consider BC's current situation: Increasing energy demand, fueled by population growth, lifestyle and commercial development patterns, is propelling us towards an energy crisis. From a policy perspective, rising prices for energy and the calls for new energy supply cannot be separated from the need to reduce air pollution and global warming. Addressing these issues in a meaningful way can only be achieved by changing BC's energy policies.

Fuel prices have increased dramatically and controversial energy projects, including power plants, pipelines and natural gas production and processing facilities, are being proposed and built. Rising energy costs for heating homes and running businesses are hurting individuals and the economy. The urban sprawl covering many parts of the province along with increases in heavy truck traffic for freight transport are increasing congestion on our highways and in our cities. As our communities continue to grow in this way, we can expect more air pollution, more impacts on fish and wildlife habitats, longer commutes to and from work and a dramatic growth in greenhouse gas emissions.

In British Columbia, the effects of climate change are already being felt.

British Columbians need to make choices. We can choose to continue along the well-worn path of ecological decline and its inevitable social consequences. Or we can choose to address our over-consumption of energy and environmental resources. By becoming more efficient in the way we live, move goods and design communities, we can protect the climate and create a healthier social environment for current and future generations. We can design complete, compact communities with more efficient housing, and cleaner, more efficient industries and transportation systems.

To make this a reality, action is required at the federal, provincial, municipal, corporate and individual levels. The David Suzuki Foundation commissioned expert studies on four key energy-consuming sectors of the BC economy: urban land use and transportation, commercial and industrial operations, oil and gas production, and freight transportation. By presenting the analysis of these fast-growing sectors we hope to contribute to the development of effective policies to address BC's share of the global warming problem, with a resulting drop in greenhouse gas emissions and air pollution.

The full report, *Climate Crisis: Energy Solutions for BC*, sets out exciting ideas and practical solutions to reduce energy consumption and help slow global warming. Through a combination of regulation, public investment, market mechanisms and cultural change these ideas can be realized and these solutions adopted.

BC's challenge

In British Columbia, the effects of climate change are already being felt. Coastal temperatures have increased by about 0.6 Celsius and the interior has warmed by more than 1 degree during the past century. In the short term, the Lower Fraser Valley may experience some of the largest climate change impacts in the province. Warmer, drier weather in the summer will produce hot, stagnant air leading to the formation of heavier smog. As well, extreme weather events such as floods, droughts and forest fires are expected to increase.

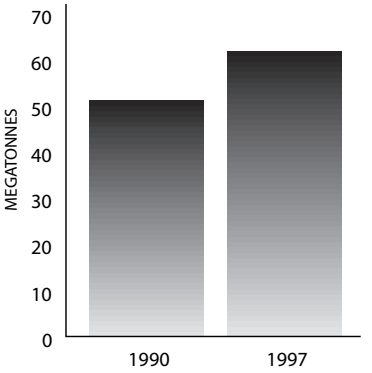
Scientific analysis in the context of the United Nations climate change treaty process demonstrates that Canada and other industrialized nations must reduce greenhouse gas emissions by 60 to 80 per cent to help stabilize the climate. The Kyoto Protocol, which calls for Canada to cut greenhouse gas emissions by six per cent from 1990 levels, is seen as the first step to long-term reductions.

BC emissions and trends

British Columbia is responsible for about nine per cent of Canada's total greenhouse gas emissions. In 1995, the province committed to stabilize its emissions

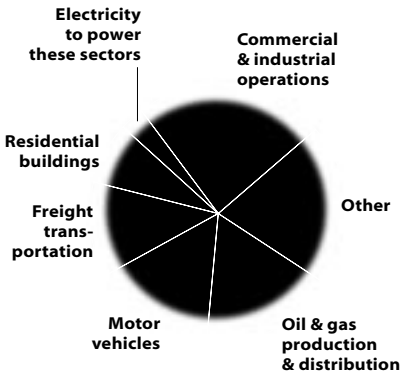
Climate change science and impacts

Global warming, caused by the increased concentration of greenhouse gases in the atmosphere, is changing the climate. Since the Industrial Revolution, atmospheric concentrations of carbon dioxide have mushroomed from 280 parts per million to 360 ppm – levels far higher than at any time during the last 450,000 years. The world's top climate scientists predict that annual global temperatures could rise an average of four degrees Celsius over the next 100 years.



BC EMISSIONS, 1990 AND 1997

SOURCE: Environment Canada



BC EMISSION SOURCES, 1997

SOURCE: Environment Canada

at 1990 levels by the year 2000. But with no firm strategy in place BC missed this target and emissions grew from 51.2 million tonnes in 1990 to 61.9 million tonnes by 1997.

The largest sources of energy emissions in British Columbia come from commercial and industrial operations (24 per cent), oil and gas production and distribution (17 per cent), motor vehicles (15.6 per cent), residential buildings (7.7 per cent), electricity to power these sectors (3 per cent) and freight transportation (12 per cent).

In October 2000, both BC's "Business Plan on Climate Change" and Ottawa's "Action Plan 2000" outlined several ways to reduce emissions, but more significant steps are needed to meet the Kyoto target and beyond.

Urban land use and transportation

Due to population pressures and lifestyle trends, we can expect to see more vehicles travelling greater distances, more land alienation and more air pollution.

In 1999, approximately four million people lived in BC. By 2015, our numbers are expected to grow to five million, resulting in 500,000 new homes and 800,000 new vehicles. Large population growth will put more pressure on transportation systems and energy consumption, worsening climate change and other environmental impacts associated with sprawling land use and car dependence.

Today, there are over one million vehicles registered in the Lower Mainland alone, making three million car trips a day, with two million of those single occupant vehicles. It is estimated that the vehicle fleet will double to two million by 2021. If current trends continue, much of the growth in personal vehicle sales will be for trucks, minivans and sport utility vehicles, which use more fuel and create more pollution.

Solutions

Improving automobile fuel efficiency, reducing transportation demand and designing transit and pedestrian-oriented communities will reduce air pollutants and urban sprawl and create positive health benefits.

To reduce the social, environmental and economic costs associated with urban sprawl, urban centres must integrate transportation and land use planning. For example, to support public transit and local commercial services, there needs to be a critical mass of people that live within a five to 10 minute walk of these services – unlike today's low density suburbs.

Municipalities can also establish urban growth boundaries and orient buildings to capture more passive solar energy.

Commercial and industrial operations

Commercial and industrial operations are a source of greenhouse gas emissions from energy consumption for specific processes directly on site, as well as indirectly from the sources of electricity used to power these operations. In BC, these operations consume 70 per cent of the province's electricity and produce about 24 per cent of our greenhouse gas emissions.

As a result of rising demand in these sectors and increased residential electricity consumption, BC Hydro is projecting that overall electricity use in BC will grow by 30 per cent between 1998 and 2015. Most of this new supply is expected to be generated by burning natural gas. As a result, natural gas use is expected to increase dramatically, driving the need for expanded natural gas production as well as new processing plants and distribution networks, leading to even greater emissions from production, processing and distribution.

Solutions

Lowering BC's greenhouse gas emissions in the commercial and industrial sectors will require more efficiency improvements, switching to lower carbon fuels and using renewable energy sources.

Most of the opportunities for energy efficiency and conservation in the commercial sector relate to building improvements. For example, installing high efficiency heating, lighting, air conditioning, better windows and roofs will help reduce greenhouse gas emissions.

In the industrial sector, measures include adopting high efficiency boilers, switching from coal or oil to natural gas and installing high efficiency motors, pumps, fans, compressors and conveyors. BC Hydro must promote energy efficiency and renewable sources for electricity rather than burning more natural gas.

The federal government can play a key role by improving regulated energy efficiency standards for industrial motors and equipment, and offering financial incentives for investments in energy efficiency improvements.

Upstream oil and gas

In addition to the greenhouse gas emissions released by their end use, oil and gas create pollution every step of the way from exploration to extraction, processing, delivery and consumption.

The "upstream" oil and gas sector is one of the fastest growing sources of emissions in British Columbia. Upstream oil and gas activities produced five million tonnes of greenhouse gases in 1990, growing to 7.8 million tonnes by 1997. Emissions are expected to continue to increase dramatically even without

taking into account the growth resulting from restructuring of provincial oil and gas royalties in 1998. As a condition of the BC government's commitment to lower royalties by 20 to 40 per cent, the oil and gas industry agreed to double oil and gas production capability by 2008.

Solutions

Greenhouse gas emissions can be reduced in the upstream oil and gas industry in various ways, from addressing combustion sources and equipment leaks to changing the way fossil fuel reservoirs are accessed from the surface. Reducing emissions from equipment leaks, for example, can be achieved in a variety of ways, including minimizing the number of potential leak points (install caps, plugs, blinds or a second valve on open-ended lines) and by performing more regular leak detection and repair activities.

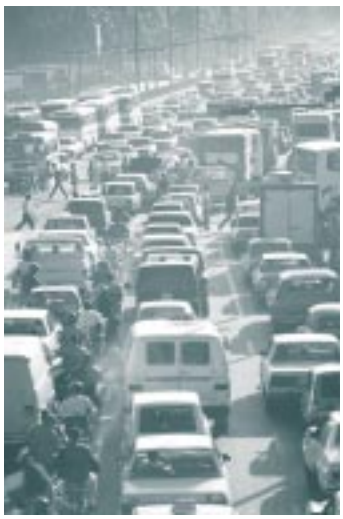
Instead of disposing of unwanted gas by venting or flaring, the industry could collect, process and sell the gas or conserve it to generate electricity. Technologies also exist to reduce or prevent emissions from tanks that occur when vapours in the tank are displaced by incoming or outgoing liquids, by evaporation, or due to rapid changes in pressure and temperature when liquids enter the tank.

There are competitive advantages in moving pro-actively on climate change – energy efficiency cuts costs.

Freight transportation

In recent decades, freight movement has been substantially shifted from railways and onto heavy diesel trucks. This has led to more highway congestion and a dramatic increase in air pollution and greenhouse gas emissions.

Greenhouse gas emissions in the freight transportation sector in BC are predicted to grow from 4.6 million tonnes in 1990 to 7.3 million tonnes in 2015 – a 56 per cent increase. Almost all of this growth in emissions is due to increased trucking activity.



Solutions

Reducing the road transportation of freight will reduce road expansion costs, road damage, traffic collisions, congestion and local pollution and will therefore improve public health. A 20 per cent shift of BC inter-city freight to rail by 2015 would reduce direct annual public costs by about $63 million (road costs $14 million, collision death and injury costs $17 million and congestion costs $32 million).

Pooling urban delivery systems will also reduce greenhouse gas emissions. Several firms could combine their pick-up and distribution, based out of an intermodal freight terminal and distribution centre. New short-line railways

would also help take truck traffic off the highways in key regions. Road pricing based on truck weight and distance travelled would help provide a level playing field with rail and more fully recover road damage costs not covered by truckers' fuel taxes.

Conclusion

There are significant employment benefits arising out of greenhouse gas reduction strategies and programs that promote the efficient use of energy and resources.

Working to reduce greenhouse gas emissions in British Columbia will not only help prevent climate change but will also provide environmental, social and economic benefits. Applying the practices and technologies described in *Climate Crisis: Energy Solutions for BC* will allow us to change how we use energy and put us on the path to increased sustainability.

Governments can further enhance environmental, economic and employment benefits by developing greenhouse gas reduction policies which:

- Encourage industries to proactively pursue their own research and development into equipment and process-related improvements,
- Support BC firms with the ability to pioneer new technologies,
- Keep research and development dollars in BC and help to preserve and develop high technology jobs,
- Support energy efficiency in homes and businesses.

Energy waste and inefficiency drives up energy costs as well as pollution. In contrast, climate solutions save money. For example, the U.S. Department of Energy estimates that country is now saving $150-200 billion annually as a result of energy efficiency measures taken during the 1970s oil embargo.

The opportunity to pro-actively address global warming and climate change while enhancing our economy is here today. British Columbians can use these solutions as a foundation on which to create a more sustainable society and strengthen the economy while significantly addressing climate change and reducing environmental impacts. We look forward to seeing these economic and environmental solutions implemented.

The full report – *Climate Crisis: Energy Solutions for BC* – presents solutions to reduce energy consumption and help slow global warming.

The full report and technical appendices, can be found at
www.davidsuzuki.org/publications/climate_change_report

Or call 1-800-453-1533 to order a copy of the report at a cost of $10.

David Suzuki Foundation

Finding solutions

2211 West 4th Ave., Suite 219
Vancouver, B.C., Canada V6K 4S2
Tel: (604) 732-4228
Fax: (604) 732-0752
email: solutions@davidsuzuki.org
www.davidsuzuki.org