Ministry of Environment

Transition Binder
June 2013

BRITISH COLUMBIA

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BRITISH COLUMBIA

April 2013

JAMES MACK

HEAD, CLIMATE ACTION SECRETARIAT

James Mack is the Head of the Climate Action Secretariat in the Ministry of Environment. The Secretariat provides a whole of government approach to BC's Climate Action Plan and legislated greenhouse gas emission reduction targets. It comprises a strong, committed and knowledgeable team with expertise in key areas of climate action including: carbon neutral operations, transportation, energy policy, research and strategic partnerships.

Prior to joining the Secretariat, James worked in Ottawa for the Government of Canada on a variety of environmental, social and economic development issues. This included work at the Canadian Environmental Assessment Agency, the Privy Council Office and Indian & Northern Affairs Canada. James is a graduate of the University of British Columbia and has a Masters Degree from Queen's University.

BRITISH COLUMBIA

April 2013

MINISTRY OF ENVIRONMENT

CLIMATE ACTION SECRETARIAT

James Mack, Head

The Climate Action Secretariat (CAS) was created in 2007 to foster an innovative, coordinated and effective cross- government approach to climate action in British Columbia. The Secretariat leads development of climate action initiatives in collaboration with ministries, government agencies, B.C. stakeholders, and other governments. In addition, the Climate Action Secretariat also adds core-capacity to the Ministry of Environment for the development and implementation of climate-related legislation and regulations; implementing a cross-government adaptation strategy; and meeting legal requirements for reporting on BC's greenhouse gas emissions.

To deliver on these responsibilities, the Climate Action Secretariat:

- provides a whole of government approach to climate action in British Columbia, including reducing greenhouse gas emissions, adapting to the impacts of climate change, and developing a low carbon economy;
- Provides executive leadership and strategic advice on the development and implementation of BC's Climate Action Plan;
- co-ordinates and facilitates best practices research and policy on climate action across government ministries;
- leads and supports the development of all required climate action related legislation and regulations;
- assesses incentives and other fiscal and financial mechanisms to lead and drive the change envisioned;
- negotiates, develops and implements a regional cap and trade system and standardized offsets program;
- works with international, national, and regional partners to forward climate action goals and represents BC in key international leadership roles such as Chair of the International Carbon Action Partnership, Executive of The Climate Registry, Board of Directors for the Climate Action Reserve and Canadian Liaison for the Western Climate Initiative;
- leads and co-ordinates BC's Carbon Neutral Government initiative;
- coordinates development and implementation of BC's Adaptation Strategy, including initiatives to enhance knowledge and tools, mainstream adaptation into government business and address adaptation in key sectors;

- establishes engagement processes with First Nations, municipalities, other governments, industries, environmental organizations, and the scientific community;
- co-ordinates the development of a public outreach and strategic engagement program to mobilize citizens and partners.

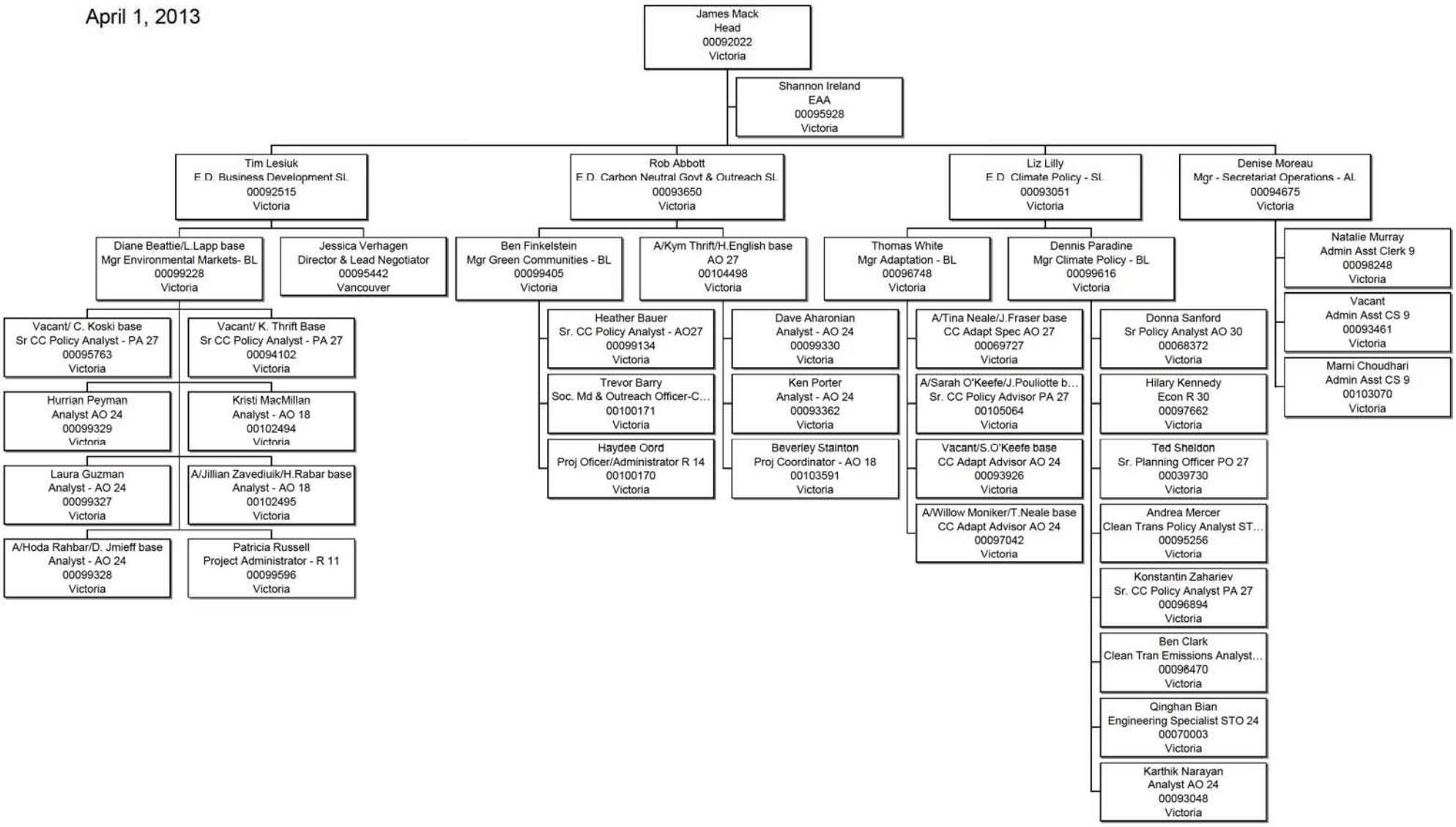
Budget: $3.271M

Related Legislation:

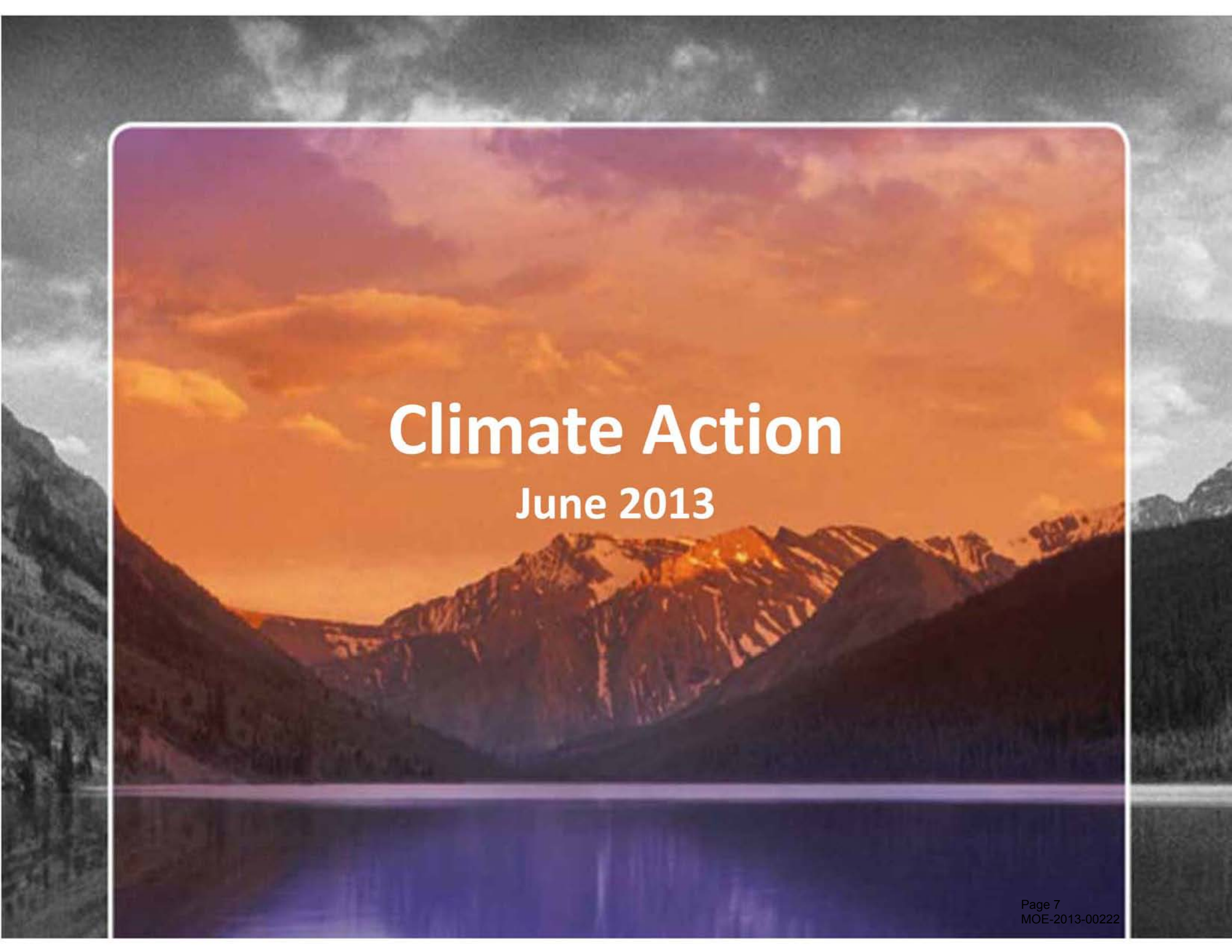
Greenhouse Gas Reduction Targets Act
Greenhouse Gas Reduction (Cap and Trade) Act
Greenhouse Gas Reduction (Vehicle Emissions Standards) Act

Organizational Chart: See attached

April 1, 2013



Climate Action Secretariat

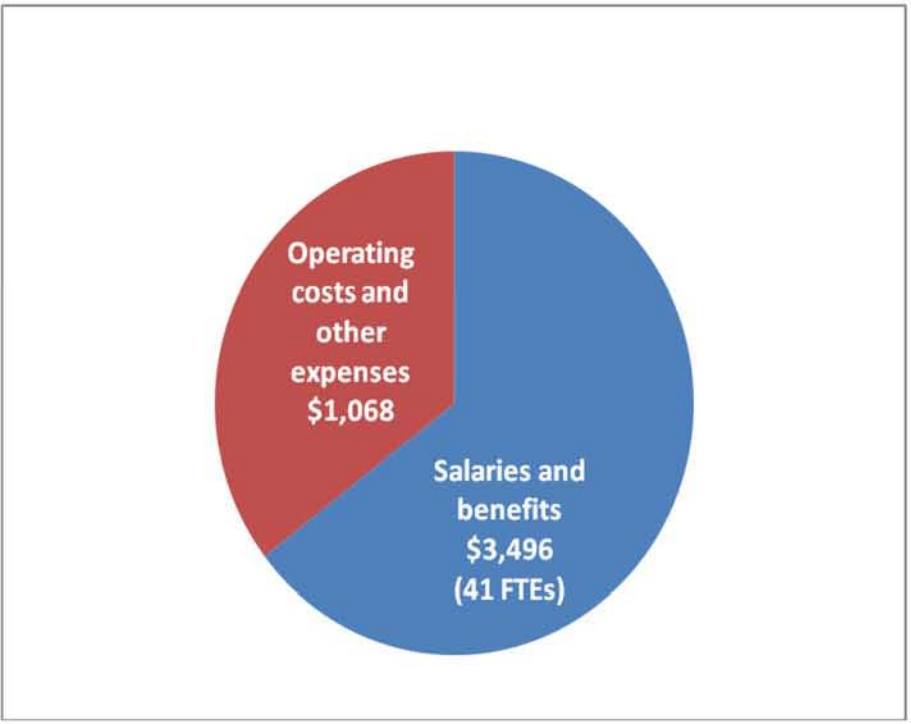

Climate Action
June 2013

Role of Minister on Climate Action

- Cross-government strategic leadership
  - Liquefied natural gas, transportation, clean energy
- Support partners taking action
  - Climate Action Charter, Green Economy, Pacific Institute for Climate Solutions
- Legal responsibility for:
  - GHG Reduction Targets Act (GGRTA)
    - Reports on progress to targets, provincial inventory and carbon neutral government
  - GHG Reduction (Emissions Standards) Statutes Amendment Act
    - Landfill Gas Management Regulation
  - GHG Reduction (Cap and Trade) Act
    - Large Facilities Emissions Reporting Regulation
  - Environmental Management Act
    - Zero-net emission electricity

Climate Action Secretariat

Provides a whole-of-government approach to achieving BC's emission reduction targets, adapting to the impacts of climate change and driving the low carbon economy.



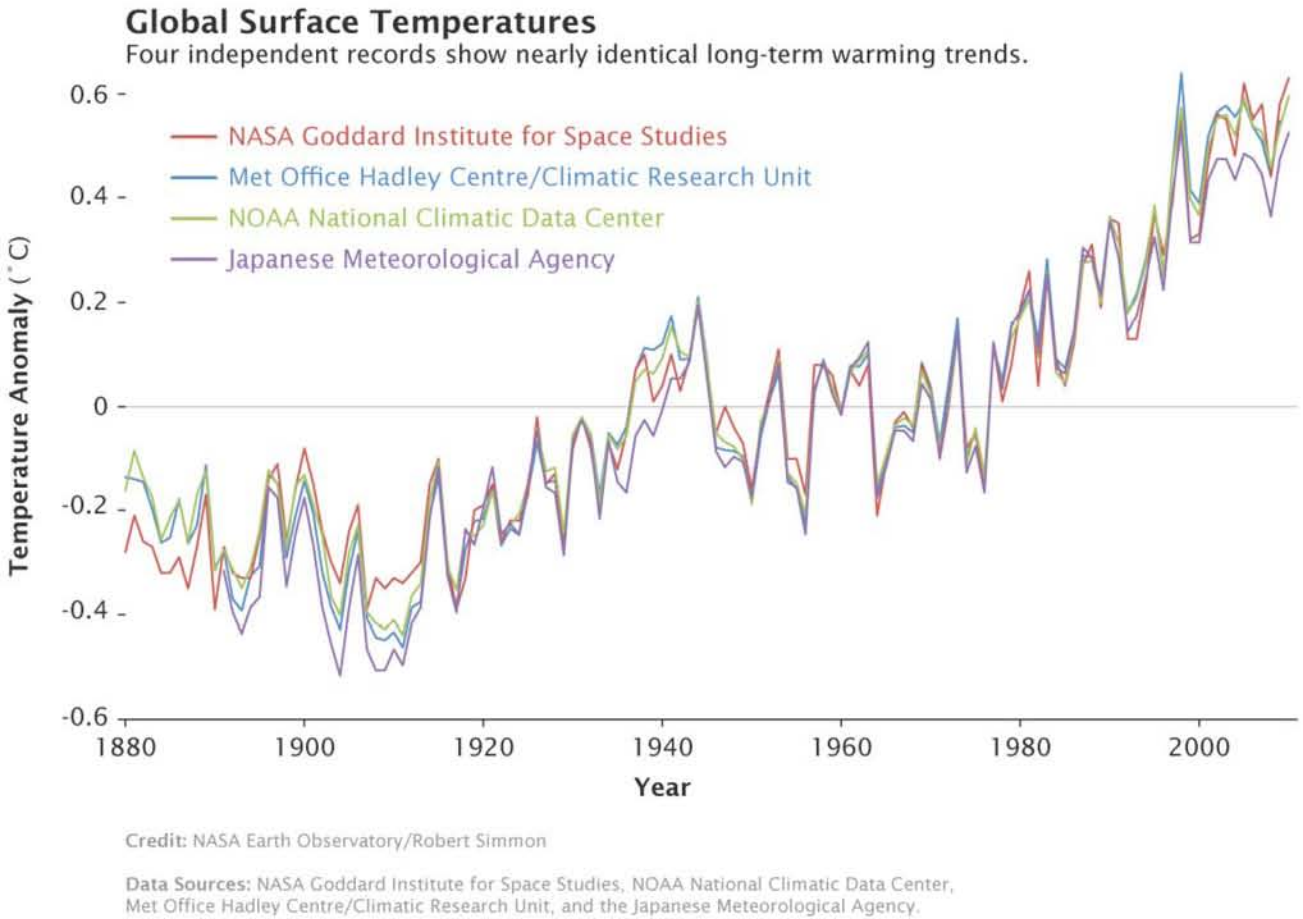
Three Business Lines:

Climate Policy: cross government work on adaptation and mitigation

Business Development: BC Jobs Plan/ Green Economy; large industry strategies; clean tech opportunities

Carbon Neutral Governments and Outreach: government adoption of clean energy and technology; promoting community and public action

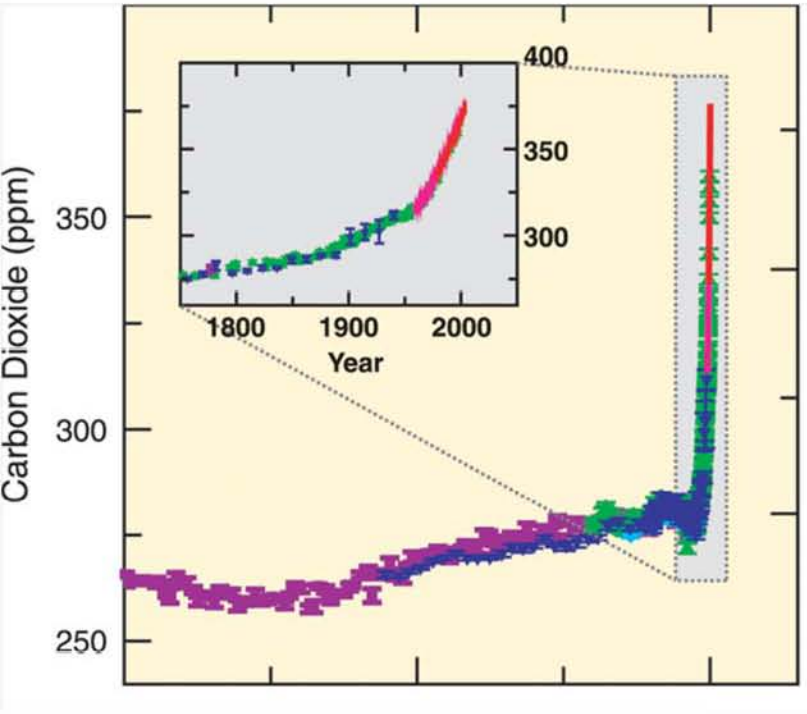
Background – global climate is warming



- Measurements confirm trend
- Globally, large majority of warmest years occurred since 1997

Background—Greenhouse Gases increasing

Changes in GHGs over time



Atmospheric CO_2 concentration 400 ppm -- highest in 800,000 years

- GHGs trap heat in atmosphere
- Atmospheric concentrations of CO_2 increasing rapidly
- Fossil fuel combustion, industrial processes and land use changes emit GHGs
- International Panel on Climate Change releases update Sept/13

Background—there are implications for BC

- Extreme weather events more costly and frequent
- Long term changes jeopardize natural resources and communities
- BC a centre of climate science and solutions

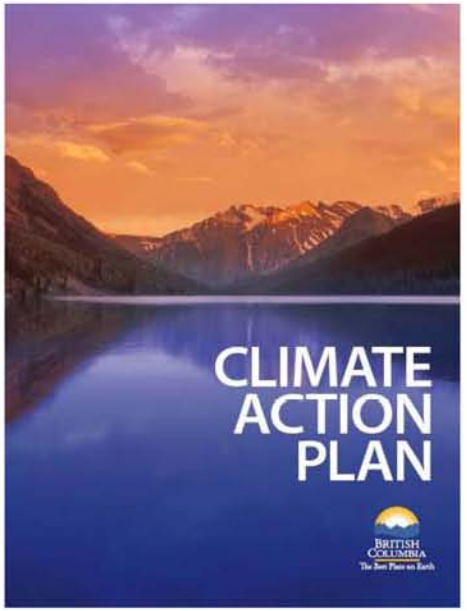
PACIFIC CLIMATE IMPACTS CONSORTIUM

Pacific Institute for Climate Solutions
Knowledge. Insight. Action.

BC's leadership on climate action

Legislated GHG targets

- 6% by 2012
- 18% by 2016
- 33% by 2020
- 80% by 2050



Climate Action Plan

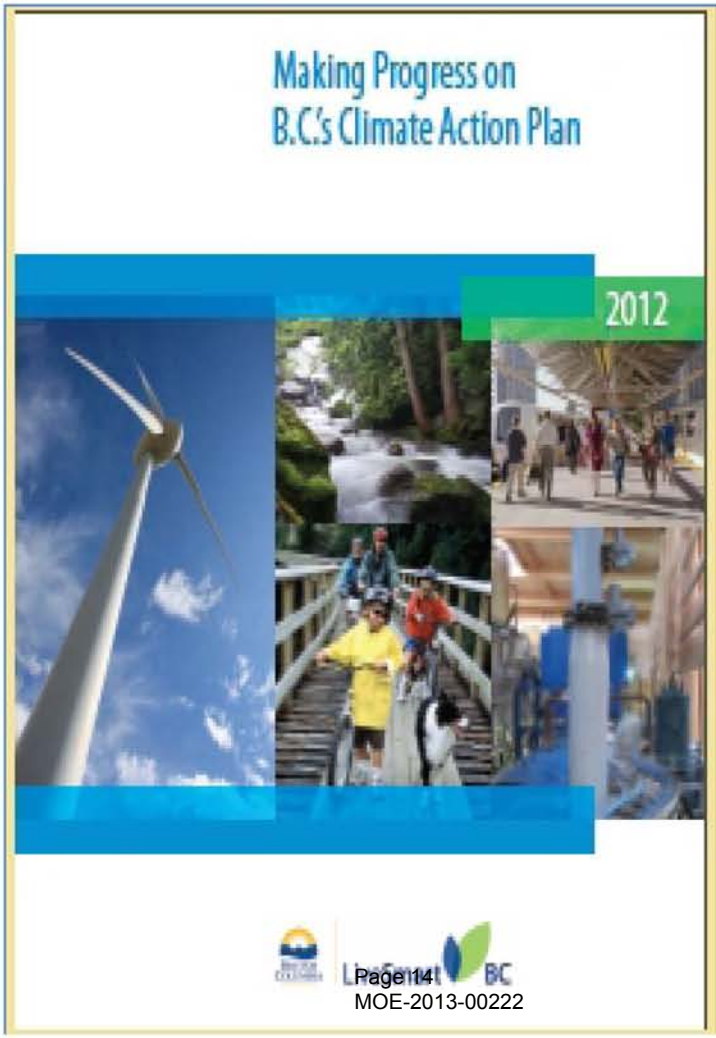
- Adaptation strategy
- Revenue neutral carbon tax
- Carbon neutral government
- Community Climate Action Charter
- LiveSmart BC
- Forest carbon
- Actions in every sector

BC Jobs Plan/Green Economy

- "BC is, and will remain, a climate change leader"

BC within reach of its 2012 target…

- Between 2007-2011 emissions dropped 5.8% …while population and GDP grew
- BC fossil fuel use decreased, and by more than Canada's, for main fuel types
- Signs of growing green economy:
  - 20% of Canadian LEED gold buildings registered in BC since 2007
  - Over twice the Canadian rate of hybrid vehicle adoption
  - 48% growth in clean tech sectors sales



But challenges facing future targets

- New policies and programs needed to reach targets
- Emissions growth in natural gas sector, industrial projects, off-road diesel, and forest degradation
- However, international accounting changes for "land-use" could benefit BC's position
- Regular reports on progress:
  - National Inventory Report - April 2014
  - BC Progress to Targets and GHG Inventory June 2014

Taking action poses its own challenges

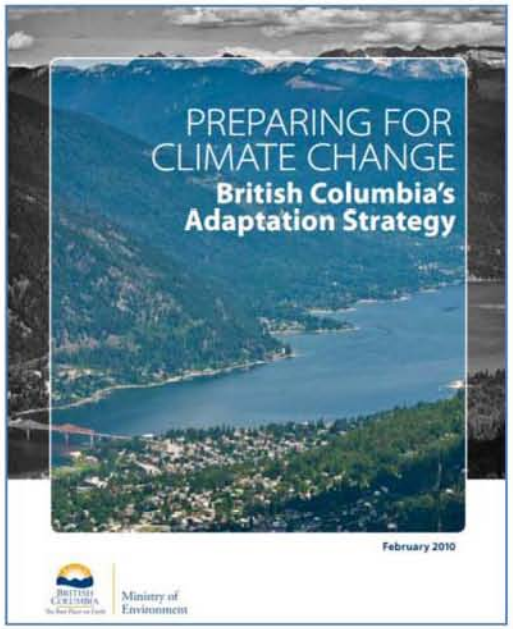
- BC can have best policies but not reach targets if individuals, businesses, and communities don't act
- Most popular policies are generally least effective and vice versa
- Public cares about environmental problem, but more inspired by positive vision for communities/ economy
- Even if we reduce our emissions, we will still face impacts from climate change
- BC can reach targets, but not solve global warming unless other jurisdictions also take action

Need for a strategic approach

- Enable leadership by families, businesses and local governments
- Deliver comprehensive plan that builds public support while taking tough, concrete actions
- Commit to reduce emissions, but focus on positive solutions for communities/ economy
- Adaptation is core element of climate action plan
- Promote BC's actions as a model for adoption internationally

1) BC's adaptation strategy

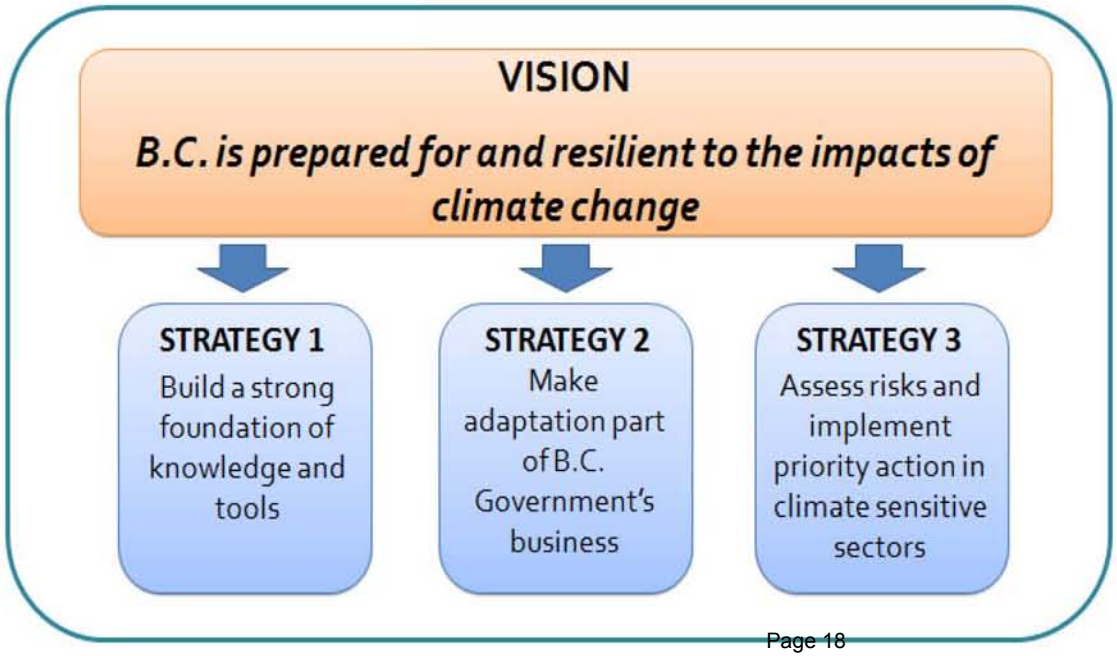
- Preparing ahead yields benefits today and avoids costly fixes later



Key files:

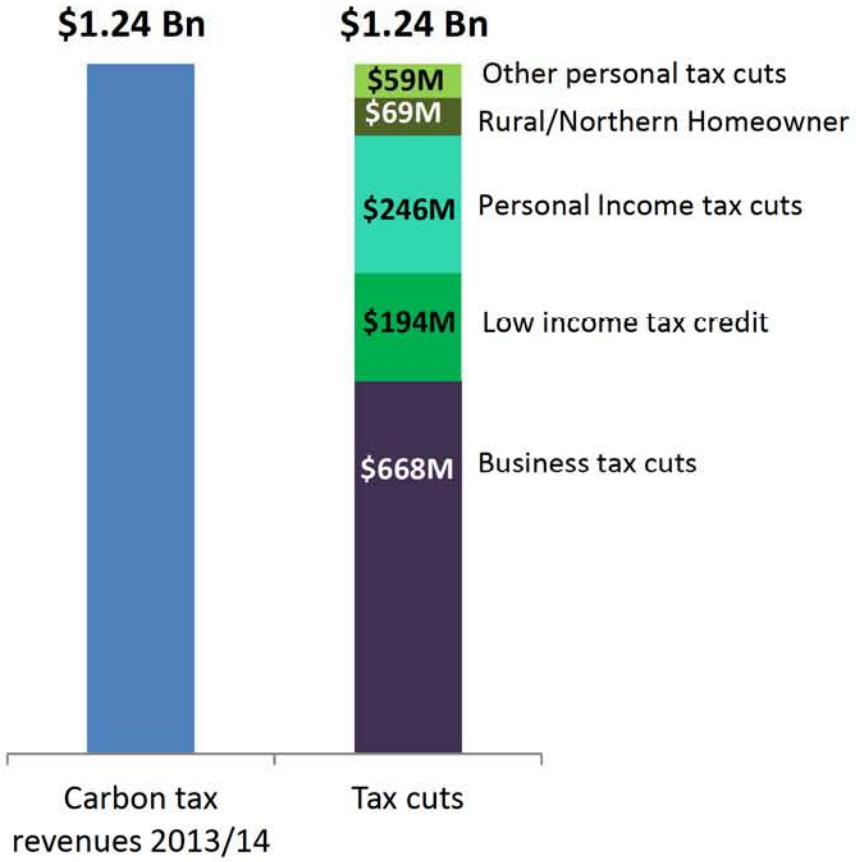
- Sea level rise and coastal infrastructure
- Federal adaptation funding
- Agriculture and mining assessments
- Insurance industry
- Pacific Climate Impacts Consortium

➢IPCC report in Sept will raise profile of climate impacts

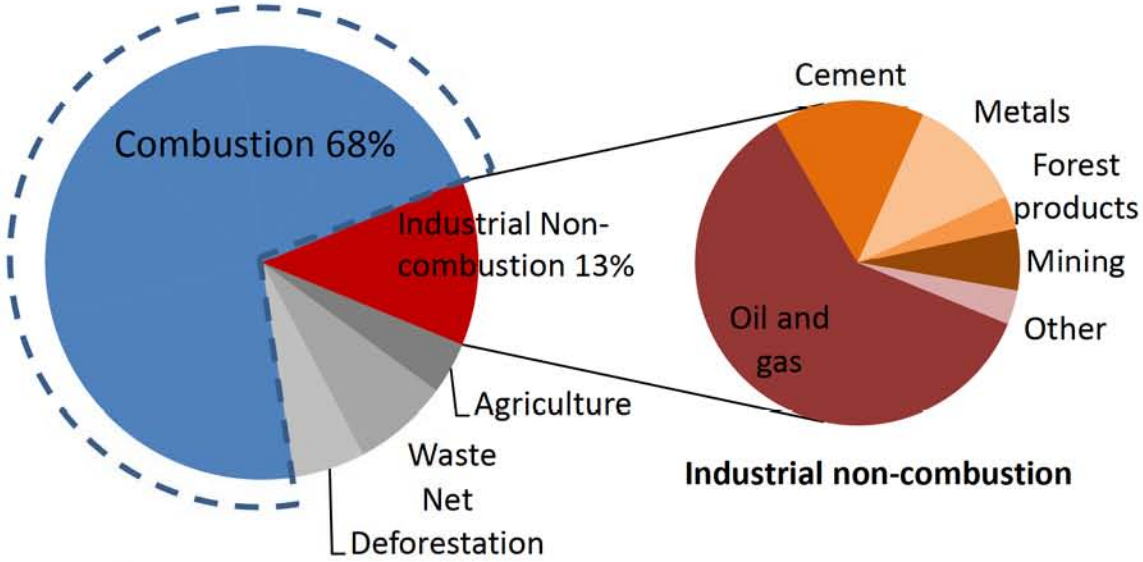


2) Revenue neutral carbon tax

Carbon Tax Revenues and Tax Cuts



Carbon tax covers fossil fuel combustion—68% of total provincial emissions



BC Emissions 2011 total: 62Mt

- **BC to freeze carbon tax at $30/tonne for five years**

3) Carbon Neutral Government

First in North America

- Measured footprint, reduced emissions, and invested in BC-based offsets

Auditor General 2012 report

- concluded BC did not meet 2010 carbon neutral goal
- BC rejected conclusion but accepted recommendations
- Continued controversy surrounding Pacific Carbon Trust and offsets

Continued improvements

- Updating offset oversight procedures
- Prioritizing emission reductions in public sector

➢ Next CNG Report June 2013

4) Community Climate Action Charter

- 182 of 189 local governments signed Charter
  - Creating complete, compact and energy efficient communities
  - Becoming carbon neutral in corporate operations for 2012
  - Measuring community wide emissions using Community Energy and Emissions Inventory

- Receive carbon tax refund and report annually through Climate Action Revenue Incentive Program (CARIP)

➢**UBCM (Sept) key opportunity to profile leadership**

5) LiveSmart BC *"You Choose, You Save"*

- Cross-government LiveSmartBC brand helps families and businesses make green choices that save money
- Key programs provide incentives for energy retrofits and clean energy vehicles
- Social media outreach encourages behaviour change in families, businesses and communities

➢ **Ongoing opportunities to profile Clean Energy Vehicles program**

6) Actions in every sector

Transportation

Buildings

Waste

Agriculture

Industry

Energy

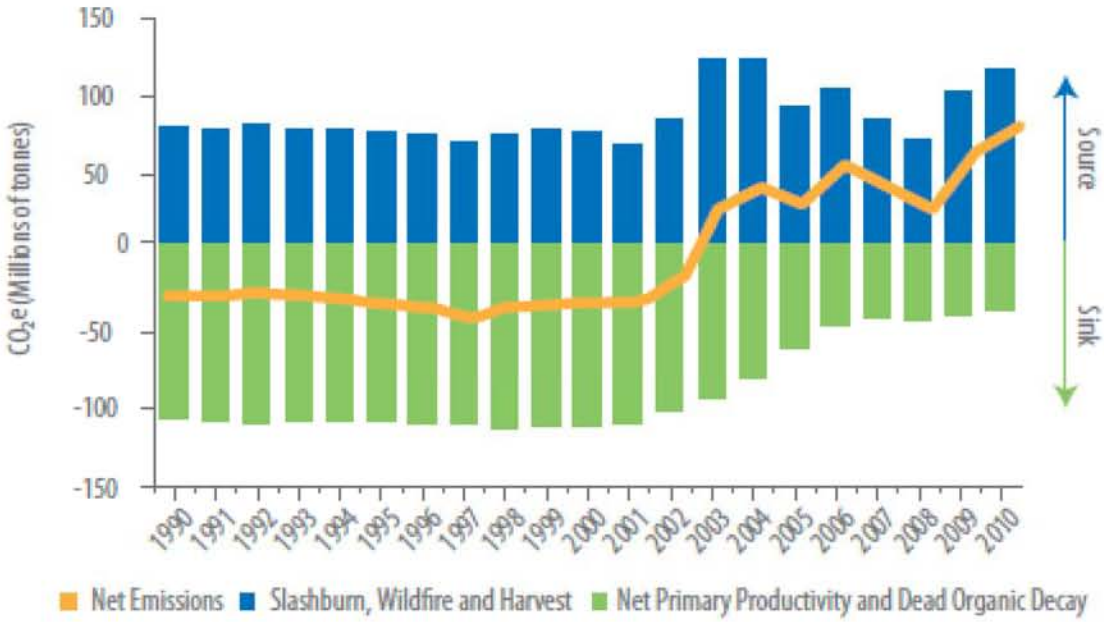
Forestry

7) Forests as sinks of carbon

- BC's forests can store and emit carbon
- International accounting changes could be a "benefit" to BC's target

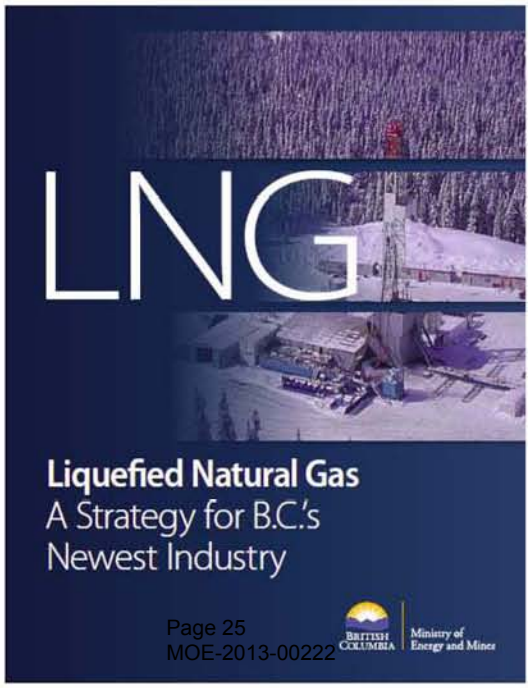
➢ **Forest Carbon Offset Protocol unlocks investment in BC forests**
  - Great Bear Rainforest
  - Pine beetle forest restoration offsets

Forest Land Use Sources and Sinks



8) Green Economy – BC Jobs Plan

- BC Jobs Plan: *BC is, and will remain a climate change leader*
- Green Economy Plan
  - highlights green leadership across BC Jobs Plan
  - Sets out role of technology and innovation in developing green economy
- LNG Strategy lays out path to cleanest LNG plants in the world.



➢**GLOBE conference (May 2014) opportunity to showcase results**

Upcoming Issues

- Carbon Neutral Government report (June 2013)
- GHG requirements for LNG (Summer 2013)
- Local Governments' Climate Action Charter profiled at UBCM (Sept 2013)
- International profile on assessment of climate science(Sept) and international negotiations (Nov 2013)
- Green Economy update to GLOBE Conference (March 2014)
- Report on BC's progress to targets required (Summer 2014)
- Potential carbon tax ballot initiatives in Oregon and Washington expected (2015)
- Federal GHG regulations (2014/15)

BRITISH COLUMBIA

April 2013

MINISTRY OF ENVIRONMENT

ENVIRONMENTAL PROTECTION DIVISION

Jim Standen, Assistant Deputy Minister

The Environmental Protection Division works to ensure that British Columbians continue to enjoy the health, environmental, economic and social benefits of clean air, land and water. The purpose of the Division is to provide environmental leadership now and into the future.

Our main goals are to:

- Implement innovative strategies and world-leading standards for the prevention of pollution and management of wastes;
- Promote the application of Integrated Pest Management principles to the use of pesticides;
- Prevent, prepare for and respond to high risk spills;
- Provide leadership and oversight to the remediation of degraded land, air and water;
- Track and report on the quality of BC's air, land and water using environmental monitoring data from government and partner/stakeholder networks;
- Develop strong, trust-based collaborative relationships with partners and stakeholders as a foundation for sharing environmental responsibility with others;
- Support balanced decision-making and influence thinking across government and society using knowledge of environmental trends, patterns and cumulative impacts; and
- Build understanding of the environmental impacts of our collective choices and appreciation for the link between our environment, economy and the well-being of BC citizens.

We achieve our goals through science-based policies, laws and environmental contracts/covenants. We carry out monitoring to ensure the standards and codes of practice we develop are met and share our monitoring results publicly. We issue authorizations for discharges to the environment, review major projects, check for compliance and monitor for regulatory effectiveness.

The Environmental Protection Division maintains strong linkages across ministry branches to ensure collaboration on cross ministry priorities.

The Division carries out its responsibilities through three branches: Environmental Management Branch; Environmental Standards Branch; and Regional Operations Branch.

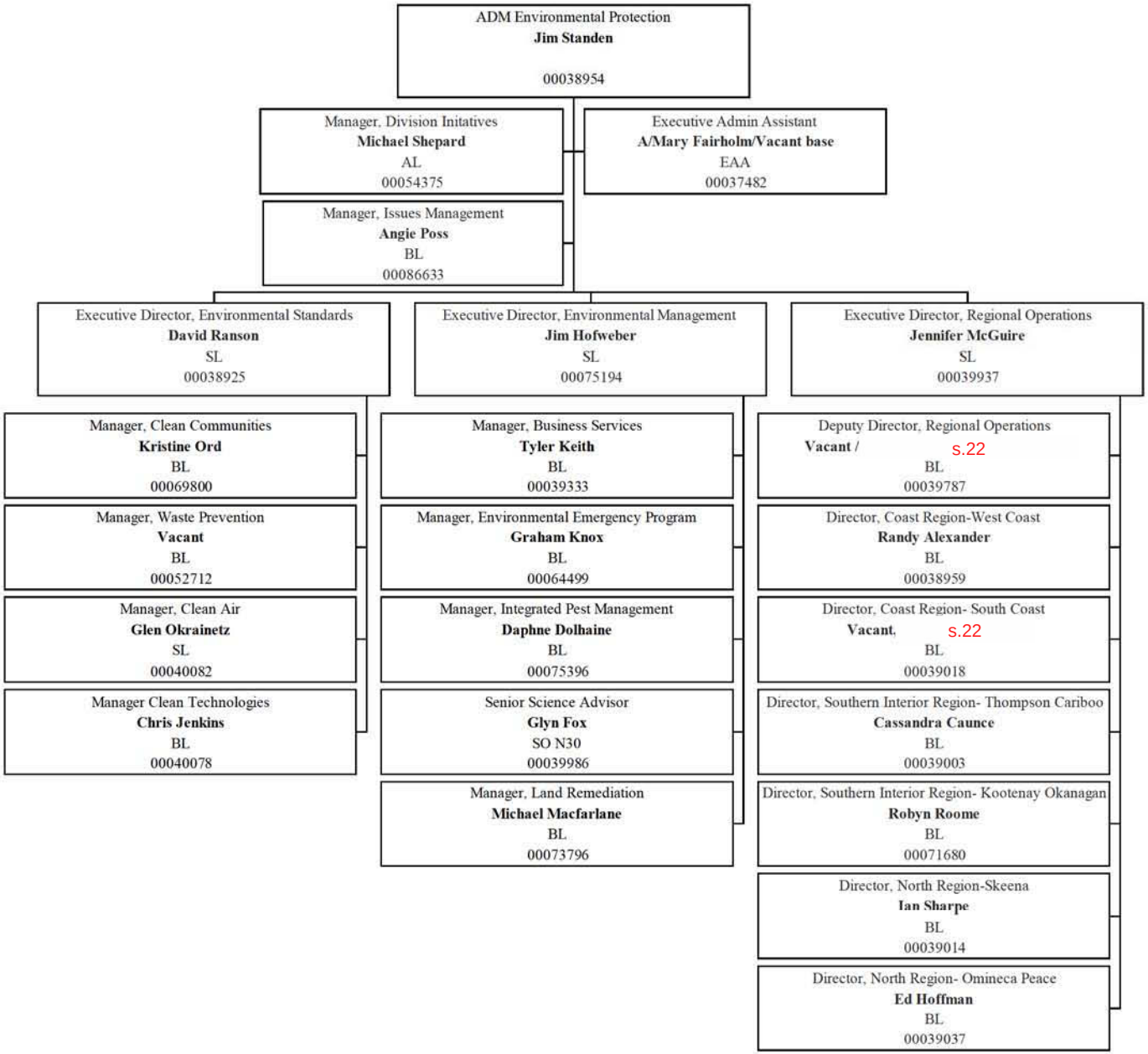
Budget: $25.443 ($17.630 from the Sustainable Environment Fund: a special B.C. Government financial account dedicated to supporting provincial environmental protection and renewal initiatives)

Related Legislation:
Environmental Management Act
Integrated Pest Management Act

Organizational Chart: See attached

Environmental Protection Division

October 2012




ENVIRONMENTAL PROTECTION DIVISION
BC Pollution Free
June 2013

Our Mission

The Environmental Protection Division (EPD) of the Ministry of Environment works to prevent pollution and promote and restore environmental quality.

We provide scientific expertise and leadership to protect human and environmental health while supporting positive economic outcomes.

Our Drivers

- Population growth
- Increasing urbanization
- Increasing industrial/resource activity
- Resource constraints
- Changing demographics
- Growing public expectations
- Growing economic value of waste

Our Focus

The EPD regulates the management of waste and chemicals introduced into the environment by industry and residents.

With the incredible (and growing) number of waste producing activities, government must rely on results based and non-regulatory approaches, with a focus on high risk discharges.

Our Approach

Sustainability & Risk Management

- Tailor our approach to the level of environmental risk
- Support green economy
- Regulation as driver of innovation
- Clear standards and process create certainty and strong investment climate
- Environmental protection = improved public health outcomes

Our Approach

Partnership & Transparency

- Share responsibility for environmental protection
- Partnerships with local governments and other agencies
- Engage communities in shared stewardship
- Public reporting

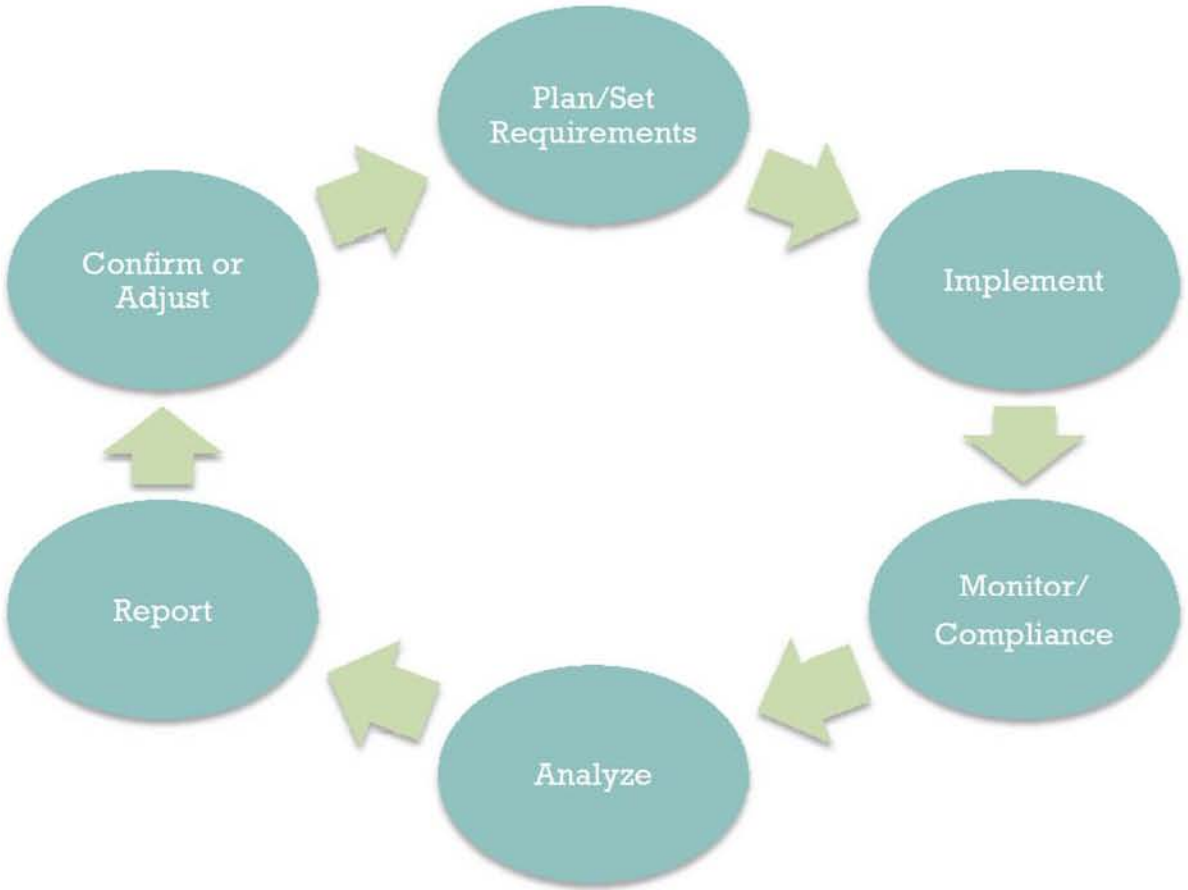
Our Divisions

Environmental Management Branch

Environmental Standards Branch

Regional Operations Branch

Our Business Model



Our Work

Environmental Assessment

- Set environmental information requirements for EA
- Provide expertise to review of project proposals
- Advise EAO on potential for significant adverse effects

Our Work

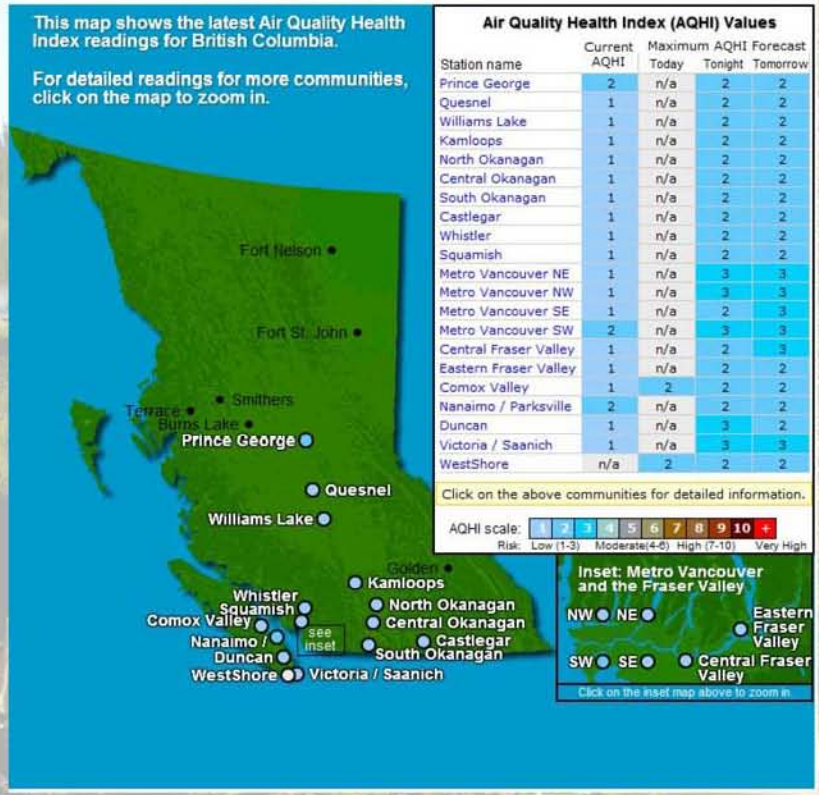
Discharge authorizations

- Issue authorizations for specified discharges to the environment – air, water, land
- Check for compliance and monitor regulatory effectiveness
- EPD's waste authorization role is a key component for sustainable resource extraction activities

Our Work

Air quality monitoring and planning

- Develop provincial air quality and airshed management policy
- Provide expertise to regional airshed planning
- Provide live air quality data online at www.bcairquality.ca



Our Work

Encourage industry-led product stewardship

- B.C. is a national leader in product stewardship
- Putting the responsibility on producers for end-of-life management
- Packaging
- Beverage container consultation

Our Work

Respond to spills

- Respond to 3,500+ spill reports each year
- Polluter pay principle
- Enbridge cross examination
- Enhanced response capability
- Only the Minister has the authority to declare environmental emergencies

Our Work

Integrated Pest Management

- Regulate pesticides and ensure an integrated pest management approach.
- Created legislation to enable a reduction in cosmetic use of pesticides
- Protect human health and the environment

Our Work

Lead the remediation of high-risk contaminated sites

- Legacy of industrial activity in B.C.
- Manage risk
- Create economic activity through brownfield redevelopment

Our 2013/14 Priorities

Support Delivery of the Natural Gas/LNG Strategy

- Clear roles and responsibilities
- Understand and manage impacts of wells and LNG compression (air)
- Waste disposal issues – waste water
- Toxics management

Our 2013/14 Priorities

Cumulative Effects

Regional cumulative effect issues:

- Kitimat (air and waste)
- Elk River (water)
- Northeast (air)
- Murray (water)

- Policy and legislative changes to support cumulative effects management

Our 2013/14 Priorities

Built Environment

- Increased collaboration among provincial agencies
- New relationship with local government
- New regulatory models and non-regulatory tools

Our 2013/14 Priorities

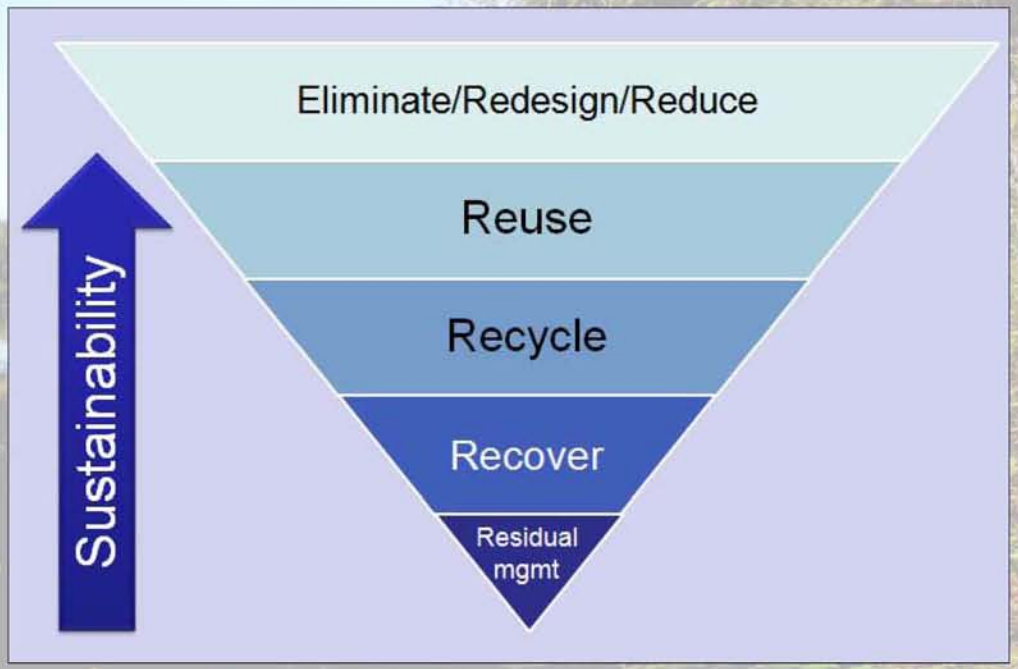
Integrated Decision Making

- Strong sector leadership – ensure commitment to balanced decisions
- Support legislation to create common NRS sector requirements for public notification, securities and appeals, other topics
- Contribute to successful integrated decision making

Our 2013/14 Priorities

Zero Waste Strategies

- Develop provincial Zero Waste
- Plan and goals for local governments
- Provincial organics management strategy
- Innovative regulatory and non-regulatory approaches to eliminating waste
- Public reporting of environmental performance data



Environmental Protection Division

June 2013

OFFSETS AND THE PACIFIC CARBON TRUST

Issue:

Offsets are a controversial climate policy tool that could play a significant role in meeting BC's climate action objectives. Offsets are currently facing public scrutiny following the Auditor General's critical assessment of their use as part of Carbon Neutral Government. BC is currently considering the use of offsets in potential regulations for Liquefied Natural Gas plants.

Background:

An offset represents a reduction in greenhouse gas (GHG) emissions that can be used to compensate for, or "offset", emissions from other sources. Offsets are generated through projects that reduce or remove GHG emissions.

Offsets can be purchased either voluntarily or because of regulatory requirements. Voluntary offsets are cost effective emission reductions for organizations that have few cost effective reductions of their own and have set their own emission targets. Regulatory compliance offsets are used in jurisdictions to reduce the cost of direct industrial reductions within their GHG programs. Offsets are a part of Alberta's regulations and are included in proposed federal GHG regulations.

The BC public sector purchases compliance offsets through the Pacific Carbon Trust (PCT) in order to meet its legal requirement to be a Carbon Neutral Government. Local governments have made their own commitments to become carbon neutral for their corporate emissions, but have flexibility in when to meet this commitment and whether to purchase offsets through the PCT. BC is currently considering whether offsets may play a role in potential regulatory requirements for Liquefied Natural Gas plants and this could create significant future demand for BC-based offsets.

There are several reasons a jurisdiction may choose to require offsets:

1. Offsets provide a carbon price to emitters with the flexibility to reduce their own emissions or to purchase offsets;
2. Offsets stimulate innovation and investment in sectors that are difficult to regulate such as forest management, shoreline restoration (blue carbon), trucking and greenhouse growers;
3. Offsets are relatively low cost. Each company will have an internal price where they will choose to buy offsets instead of spending money uneconomically on direct reductions; and
4. Offsets are real reductions and real investments that move a company economically towards its target while the investment benefits other parts of the economy.

Between 2008 and 2012, the PCT invested $30 million in offset projects that leveraged $317 million in private sector investment and generated incremental government revenues of $48.8 million.

Offsets remain controversial despite their benefits and widespread use. Two key concerns with offsets are:

1. Projects may have happened anyway - Offsets criteria, protocols and auditing requirements are designed to ensure projects are "additional". The BC Emission Offsets Regulation complies with international best practices and the International Organization for Standardization (ISO 14064). Offsets in BC are required to be independently audited to the same standard required for corporate financial audits.
2. Offset money could be used for other things - Offsets are an economically efficient way to achieve BC's targets and organizations have the flexibility to reduce their own emissions or purchase offsets at a lower price. However, in the case of Carbon Neutral Government, some have criticized the purchase of offsets when funds could have been use to enhance education and health services.

The BC Auditor General issued a report critical of two offsets projects purchased by the Pacific Carbon Trust in 2010. The Auditor General concluded that the projects were not "credible", but did not assess whether or not they met BC's regulatory requirements. The government rejected the Auditor General's conclusions but accepted the recommendations in the report. The Ministry has observed that the projects in question were each audited by two independent firms, and subsequent reviews conducted by subject matter experts confirmed those firms' assertions that the projects meet the requirements of the regulation.

Next Steps

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June 2013

LEADERSHIP THROUGH CARBON NEUTRAL GOVERNMENT

Issue:

- B.C. is the first public sector in North America to become carbon neutral. This accomplishment demonstrates concrete leadership on climate action, saves energy costs for the public sector, and stimulates investment across B.C. in clean technology and the emerging green economy.

- Carbon Neutral Government has been controversial. A report from the Auditor General in April 2013 was critical of the program and in particular the acquisition of carbon offsets by the Pacific Carbon Trust. As required by legislation, BC will report by the end of June on its achievement of carbon neutrality for the 2012 calendar year.

Background:

The 2008 B.C. Climate Action Plan set out a whole-of-government approach to reduce greenhouse gas (GHG) emissions, adapt to unavoidable climate impacts, and promote the green economy. A key component of the Plan is the legislated requirement for the provincial public sector to be carbon neutral. To achieve this, public sector organisations (PSOs) must measure their greenhouse gas emissions, take action to reduce those emissions, purchase offsets elsewhere in BC for emissions that cannot be cost-effectively reduced, and report publicly on progress each year.

PSOs include core government, schools, universities, Crown corporations and hospitals. By including the broader public sector, BC has engaged employees, students, users of public facilities and their families in a strategic conversation about climate change and the need for individual and collective action.

Why Government Leadership Matters

While the relative amount of emissions from the provincial public sector is small (less than 2.0% of provincial emissions), pro-active management by government of its GHG emissions is important because:

- Leadership provides government with legitimacy when enacting climate action requirements within the BC economy, as well as negotiating with other jurisdictions;
- Capital investments in energy efficiency can achieve long-term operating savings; and
- The demonstration of clean energy and other technologies in BC communities accelerates their transition to a clean and healthy future, and showcases these technologies for export markets.

A Four-Step Process to Achieve Carbon Neutrality

June 2013

Achieving carbon neutrality is a four-step process: measure emissions; reduce emissions as much as possible each year; purchase high-quality carbon offsets elsewhere in BC to ensure net emissions are zero, and report publicly on the results. The Climate Action Secretariat (CAS) works in partnership with Shared Services BC and the Pacific Carbon Trust (PCT) to ensure PSOs are prepared and have the necessary tools to meet the carbon neutral commitment.

Advancing Carbon Neutral Government

In view of experience to date and the results of the recent Auditor General report, there is an opportunity to provide renewed emphasis on the reduction of GHG emissions within the public sector (as opposed to a primary emphasis on the purchase of offsets). A good example of this is the Carbon Neutral Capital Program, administered by the Ministry of Education that provides $5 million in funding each year to school districts across the province to undertake energy efficiency upgrades. Equally, there is an opportunity for the province to provide strategic support to local governments that are showing leadership in the creation of clean and healthy communities.

Government rejected the conclusion of the Auditor General's Report that BC failed to achieve carbon neutrality in 2010 because every offset in the PCT portfolio had been twice audited by third-party experts, had passed those audits and fully met the requirements of BC's Emission Offset Regulation. Government did, however, accept the recommendations of the Auditor General's Report and committed to completing them prior to an anticipated follow-up audit in April 2014. Key actions required in this regard are:

- CAS will take greater efforts to promote GHG emission reductions across the public sector
- CAS will formalize the guidance and procedures governing the purchase of carbon offsets
- CAS will produce formal procedures on how the Director's oversight role will be delivered
- CAS will take further action to communicate the value of reducing public sector emissions as well as investing in emission reduction projects (offsets)

Separately, BC also committed to reviewing the price paid by public sector organizations for carbon offsets. An internal review will be provided to the Minister of Environment in June for discussion, including determination of whether engagement with public sector organizations and/or the public generally would be appropriate.

Next Steps:

- BC has a legal obligation to report on the achievement of carbon neutrality for the 2012 calendar year by the end of June 2013. The report is an opportunity to highlight program successes in 2012 and signal next steps following the Auditor General's Report.

June 2013

Tsunami Debris Response

Issue:

- Timely distribution of approximately $1 million from the Japanese government to aid with tsunami debris clean up.

Background:

- March 11, 2013 marked the second anniversary of the Great Eastern Japanese earthquake and tsunami. Tsunami debris has been arriving on B.C.'s coast for about a year now, most of it indistinguishable from marine debris that has been arriving for decades. A few larger items have been traced back to Japan, including: a number of small fishing vessels, a Harley Davison motorcycle and a tank that arrived in Haida Gwaii. Some small items have also been traceable such as a volleyball and an increase in polystyrene objects.
- So far this year, the volume of debris is lower than anticipated although it is difficult to quantify how much to expect or when it will arrive. Tsunami debris will continue to arrive for a number of years, with the volume diminishing over time.
- The most recent predictions by the Japanese government suggest materials that sit lower in the water, like lumber, will arrive through mid-2013. It is impossible to predict the volume or weight of tsunami debris that remains at sea and how much will find its way to B.C.
- Local governments and First Nations along the coast have been vocal in their concern that the debris will overwhelm their capacity for collection and landfilling or recycling. They have requested senior government funding for clean up.
- Senior government response to tsunami debris has been a collaborative effort between a number of federal and provincial agencies through the Tsunami Debris Coordinating Committee (TDCC) which is led by B.C. Ministry of Environment Assistant Deputy Minister Jim Standen and Environment Canada Regional Director General Paul Kluckner. MoE appointed employee Jonn Braman as the Tsunami Debris Regional Director coordinating the work of the TDCC. There is no federal or provincial marine debris program outside the work of the TDCC.
- The Japanese government provided grants to the US and Canada to assist affected states and the Province with debris clean up. Aside from the general obligation to report to the people of Japan on success with the clean up effort, the contribution agreement requires an annual report.
- The Canadian grant will flow through Environment Canada to the B.C. Ministry of Environment for fiscal 2013/14 and 2014/15 and it will be directed to three areas:

  - Local governments and First Nations to support clean up efforts. The process for this is being developed.
  - Parks Canada and BC Parks to support volunteer and other efforts to address clean up in coastal parks.
  - A portion will be held back to address removal costs and management of invasive species risks when and if large objects arrive. This portion would be released for other uses as the risk of large objects arriving diminishes with time.
- Principles for use of the funds include: emphasis on tsunami debris clean up over planning and monitoring; priority support to volunteers, local governments and First Nations working on coastal clean up with greatest need; priority to regional collaborative efforts (regional groups); and, funding will not be used for provincial or federal staff. Covering extraordinary expenses related to large objects is possible.
- Distribution of the funds could begin on completion of the agreement and receipt of the funds. This process will be managed by Jonn Braman, Tsunami Debris Regional Director and overseen by Assistant Deputy Minister Jim Standen as TDCC co-chair.
- Distribution to coastal communities is envisioned in two or more stages: through an application-based process for larger grants based on actual need (amount of debris and proposed community effort). Residual funds in the large object holdback pool will be distributed, if available, using a third similar process.
- The application process will ensure the bulk of the money is directed to where the effort is most needed as more tsunami debris arrives.

Action required:

- The contribution agreement between Environment Canada and BC Ministry of Environment will need to be signed by the Deputy Minister in order to receive the money. That process is currently with the federal government, but expected to be complete shortly.
- The agreement envisions the funds being transferred in a single lump sum and held in a consolidated revenue account (not general revenue) for distribution.

June 2013

Water Management in Northeast BC

Issue:

- Coordination of land and water management in the Northeast to facilitate efficient decision making and sustainable management of water.

Background:

- There are many different natural resource sectors active in Northeast BC (NE) and multiple agencies involved in issuing authorizations. Oil and gas is one of the highest profile sectors; pipeline development, mining projects, Site C on the Peace River, and wind power projects are also active in the region.

- Public concerns have been raised about the intensity of these activities and the potential impacts on communities, agriculture, First Nations values, wildlife, and the environment. Compounding the concerns is the limited resource data available to inform resource use decisions. To address these concerns, fill information gaps and achieve better coordination and streamlining among agencies, the following projects are underway:

- The **Shale Gas Hydraulic Fracturing Water Strategy** is being led by the Ministry of Energy, Mines and Natural Gas (MEMNG) and the BC Oil and Gas Commission (OGC) and is a commitment in the provincial **Natural Gas Strategy**. The Shale Gas Hydraulic Fracturing Water Strategy outlines the legal and policy framework for water management in the NE and will be completed in spring 2013..

- In addition, MOE and MFLNRO are co-leading a **Northeast Water Stewardship Coordination Plan** to coordinate ongoing multi-agency water management initiatives in the NE. The proposed plan will identify knowledge gaps and risks related to water management decisions and will establish strategies to fill these gaps. Completion of the strategy is targeted for Spring 2013.

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Decision/Action required (optional):

- None at this time.

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BRITISH COLUMBIA

June 2013

Water resources and hydraulic fracturing

Issue:

- There are high economic, social and environmental expectations associated with shale gas development in Northeastern British Columbia. However, the process of hydraulic fracturing uses significant water resources and has the potential to adversely impact the Province's water resources in the region.

Background:

- Hydraulic fracturing or 'fracking' is a process where a fluid is injected at high pressure to fracture or crack rock formations, thereby increasing the rate and recovery of natural gas. This advancement in extraction technology has accounted for the current shale gas boom in North America.
- The Montney and the Horn play regions contribute significantly to western Canada's natural gas resources. These regions are key components of the Province's *Natural Gas Strategy* and *Liquefied Natural Gas Strategy*.
- A key concern associated with fracking is the potential impacts on surface and groundwater resources due to the large volume of water used in fracking and the potential degradation of water quality. However, the Province's water resources are protected through a number of regulatory mechanisms.
- MoE contributed to the development of the *Oil and Gas Activities Act* (OGAA), which includes the authority to designate areas for protection and to establish environmental objectives – for such features as aquifers, watersheds as well as fish and wildlife habitats for protective measures.
- OGAA's accompanying Environmental Protection and Management Regulation (EPMR) provides regulatory requirements for surface-based oil and gas activities on Crown land. The Drilling and Production Regulation provides protection of fresh water aquifers by establishing stringent drilling and pipe casing requirements.
- The Oil and Gas Commission (OGC), is the agency responsible for overseeing oil and gas operations in BC, also requires all oil and gas developers to report quarterly on the amount of water they use. The OGC also launched the FracFocus.ca website earlier this year to provide more transparent accounting of B.C. hydraulic fracturing operations.
- The OGC also regulates the discharge of produced water and recovered fluids from fracking under the Oil and Gas Waste Regulation of the *Environmental Management Act*.

s.12

- MoE continues to partner with agencies such the Ministry of Energy, Mines and Natural Gas, the OGC and Geoscience BC to help characterize freshwater aquifers in the Montney shale gas area, which includes the communities of Fort St. John and Dawson Creek.

- In response to health concerns associated with fracking, the Ministry of Health is conducting a Human Health Risk Assessment. The project involves three phases: stakeholder consultation (complete) , human health risk assessment based on scientific review (underway), and finally reporting to public and stakeholders. MoE is participating in this study and will continue to review the results closely.
- Ministry staff are participating in the development of a *Shale Gas Hydraulic Fracturing Water Strategy.* In addition, the Ministry is currently working with other agencies to develop a *Northeast Water Stewardship Coordination Plan.* The plan will help better coordinate ongoing multi-agency water management initiatives in the Northeast where all of the shale gas operations are currently focussed.

Decision/Action required:

- None at this time.

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June 2013

UNDERSTANDING CLIMATE CHANGE

Issue:

- There is compelling evidence that human activity is altering the climate globally and in British Columbia. The implications for BC are significant.

- The release of the International Panel on Climate Change's (IPCC) report on climate change in September 2013 will focus public attention on climate action initiatives in BC and globally.

Background:

Definition and cause

The term "climate" means the average weather conditions expected at a given location. Because weather conditions vary naturally from year to year, the climate of a region is defined by averaging weather statistics over a 30 year period.

The terms "global warming" and "climate change" denote permanent changes in expected average weather conditions, including changing likelihood of extreme weather, associated with a gradual warming of the earth's atmosphere.

Average global temperatures have risen since pre-industrial times. A large majority of the warmest years on record have occurred since 1997. Other scientific observations, such as declining summer extent of arctic sea ice, rising sea levels, receding glaciers, lengthening of the growing season, and an increased incidence of extreme weather events and weather related disasters, provide additional evidence of rising average global temperatures.

Scientists have also established that the increase in average global temperatures is best explained by the observed increase in the atmospheric concentration of carbon dioxide (CO_2), an important greenhouse gas (GHG) that traps heat in the atmosphere.

In pre-industrial times, and for most of human history, CO_2 concentrations averaged 280 parts per million (ppm). In May 2013, the concentration was measured at 400 parts per million (ppm), higher than it has been in 800,000 years.

The consensus opinion of the scientific community is that this increase is due to human activities: fossil fuel combustion; industrial processes such as cement production; and, land-use changes.

Impacts of Climate change

Impacts of climate change include sea level rise and ocean acidification, decreasing snow pack and hotter summers. These in turn impact coastal communities and infrastructure, water supply and power generation, and human health, agriculture and forestry (through disturbances such as mountain pine beetle and longer forest fire seasons).

Although extreme weather events cannot be directly attributed to longer term climate change trends, scientists project such incidents will increase in frequency and severity as a result of a warming climate. There is now statistical evidence that recent extreme events, such as widespread flooding in the United Kingdom in 2000, the European heat wave of 2003 and Russian heat wave of 2010 were far less likely to have occurred had atmospheric concentrations of greenhouse gases remained at pre-industrial levels.

Governments are increasingly focusing on adaptation strategies that will help make smarter investments in natural resources and infrastructure given that some climate change is already locked-in. BC launched a provincial adaptation strategy in 2010.

BC is home to world-class scientific expertise on climate and climate change, including the Pacific Climate Impacts Consortium and the Canadian Centre for Climate Modelling and Analysis, both based at the University of Victoria. Experts from BC Universities have contributed to the IPCC's upcoming global report on climate change.

Next Steps:

- The IPCC, the global scientific authority on climate change, will be releasing the first installment of its 5th Assessment Report on September 30th, 2013. An in-depth briefing on this report is being arranged for September 30th in Victoria.

- The IPCC's last report, released in 2007, generated significant public interest, within BC and around the world. With global CO_2 levels exceeding a 400 ppm milestone it is expected that the release of the 5th assessment will also generate considerable interest and spark calls for action.

June 2013

CLIMATE POLICY APPROACHES

Issue:

- BC's Climate Action Plan is a comprehensive approach that includes a clear price on carbon (through the revenue neutral carbon tax) as well as complementary policy approaches. Because of this BC's approach is of interest internationally to climate policy experts as well as other governments.
- The revenue neutral carbon tax is BC's signature policy, and attracts the most interest, but there is an important role for other measures as well.

Background:

Climate change is difficult to address because its causes (especially fossil fuel combustion) are pervasive, and integrated into our economy and society. Because greenhouse gas (GHG) emissions distribute themselves evenly in the atmosphere once emitted, and the impacts are borne by the world as a whole, there is an incentive to free-ride on climate change mitigation actions of others. The tendency to avoid the cost of taking action happens both at the individual level as well as for governments.

Adaptation actions are also a public good, meaning that many can benefit from an action that is not necessarily paid for by all, but the problem is more manageable given that the actions (e.g. flood defences) and their benefits are local.

There are four broad categories of policy types which can address climate change: (1) regulation, (2) price signals, (3) positive incentives, and (4) information or persuasion (see appendix 1for more details on each of these approaches). Each of these policy types will generate emissions reductions or adaptation actions directly or indirectly and each has a cost, though who bears the cost varies by policy type. The most popular policy options (those with the lowest direct costs for the public and emitters) tend to be the least effective and vice versa.

The core metric for assessing climate change mitigation policies is the cost per tonne of GHGs reduced annually. This metric is aimed at identifying the options that generate the most GHG reductions for the least cost. Similarly, we can consider relative costs for a given adaptation outcome. Table 1 compares the different policy approaches.

June 2013

Policy types summary:

Policy Type	Intent	Costs	Cost borne by (predominately)*	Benefits	Examples (**not implemented in BC)
Regulation	Achieves specific emission level, technology implementation or other outcome.	Higher cost; little flexibility to seek cheapest options.	Regulated entity (e.g. industrial facility, business, homeowner)	Guarantees an emissions, technology or adaptation outcome.	Landfill Gas Management Regulation; building code adaptation requirements.**
Price signals	Behaviour change; investment in clean options; re-balancing relative prices; market transformation.	Lowest cost/tonne option; uses market to identify cheapest options.	Emitter (and their customers); entity bearing climate impact risk (for adaptation).	Can guarantee an outcome (cap and trade); or, outcome depends on price level (carbon tax).	Carbon tax; insurance plan designs that promote adaptation.**
Positive incentives (subsidies)	Remove cost and other barriers (e.g. capital cost, mainstreaming technology adoption).	High cost; risk of free-ridership.	Government	Does not guarantee a given outcome. Strong co-benefits: jobs, market creation.	Clean Energy Vehicle Program; subsidy for flood defences.**
Information	Correct information gaps; promote public-minded behaviour.	Some low cost actions, but costs very high on a direct cost/tonne basis because often few reductions achieved.	Government	Necessary for barrier removal alongside other instruments, but largely ineffective alone.	LiveSmart social media

*Administration, compliance and/or enforcement are costs to government in all categories.

There are, however, good reasons for choosing policy options with higher costs per tonne where they lead to other beneficial outcomes such as construction jobs created through energy retrofit programs. Also, longer term transformations that can deliver significant future emissions reductions, such as establishing infrastructure for electric vehicles, can have a high cost per short-term tonne of emissions reduced but are crucial to laying the foundation for a low emissions future.

Next Steps

- BC's Climate Action Plan draws on all of the different policy tool types based on the strengths of each and in the knowledge that they all have costs and benefits. A comprehensive approach to climate action engages business, families and communities, and promotes BC's climate actions as a model for adoption internationally. It builds public support while taking concrete and difficult actions to address and adapt to climate change.

Appendix 1: Policy type descriptions

Regulation – is an effective mode of achieving a given emissions reduction or adaptation outcome. However, regulation has a relatively high cost per tonne (or per avoided climate impact) because it provides little flexibility for individuals and businesses to choose the technology or process options that are most appropriate for them and can achieve the objective at lowest cost. The costs of regulation are borne by those who are regulated (and their customers); however, regulation is often inappropriately seen as a low cost option because of low cost to government and the lack of an overt 'price' in the policy design. Regulation provides no incentive to take viable emissions reduction or adaptation activities beyond the regulated level. Regulation is the appropriate option where the regulated activity is too dangerous to be permitted under any circumstances (more relevant to adaptation) or where other barriers (or inertia by slow movers) prevent the uptake of economically beneficial options (e.g. replacing high bleed valves in oil and gas).

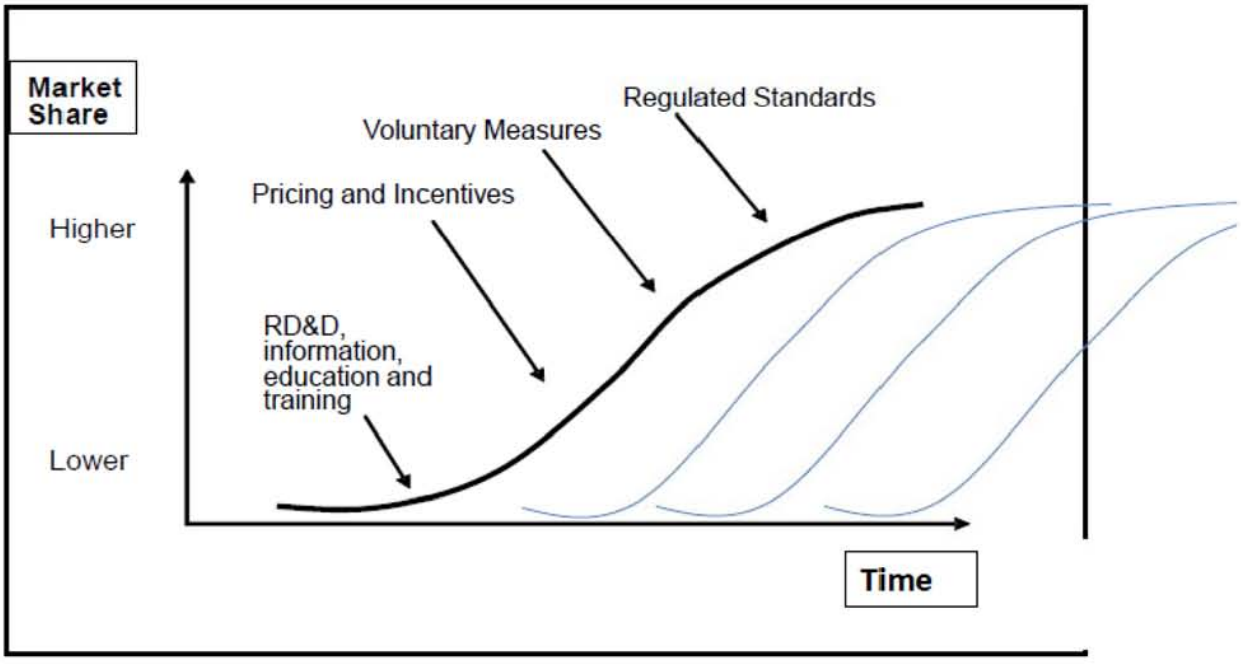
Price signals (e.g. carbon tax, cap and trade, offsets requirements)– provide the lowest cost way to achieve emissions reductions. They provide an incentive in the market to identify and undertake any emissions reductions that cost less than the level of the price. They incorporate into decision making the external costs that actions impose on society through emissions and their damages. Cap and trade guarantees a given level of reductions, but has significant price uncertainty. A carbon tax provides price certainty, but the level of the price needs to be continually managed to ensure that it is generating the desired level of emissions reductions. The most efficient price is one that is uniform, and covers as much of the economy as possible. Exemptions mean higher rates are needed in covered sectors to achieve a given emissions outcome. Though they provide the least cost option overall, price signals are perceived as a high cost option because of the breadth and visibility of the price. Price signals can also be achieved indirectly (e.g. changing liability structures).

Positive incentives (e.g. subsidy, public provision) - are popular, but come at the cost of government and the taxpayer, and have a high cost per tonne. Positive incentives have an important role in overcoming market failures in which goods are underprovided (e.g. research and development, commercialization of green technologies), and where other barriers prevent the adoption of cost effective options. Positive incentives are less effective and more costly than price signals because incentives are often given to people who would have taken the action anyway (free-riders), yielding no net improvement in the desired outcome (e.g. GHG reductions).

Information – is a crucial part of encouraging action on climate change, and the lack of information is often a core explanation for why people fail to take cost effective GHG reduction and adaptation actions. However, information campaigns designed to persuade people to altruistically take action tend to, in the absence of the above stronger policy types, have little effect on behaviour and emissions, and as a result have a very high cost per tonne.

Appendix 2: Technology adoption curve

A new technology goes through research, development, testing, and commercialization phases before being widely adopted. There are barriers at each phase. Using electric vehicles (EVs) as an example, there is research into battery designs, then prototype vehicles, and need for capital before there are electric cars introduced for sale. Appropriate policy for this stage includes support for research and development, and education. EVs were first adopted by enthusiasts with conversion or niche vehicles produced in very small numbers. Then key vehicle manufacturers developed EVs for the mass market, but the price premium and lack of infrastructure means low market share. Once a technology is introduced to the market, there are many challenges moving past adoption by a small number of people, to the broader population. Incentives help to overcome these obstacles.



Encouraging technology adoption, pushing from the early adoption phase through to a majority adoption phase, is a key area for supportive public policies that have a higher cost per direct tonne of GHGs reduced, but that can lead to large emissions reductions by overcoming the barriers (e.g. chicken and egg problem of too few EV drivers to demand charging infrastructure, and too little infrastructure to attract new drivers) preventing clean technologies from moving beyond the early adopter phase and being widely adopted.

Once a technology has achieved broad-scale adoption, regulation becomes a preferred means to address those that are slow to transition.

June 2013

BC GREENHOUSE GAS REDUCTION TARGETS AND CLIMATE ACTION PLAN

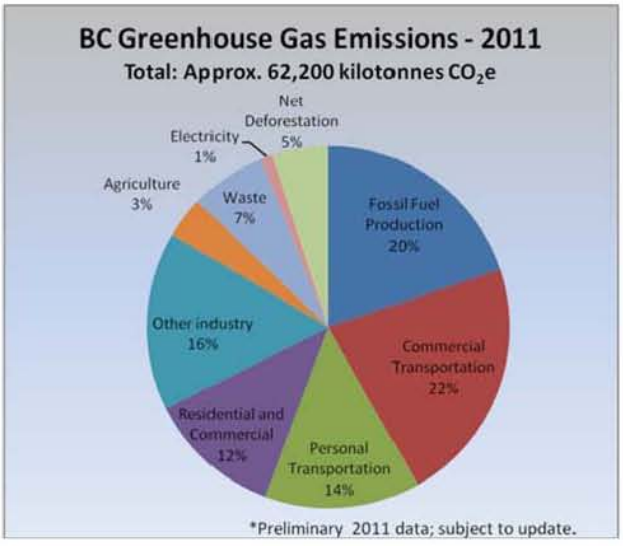
Issue:

- BC has legislated greenhouse gas (GHG) reduction targets and has put in place measures that will get BC part way to meeting them. BC is required by legislation to report in 2014 on its progress in reaching the targets and measures taken for further action.

Background:

The Greenhouse Gas Reduction Targets Act (GGRTA) sets targets to reduce emissions by 33% by 2020 and 80% by 2050 below 2007 levels. Interim reduction targets were set at 6% by 2012 and 18% by 2016.

GGRTA requires the province to publicly report, every two years, on progress toward targets and plans to continue that progress. The next report is due 2014. Due to an 18 month lag in data, it will be the 2014 progress report that determines whether BC's 2012 interim target is attained.



BC, with 62 Mt of emissions in 2011, has a relatively low GHG economy because of hydro electricity and relatively little heavy industry. Preliminary data indicate that the largest emissions sources are transportation (23Mt, of which 60% is commercial), oil and gas (10Mt), other industry (9Mt), and buildings (7Mt).

The 2008 Climate Action Plan sets out a whole of government approach to reduce emissions including:

- A revenue neutral carbon tax;
- A legislated Carbon Neutral Government commitment;
- Partnerships for collaborative action with other jurisdictions;
- The Climate Action Charter, which commits local government signatories to carbon neutrality and actions to develop energy efficient communities;
- Investments in the green economy through a variety of mechanisms;
- Public engagement and outreach; and
- Identifying the need to adapt to a changing climate.

Most Climate Action Plan commitments are complete or substantially underway, with the exception of a cap and trade system and bringing net zero deforestation legislation into force.

Some Climate Action Plan initiatives have yet to come into full effect, which means their full GHG impacts are yet to be realized. These include the Landfill Gas Management Regulation (2016), net zero GHG electricity requirements (2016 for existing facilities), and the Renewable and Low Carbon Fuel Requirements Regulation (10% reduction in the average carbon intensity of transportation fuels by 2020).

Emissions levels for 2011 were found to be 5.8% below 2007 levels. BC is within reach of its 2012 interim target of 6% below 2007 levels but there are key challenges to meeting subsequent targets: anticipated increases in natural gas production, new industrial projects, off-road diesel emissions, and forest degradation.

In the absence of new climate actions, we can expect emissions to begin to grow again as the economy grows and new projects are developed. Population growth and consumer behaviour will also affect emission levels.

Natural gas development will have a significant impact on BC's progress to the targets. Emissions increases in BC resulting from liquefied natural gas (LNG) development could range from a 16% increase through to a doubling of BC's total emissions depending on the number of plants and the technology and energy options chosen. At the high end of that range, BC's natural gas sector emissions would be comparable to those from Alberta's oil sands. Work is underway to better understand the emissions implications of LNG development and options to reduce them.

Updates to international GHG accounting rules for forest carbon may impact how BC approaches forest carbon management. These rules, which have recently been applied at the national level, exclude natural disturbances and account for GHGs emitted or sequestered on forested lands that are subject to human influence. s.16

s.16

s.16 The Government of Canada has released national updates indicating significant benefits to the national targets resulting from the accounting change, most of which result from BC forest.

s.13 s.13

Next Steps

- Work is underway to understand the impact of both natural gas development and forest carbon accounting changes on BC's targets.
- BC is recognized for its leadership and concrete results from the Climate Action Plan. However, additional measures would be required in order to deliver further progress to the targets.