

**Alberta Government VCR Action Plan
on
Climate Change**

1999/00 Progress Report

October 2000

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Executive Summary

The Alberta government submitted an Action Plan for Canada's Climate Change Voluntary Challenge and Registry Program in October 1995. The Action Plan focussed on measures that will directly result in reductions of greenhouse gas emissions from Alberta government operations over a three-year period.

The Alberta government submitted its first Progress Report in October 1996. The Progress Report described the organization established to deliver on the plan, the 1990 to 2000 baseline, a list of performance indicators, the target for the year 2000, and the cost-effective actions taken during the first year. Progress Reports have been submitted annually since 1996.

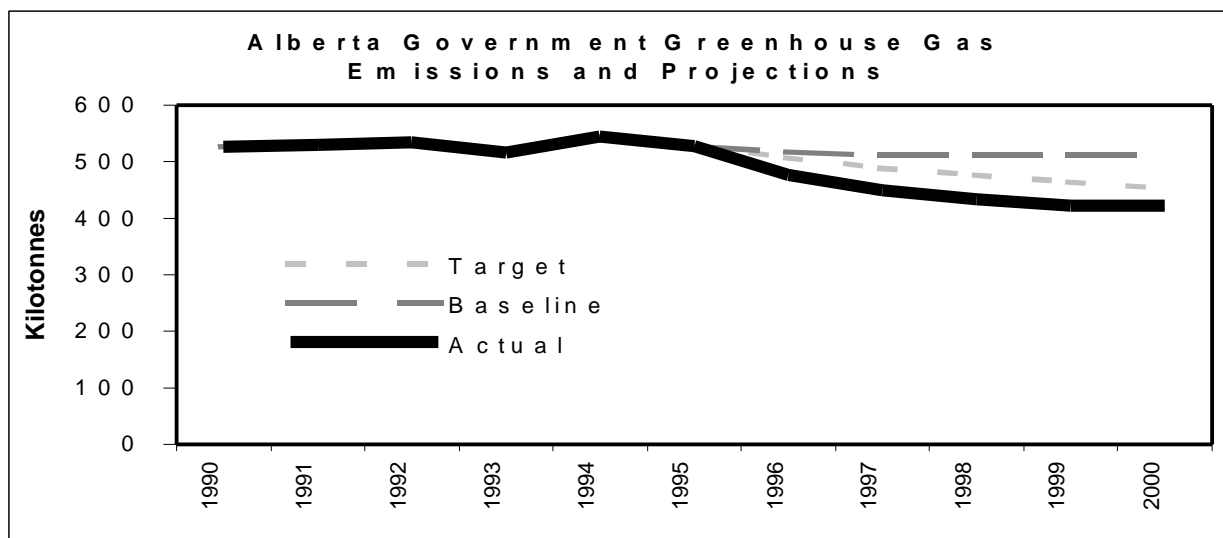
The overall target of the Alberta government is to reduce emissions by 14.1 per cent from 1990 levels by the year 2000. This overall target, and targets for each of the focus areas, were established three years ago and outlined in the Alberta government's 1996 VCR Progress Report.

This is the Alberta government's fifth annual Progress Report. This Progress Report describes the actions taken and the results from these efforts. In fiscal year 1999/00 total emissions of CO₂ equivalent from all

government operations decreased from 434 kilotonnes in 1998/99 to 422 kilotonnes of CO₂ equivalent, a 2.8 per cent reduction.

The Alberta government continues to reduce its overall emissions and has consistently exceeded its annual targets. 1999/00 emissions of 422 kilotonnes of CO₂ equivalent are 19.8 per cent below 1990 levels. The reductions exceed our 1999/00 target by 42 kilotonnes. Our overall target for 2000 of 452 kilotonnes of CO₂ equivalent has also been exceeded by 30 kilotonnes of CO₂ equivalent.

Alberta remains a leader in the National Climate Change Process. As part of this process, the province is developing measures for inclusion in the first business plan under Canada's national implementation strategy. A key component of the national strategy is the theme of "Government House in Order". Tied to this are actions by the Alberta government to reduce emissions from its own operations. The Alberta government will be preparing a new Action Plan with revised targets in the spring of 2001, not only as part of the national implementation strategy, but equally import, to demonstrate its continued support and commitment to the VCR Inc. program.



1.0 Background to Alberta's VCR Action Plan

1.1 Action Plan Objectives

The Alberta government submitted an Action Plan for Canada's Climate Change Voluntary Challenge and Registry Program in October 1995. The Action Plan focussed on measures that will directly result in reductions of greenhouse gas emissions from Alberta government operations over a three-year period. Greenhouse gas emissions related to Alberta government operations are mostly carbon dioxide. Emissions of methane, nitrous oxide and other greenhouse gases are less significant. The three major sources of carbon dioxide, in order of significance and their potential for reducing emissions are:

- 1) energy used in buildings, mostly natural gas and electricity;
- 2) operation of vehicles in the government's transportation fleet; and
- 3) solid waste.

In 1990, emissions of carbon dioxide from Alberta government operations were 526 kilotonnes or about half a per cent of the province as a whole. The Alberta government is showing leadership by taking cost-effective actions to reduce the Alberta government's own greenhouse gas emissions.

The Alberta government's Action Plan has seven objectives:

- implement actions that reduce greenhouse gas emissions related to Alberta government operations;
- demonstrate the advantages of a voluntary approach;
- take effective actions that save money;
- profit from doing business in new ways;
- show how others can take cost-effective action to reduce emissions;
- share what we learn; and
- measure and report on cost-effective quantitative actions.

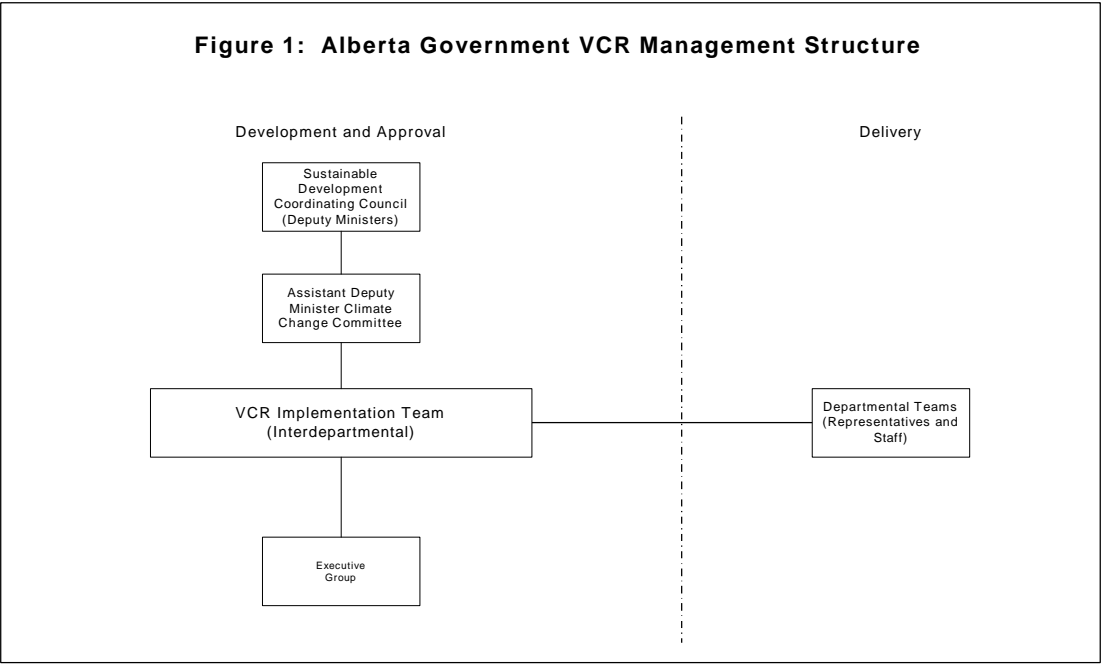
1.2 Cross Government Implementation

The Action Plan required an organizing mechanism to plan, develop, deliver, advise and assess greenhouse gas emission reducing actions (see Figure 1). An Implementation Team was established in December 1995 with representation from all government departments. This team reports to a committee of deputy ministers, the Sustainable Development Co-ordinating Council. The team provides overall co-ordination and direction for the Action Plan; ensuring integration of plans, actions and communication efforts.

Each department representative on the implementation team co-ordinates his/her department's involvement in the program by keeping senior executives informed, developing departmental teams, and encouraging staff to take specific actions. Some department representatives established teams of interested staff to facilitate their department's involvement in the program. Each department then develops further actions by assessing the results from initial actions and investigating other potential actions.

Three years ago, an executive group was established to develop options to reduce greenhouse gases from the key emission sources and present them to the VCR team. Members of this group currently include representation from 3 key departments: Environment, Infrastructure and the Alberta Corporate Service Centre.

In an effort to ensure that cross-government climate change co-ordination takes place at all levels within the provincial government, an Assistant Deputy Minister (ADM) level climate change committee was created. With representation from 9 departments, the mandate of the ADM committee is to ensure that the Alberta government's climate change strategy incorporates the concerns of all departments and agencies and that



government resources devoted to the issue of climate change are optimized. Support for actions related to VCR reporting will be sought from this group.

1.3 Establishment of Greenhouse Gas Emission Baselines

A baseline was established for the period from 1990 to 2000 in the 1995-96 Progress Report. The baseline was adjusted in the 1996-97 report. The adjustment was necessary due to a spreadsheet error in calculating the transportation emissions. The error increased transportation and overall emissions by 4 kilotonnes of CO₂ equivalent. The figure and table below have been adjusted for this error. For the 1990 to 1995 period, recorded historical data was used. When historical data was not available, reasonable extrapolations were made. Projections were made for 1996 to 2000 based on the Alberta government’s three-year business plan. Table 1 summarizes the total tonnes of CO₂ equivalent for all Alberta government operations and for each emission source. Total baseline emissions are projected to decrease 2.9 per cent to 511 kilotonnes of CO₂ equivalent by the year 2000, from 526 kilotonnes in 1990.

The largest emission source is energy use in buildings. Building related emissions represented 82.5 per cent of the 1990 total and are projected to increase to 90 per cent of total emissions in 2000, due to reductions in the other sources. Transportation is the second largest contributor but is declining and predicted to decline even further through continued privatization of the fleet. Some of these emissions will not be eliminated as they are only transferred to the private sector. Transportation emissions will drop from 12.7 per cent of the total in 1990 to 7 per cent in 2000. Finally, waste declines from 4.9 per cent of emissions in 1990 to 2.7 per cent in 2000.

Table 1: Alberta Government Baseline, Targets, and Actual Figures for Greenhouse Gas Emissions.¹

Emission Source		Kilotonnes of CO₂ Equivalent										
		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Buildings												
	Baseline	434	434	441	434	463	460	460	460	460	460	460
	Target							450	441	432	423	414
	Actual							427	401	385	375	
Transportation												
	Baseline	67	71	71	62	64	52	43	36	36	36	36
	Target							43	34	33	31	29
	Actual							36	36	37.5	36	
Waste												
	Baseline	26	25	22	20	17	15	14	14	14	14	14
	Target							13	12	11	10	9
	Actual							12	12	11.3*	10.8	
Totals**												
	Baseline	526	530	534	516	544	527	517	511	511	511	511
	Target							507	488	476	464	452
	Actual							476	449	434	422	

*Due to a lack of data, this value was estimated at 11.7 in 1998. With new data available, the value has been calculated as 11.3.

**Columns may not add up due to rounding

1.4 Performance Indicators

To measure the success of emission reduction actions taken, a series of performance indicators were chosen. The overall indicator for the action plan will be *the percentage of CO₂ equivalent of reduced emissions from Alberta government operations*. Two indicators have been chosen for each major emission source. For buildings, the indicators are *percentage reduction of CO₂ equivalent emissions and energy consumed per square meter per year*. For waste, the indicators are *percentage reduction of CO₂ equivalent emissions and waste disposal per employee per year*. For transportation, the indicators are *percentage reduction of CO₂ equivalent emissions and total amount spent on travel per employee per year*. The percentage reduction figures for each source will be added to calculate the overall action plan indicator.

1.5 Targets

Table 1 shows the emission reduction targets. Emissions will be 14.1 per cent less in 2000 than in 1990. Emissions are targeted to be 452 kilotonnes of CO₂ equivalent in 2000, a 74 kilotonne reduction between 1990 and 2000. Targets have been established for each of the three emission sources. Based on these targets, an overall reduction target for the action plan was set.

¹ Table 1 shows the target emission reductions, adjusted in the 1997-98 progress report to account for a spreadsheet error.

1.6 Verification of Results

Alberta government emission calculations in the areas of buildings, transportation and waste are based on travel expenditure data, lighting and heating costs, square footage of owned buildings, per capita waste numbers, numbers of employees, and number of government owned aircraft and vehicles. While the Alberta government VCR Progress Report is not audited as a separate document, the data provided in this report is derived from individual departments whose numbers are subject to audit by the Auditor General of Alberta.

In addition, greenhouse gas emission reductions, energy consumption of buildings and waste reduction are key performance indicators for individual departments. These are published in department three-year business plans and results are reported annually. The Auditor General performs an annual review of the performance measures of individual departments. This review examines the source of the data and any calculations that are made. It does not constitute a formal audit. No exceptions were reported in 1999/00.

2.0 Accomplishments

2.1 Summary of Past Progress Reports

The Alberta government submitted its first Annual Progress Report in September 1996. The focus of the first year was to establish an organization to deliver on the plan, develop a baseline, choose indicators, set targets and begin to take action. These goals were accomplished.

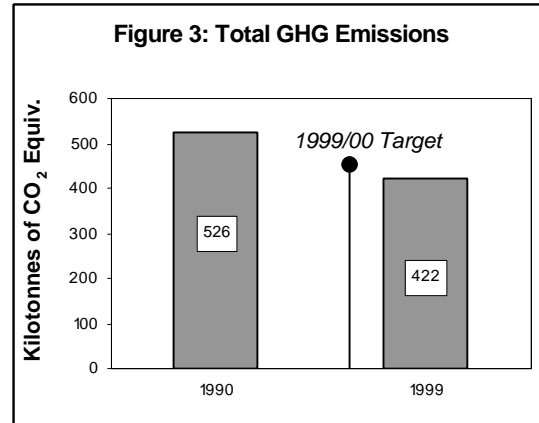
In September 1997, the Alberta government submitted its second Annual Progress Report - the first to report on measured results achieved. Over 1996/97, total emissions of CO₂ equivalent from all government operations decreased by 9.7 per cent from 527 kilotonnes to 476 kilotonnes.

In September 1998, the Alberta government submitted its third Annual Progress Report. Total emissions of CO₂ equivalent from all government operations decreased by 5.7 per cent. This reduction exceeded the target of 488 kilotonnes of CO₂ equivalent set for fiscal year 1997/98.

The Alberta government submitted its fourth Annual Progress Report in October 1999. Total emissions of CO₂ equivalent from all government operations decreased by 3.3 per cent. This reduction exceeded the target set for fiscal year 1998/99 by 42 kilotonnes of CO₂ equivalent.

2.2 Overall Results for Current Reporting Period 1999/00

Total emissions of CO₂ equivalent from all government operations decreased from 434 kilotonnes in 1998/99 to 422 kilotonnes of CO₂ equivalent in 1999/00, a 2.8 per cent reduction. These reductions exceed the target of 464 kilotonnes of CO₂ equivalent set for 1999/00



(see Figure 3). Reduced emissions from buildings was the primary source of reductions in 1999/00. Buildings showed a decrease of about 10 kilotonnes, transportation decreased by nearly 1.5 kilotonnes and waste also showed a small reduction.

Performance Measures - Overall

- **2.8 per cent reduction in CO₂ equivalent emissions in 1999/00**

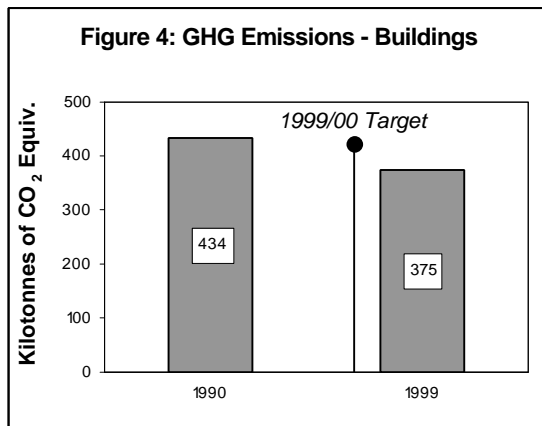
2.3 Buildings

2.3.1 Buildings – Overall Results

Energy use was reduced in Alberta government buildings by 2.1 per cent during 1999/00. While total building space also declined in 1999/00, the reduction was significantly less than the fall in energy use. The building energy performance index (BEPI) decreased from 1845 to 1812 megajoules per square meter over 1999/00. Overall energy savings resulted in a reduction of 9.8 kilotonnes CO₂ equivalent, a 2.6 per cent fall from 1998/99. Building-related emissions were 11 per cent below the 1999/00 target (see Figure 4). The energy savings were adjusted for temperature.

A Building Management Information System records energy use in all government buildings using data from gas and electric utility bills. Building managers use this information to track energy use in their buildings and to help identify opportunities for savings. The

department of Infrastructure provides additional energy efficiency information to the managers and encourages energy efficiency operating practices.



A program to audit all 342 government buildings over 1000 square meters and follow up with cost-effective retrofits is continuing. Retrofits are delivered through energy performance contracts and through capital and maintenance budgets.

Although it is difficult to assess, some reductions may have resulted from changes in staff habits. Department staff have been continually educated about measures to reduce greenhouse gases through newsletters, e-mail and posters. Prompts (labels with key messages) have been distributed throughout the government and placed on energy using equipment; such as light switches, computers, printers, and fax machines. These encourage staff to shut off lights, printers and computers when not in use, and to use e-mail. Department Intranet sites have also been used as communication vehicles.

Performance Measures – Buildings
<ul style="list-style-type: none"> ▪ 2.6 per cent reduction in CO₂ equivalent emissions in 1999/00 ▪ Energy consumed per square metre decreased from 1845 to 1812 megajoules

2.3.2 Buildings - Specific Actions

➤ Energy audits were completed for 63 buildings

over 1999/00. Of the 63 buildings, approximately 80 per cent show good potential for inclusion in Energy Performance Contracts.

- Construction has begun on retrofit projects for six buildings at the Neil Crawford Centre. As part of the Energy Performance Contract on the Neil Crawford Centre, two lighting mock-up areas have been built to allow comparison and to finalize the selection of the lighting retrofit for the two largest buildings on the site. The two scenarios are expected to reduce the present power consumption by between 50 and 60 per cent.
- Energy efficiency projects have been completed for the four correctional institutes at the Spy Hill Complex in Calgary.
- The Alberta government, in partnership with the Town of Hinton, participated in financing, design and construction of an energy-efficient government centre. Beyond a significant reduction in greenhouse gas emissions, other environmental benefits and considerations include reduced water consumption, minimum tree cutting for the building and roads, use of cut trees as building and site materials, and reuse of topsoil and seed material removed during construction to re-establish native ground cover plants. Daylight will provide as much light as possible, and windows will open. Carefully selected building materials will improve indoor air quality. A raised floor system will allow individual temperature and ventilation control and provide greater flexibility for future space changes. The Alberta government is a co-tenant in the building.
- Work was completed on a steam line extension at Government Centre that provides heating to the Legislature Annex, Bowker and Haultain Buildings and the pedway from the main power house. This project enabled the decommissioning of two steam plants.
- High efficiency lighting technology was installed

in a government leased building office to demonstrate leading-edge lighting opportunities that save energy and reduce emissions.

2.4 Transportation

2.4.1 Transportation – Overall Results

Alberta government employees use many forms of transportation. Transportation emissions come from the government fleet of light duty vehicles, government aircraft, and the use of employee’s private vehicles and flying in commercial aircraft.

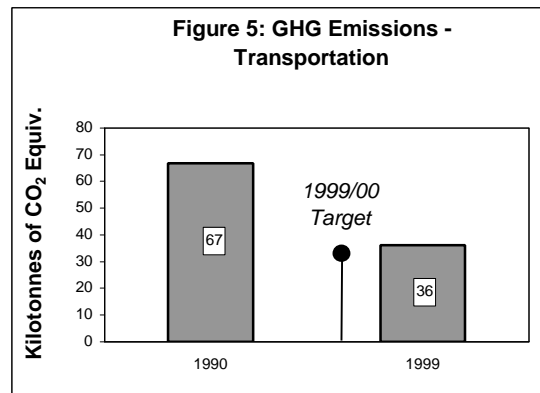
It should be recognized that there are additional vehicle related emissions arising from government business, however there is currently no ability to accurately track such emissions. Examples of such emissions include those arising from taxi travel, vehicle rentals, and vehicle emissions associated with operations previously done by government, but have since been privatized.

Overall emissions from transportation decreased from 37.5 kilotonnes of CO₂ equivalent to 36.1 kilotonnes of CO₂ equivalent over 1999/00. The decrease can primarily be attributed to the fall in government owned aircraft related emissions which were 22 per cent lower than in 1998/99 as less aircraft time was spent fighting forest fires in 1999/00. 1999/00 transportation related emissions were 5 kilotonnes above the target set for that period (see Figure 5).

Light duty vehicles are estimated to have contributed 15.4 kilotonnes of CO₂ equivalent, up from 14.7 kilotonnes in 1998/99 and above the 1999/00 target of 14.8 kilotonnes of CO₂ equivalent.

Since 1998/99, the number of vehicles leased by the Alberta government have grown by more than the emissions growth experienced by light duty fleet. This indicates that some of the older government vehicles are being replaced by newer, more efficient leased vehicles. Because of this trend, it is likely that the

emissions associated with the light duty fleet are over estimated. Efforts will be taken in subsequent reports to ensure that this trend is more accurately tracked.



Total mileage for Government owned aircraft significantly declined over 1999/00. Just as the majority of the increase experienced in 1998/99 was attributable to fighting forest fires, the fall in 1999/00 can be attributed to the subsequent decline in required mileage for such actions. A total of 969 hours were flown fighting fires in Alberta, a decrease of 40 per cent over 1998/99. Emissions from government aircraft were 4.1 kilotonnes of CO₂ equivalent in 1999/00. Total aircraft emissions were 22 per cent lower than in the previous year.

Government employees use their own personal vehicles for carrying out government business. Emissions from personal vehicle travel decreased by 31 per cent to 4.4 kilotonnes of CO₂ equivalent in 1999/00.

Emissions from commercial aircraft used by government staff to attend meetings, trade shows, conferences and other business are tracked using the total dollars spent from travel expense forms and industry averages for fuel used. The actual emissions were 12.2 kilotonnes of CO₂ equivalent for 1999/00. When compared to the 11.9 kilotonnes recorded for the previous year, there was an increase of 1.7 per cent.

Performance Measures - Transportation
<ul style="list-style-type: none"> • 3.8 per cent decrease in CO₂ equivalent emissions in 1999/00 • total dollars spent on personal vehicle and commercial aircraft decreased 13 per cent

2.4.2 Transportation - Specific Actions

- Conversion of Alberta’s light duty fleet to leased vehicles continued in 1999/00. At year-end, approximately 37 per cent of light duty vehicles were being leased.
- Alberta Environment is conducting a review of the existing department vehicle policy. Some initiatives being considered include efforts to promote efficient driving practices and habits, retiring older vehicles, and the leasing of vehicles that exhibit 'best in class' fuel economy ratings. Alberta Infrastructure has also commenced a similar process.
- A variety of transportation-related government "in-reach" initiatives took place over 1999/00. One dealt with identifying ways to maximize fuel mileage, reduce emissions and provided tips on maintenance to help keep emissions to a minimum. Another was a ‘hands-on’ session to highlight what was required to keep bicycles in shape for commuting.

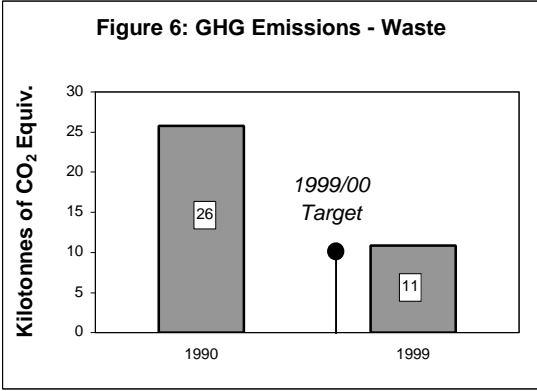
2.5 Waste

2.5.1 Waste – Overall Results

Alberta government waste has declined from 6.3 kilotonnes in 1998/99 to 6.0 kilotonnes in 1999/00, a 4.8 per cent decrease. While previous years have seen a rise in waste per capita, despite a fall in total waste arising from reductions in total government employees, 1999/00 experienced a nearly 5 per cent decrease in waste per capita compared to 1998/99.

The target for waste disposal emissions for 1999/00 was 10.1 kilotonnes of CO₂ equivalent. Although

waste disposal emissions declined over 1999/00, with actual emissions at 10.8 kilotonnes of CO₂ equivalent, the target was not met (see Figure 6).



Performance Measures - Waste
<ul style="list-style-type: none"> • 4.2 per cent reduction in CO₂ equivalent emissions in 1999/00 • Waste per employee per year decreased from 297 to 283 kilograms

2.5.2 Waste - Specific Actions

- Computers for Schools program continues to promote the recycling of computers. Approximately 1500 computers from provincial government departments were provided in 1999/00. Over 20,000 computers have been distributed throughout Alberta since the Computers For Schools program began in 1993.
- Efforts continue to focus on employee awareness. Through the use of posters, emails, and network prompts, staff were provided with information on recycling, as well as energy saving tips, which encouraged staff to shut off lights, printers and computers when not in use.

3.0 Supporting Activities

3.1 Provincial, Regional and National Initiatives

The Alberta government's Action Plan focuses on activities, which directly result in reduced emissions from government operations. However, many government activities influence others to reduce their emissions. These supporting activities contribute to the leadership role taken by the Alberta government in encouraging the reduction of greenhouse gas emissions throughout Alberta.

- **Creation of the Bureau of Climate Change:** In December 1999, the Alberta government established the Bureau of Climate Change. Situated in Alberta Environment, the Bureau will co-ordinate the government response to climate change. Participating in provincial, regional and national climate change initiatives, the Bureau has assumed the government lead for addressing climate change issues. The creation of this unique climate change group is a reflection of the Alberta government's commitment to reducing the provinces greenhouse gas emissions.
- **Provincial Government Co-ordination:** Led by Bureau of Climate Change, Alberta Environment, in concert with 11 other government departments, participates in an interdepartmental working group on climate change. This group ensures that climate change information and activities are disseminated throughout the government.
- **School Modernization and New Energy Efficiency Guidelines:** The Alberta government will be contributing over \$600 million in new funding to build new schools and to modernize existing schools in Alberta over the next three years. New standards and guidelines have been created to provide a minimum standard for this work. These guidelines incorporate life cycle costing and energy efficiency requirements.
- **Establishment of Climate Change Central:** In November 1999, Premier Ralph Klein announced the establishment of Climate Change Central. Climate Change Central is a public/private sector partnership to identify opportunities and take action on climate change in Alberta. Climate Change Central has established a board, which has representation from 13 of Alberta's key climate change stakeholders. The Board includes individuals from environmental and academic communities, municipalities, and industries involved in climate change. The Alberta government has committed \$6 million over the next three years for operational funding. A copy of the announcement of Climate Change Central is included in *Appendix 1*.
- **GERT:** Alberta remains a member of the Greenhouse Gas Emission Reduction Trading Pilot (GERT), established to learn about the feasibility of emission reduction credit trading in Canada, and to encourage early emission reduction projects. The Alberta government encourages Alberta companies to participate in the GERT pilot to strengthen their original commitment to the VVCR and to voluntarily reduce greenhouse gas emission reductions.
- **National Climate Change Process:** The Alberta government continues to assume a leadership role in the National Climate Change Process. The Alberta government is currently putting together its phase-1 action plan, as part of the province's contribution to the First Business Plan under the national implementation strategy.

3.2 Climate Change Related Science, Research and Technology Initiatives

Some of the research projects being supported by the Alberta government in the area of greenhouse gases include:

- **Improved Coal Combustion Research:** The Alberta government participates in an on-going project to evaluate the combustion, heat transfer and pollutant characteristics of coal combustion in an enriched oxygen medium with recycled CO₂ from flue gas. Research is aimed at providing a credible database for the development of more energy efficient fossil-fired power generation cycles, which can produce a purified stream of CO₂ for direct removal from a power plant. The project is entering the 5th stage, which will examine the initiative on a commercial scale and look at the possibility of burning alternative fuels.
- **Injection of CO₂ into Deep Alberta Coal Beds for the Production of Methane:** Research remains directed towards developing synergies with O₂/CO₂ recycling technology. For example, a coal-fired power plant would utilize the O₂/CO₂ combination furnace to produce a pure CO₂ flue gas that would be captured and used in the coal bed methane technology for the recovery of methane. This would result in a zero emission scenario.
- **Reduced Volumes of Flare Gas:** In July 1999, recommendations from the Clean Air Strategic Alliance (CASA) around flaring reductions and performance standards, were incorporated into the Alberta's Energy and Utilities Board's (EUB) **Flaring Guide**. The new guides calls for a 25 per cent reduction on volumes flared by 2001 and stringent performance standards for the remaining flares in Alberta. A 25 per cent reduction in flaring volumes would reduce CO₂ emissions by an estimated 1.25 megatonnes of CO₂. By the beginning of 2000, flare volumes were reduced to 30 per cent of 1996 levels.
- **Removal of Barriers to the Use of Otherwise Flared Solution Gas:** The Department of Resource Development and the EUB, together with stakeholders, is continuing to take actions to facilitate electricity generation from solution gas that would otherwise have been flared. Key priorities have been the creation of a royalty waiver program removing barriers to electricity generation using solution gas that otherwise would be flared (e.g. exempting otherwise flared solution gas from the Electric Utilities Act). The program was implemented in mid-1999.
- **CO₂ Synergies Initiative:** The Alberta government participates on this on-going program. Led by the Alberta Chamber of Resources, it is focused on developing commercial uses for CO₂ through research and development projects. A broad range of industry and government stakeholders participate in this initiative.
- **The Alberta Agricultural Research Institute:** Through Alberta Agriculture, Food and Rural Development, the Institute funds a variety of agricultural research programs, with a portion having greenhouse gas emission benefits. Three such projects have been implemented to date.
- **Prairie Soil Carbon Balance Research Study:** Alberta is one of a number of partners supporting a multi-year research study to better understand soil carbon dynamics. The purpose of the study is to develop scientifically sound methods to assess changes in soil carbon based on management practices. The first phase of the project, focusing on management practices, is currently underway.
- **Calgary Landfill Design Project:** Alberta Environment is a partner with the City of Calgary and the University of Calgary in a project to study landfill designs for the control of landfill gas emissions (including methane). The \$50,000 project involves the building of two experimental landfill cells for studying lining/capping materials

for landfills.

- **Geological Sequestration of CO₂:** This three-year project, jointly funded by the Alberta government and the federal government under the Western Economic Partnership Agreement (WEPA), is assessing the suitability of Alberta's subsurface for CO₂ sequestration in one of the following ways:
 - use in enhanced oil recovery,
 - use in enhanced coal bed methane recovery,
 - storage in depleted oil and gas reservoirs,
 - injection and sequestration in deep saline formations, and
 - storage in salt caverns.
- **Alberta's Livestock Sector Study:** Alberta commissioned a study to assess the potential effects of expanding Alberta's livestock sector on air quality. The study looks at five potential growth scenarios. The study will make recommendations on management and facility development to mitigate environmental impacts.
- **Research on the Role of Forests in the Global Carbon Cycle:** The Alberta government funds the Foothills Model Forest and the Sustainable Forest Management Network to a combined total of \$2 million per annum. A portion of this funding supports research into the carbon dynamics of forests and other landscapes of the boreal forest. The Foothills Model Forest has compared the impact of wildfire disturbance and wood products manufacture on the sequestering of carbon.

3.3 Pollution Prevention

- Pollution prevention describes a concept that aims to eliminate the source of the pollution rather than managing the waste once it has been created. Alberta Environment has practiced pollution prevention informally for some time, and now recognizes that a more formal approach to pollution prevention is necessary. As such, the

department has begun doing feasibility work on the development of a formalized Pollution Prevention Program for the province.

3.4 Air Quality

- **Air Quality Monitoring:** Alberta Environment continuously monitors air quality continuously in Edmonton (3 stations), Calgary (3 stations), Fort Saskatchewan, and Beaverlodge. A new air quality station was opened in Red Deer in December 1999. The air quality parameters monitored include carbon monoxide, dust and smoke, nitrogen oxides, ozone, total hydrocarbons, hydrogen sulphide, sulphur dioxide, carbon dioxide, ammonia, and particulates. The Index of the Quality of the Air (IQUA) was calculated at Edmonton, Calgary, and Fort Saskatchewan stations. The concentrations are converted into air quality ratings of *Good, Fair, Poor, and Very Poor*.
In 1999:
 - good air quality was reported from 96 per cent to 100 per cent of the time at all monitoring stations
 - Poor air quality occurred for a combined total of 7 hours at all stations
 - Very poor air quality was not reported in 1999

3.5 Transportation

- **Dedication of Provincial Fuel Taxes:** In September 1999, Premier Ralph Klein announced that grants based on five cents per litre from fuel sold in Edmonton and Calgary will be provided directly to those cities for transportation infrastructure needs. This amounts to approximately \$85 million per year for Calgary and \$65 million per year for Edmonton.
- **Support for Fuel Efficiency Standards:** In July

1999, Clean Air Strategic Alliance (CASA) President Ken Smith, Deputy Minister of Alberta Resource Development, sent a letter to the Deputy Minister of Natural Resources Canada, outlining the provinces support for increasing vehicle fuel efficiency standards in Canada. The letter also identified the level of importance that Alberta places on ensuring that all stakeholders, which includes all levels of government, work together to identify creative and innovative ways to move forward on this issue.

3.6 Education, Training and Awareness

The Alberta government continues to improve education and awareness about climate change. Initiatives are aimed at government employees, general public, communities, other levels of government and industry. Some of the initiatives supported by the Alberta government include:

3.6.1 Government Employee Awareness

- **CO₂ Diet In-Reach Initiative:** The CO₂ Diet Program encourages government staff to take personal action to reduce greenhouse gas emissions at work and at home. The program involves educational sessions for staff in Alberta Environment, Alberta Resource Development and Environment Canada. Sessions include topics such as climate change science, policy and personal action. Speakers are brought in from government, industry and non-governmental organizations to give presentations to staff.

3.6.2 Public Education

- **School Curriculum:** The topics of greenhouse gases and climate change are addressed in compulsory social studies courses (grades 8 and 11) and in the secondary science courses (grades 7 to 12). As well, students learn about the greenhouse effect in the grade 5-science course that was introduced in 1996. Related topics also

are included in optional courses such as environmental and outdoor education (Grades 7-9) and in the natural resources and wildlife strands of Career and Technology Studies.

Current revisions to the *secondary science program* will provide increased emphasis on environmental studies at all grade levels (7 to 12), with particular emphasis on environmental change. Implementation of the revised science programs will begin in September 2001.

- **Destination Conservation (DC) School Retrofit Program:** Destination Conservation enrolls school jurisdictions in a retrofit program. Students, teachers and other school staff audit their school's energy consumption and develop plans to reduce consumption through retrofits and lifestyle changes. Students monitor the process.
- **Climate Changes:** Alberta Environment is a partner with FEESA, An Environmental Education Society, and Destination Conservation in the national education initiative, Climate Changes, developing educational resources on global climate change. These will be delivered through professional development workshops to science and social studies teachers in the Destination Conservation network and other education networks across Canada.
- **CASA Public Education and Outreach Initiative:** The CASA outreach project is an initiative to reduce greenhouse gas emissions in Canada. The project is being conducted in order to understand the barriers that inhibit Albertans from taking actions to reduce greenhouse gas emissions, as well as stimulate behaviour change that will result in reduced greenhouse gas emissions. The pilot, called **ClimateWise**, involves four Alberta communities. Once the pilot program has been developed, it will be assessed for potential implementation in other communities throughout Alberta. This project builds on current and planned national and provincial outreach programs.

- ***Engaging Small and Medium Sized Enterprises:*** Work is underway on the development of a program that will engage small and medium enterprises to take action on climate change in Alberta. The focus will be to demonstrate the business case for taking action on climate change, using a number of methods including case studies and success stories.

3.6.3 Communities and Municipalities

- ***Sustainable Communities Initiative (SCI):*** Alberta Environment and FEESA, an Environmental Education Society, are working through the Sustainable Communities Initiative to support local community efforts to achieve their visions of sustainability. SCI has helped communities develop and implement action plans on waste, green spaces, transportation, sustainable housing and other grassroots projects.
- ***Kikino Metis Settlement Pilot Initiative:*** The Kikino Metis Settlement in northeastern Alberta is the focus of a pilot project to identify greenhouse gas reduction opportunities and encourage action. The Alberta government and partners that include the Kikino Metis Settlement, TransCanada, Alberta Pacific Forest Industries Ltd., and the federal government are working together to help shape future community engagement initiatives in other Alberta communities.
- ***Rural Utilities Program:*** As part of the ongoing effort to expand access to utilities in rural communities, the Alberta government is partnering with three Metis Settlements to develop natural gas infrastructure. The natural gas will replace more carbon intensive fuels.

3.6.4 Farm Management Practices

- ***Alberta Environmentally Sustainable***

Agriculture (AESAs) Program: The Alberta Environmentally Sustainable Agriculture Program is funded at \$5 million a year by Alberta Agriculture, Food and Rural Development. This program is helping to develop and encourage farming practices that can lead to lower greenhouse gas emissions. The program has four components: farm-based, processing-based, resource monitoring, and research. It has encouraged research and adoption of reduced tillage and other management practices that have reduced fuel use and increased soil carbon storage. The program also supports research to find cost-effective ways to reduce greenhouse gas emissions from agriculture and agri-food business.

- ***Alberta Reduced Tillage Initiative (ARTI):*** Alberta participates and provides funding to a partnership of government, agri-business, producer associations and wildlife associations which promotes the benefits of reducing the amount and intensity of tillage. The greenhouse gas benefit is reduced fuel use and increased carbon storage in soil, which helps to reduce net greenhouse gas emissions.
- ***Farm Business Management Program:*** Alberta delivers the ongoing Farm Business Management Program, which focuses on improving financial and other business management skills. Production (nutrient) management is one component of the program that can provide greenhouse gas reduction benefits.
- ***Greenhouse Gas Awareness Project:*** The Alberta government is working with the Alberta Food Processors Association (AFPA) to accelerate the adoption of energy efficient practices through the Greenhouse Gas Awareness Project. The AFPA uses case studies to highlight leading-edge energy efficient activities.

4.0 VCR Workplan for 1999-2000

Current targets for year 2000 have been exceeded for the third year in a row. This will be the last progress report for actions related to the year-2000 target. The Alberta government will undertake to set post-2000 targets for its VCR program in fiscal year 2000-2001.

4.1 Ongoing Initiatives

- Work will continue with the current program to audit all 342 government buildings over 1000 square meters and follow up with cost-effective retrofits will. Retrofits will be delivered through energy performance contracts and through capital and maintenance budgets.
- Building managers will continue to use the Energy Consumption Recording System to compare their consumption with other buildings and take operating and maintenance actions if warranted.
- The expansion of relatively more fuel efficient leased vehicles in place of older less efficient owned vehicles will continue.
- The CO₂ Diet program will continue for government staff. Future activities being explored include the delivery of "Count Me In" sessions in large government facilities to engage staff in developing personal action plans for greenhouse gas reductions.

4.2 New Actions Being Considered

In addition to forging ahead with on-going initiatives, the Alberta government VCR executive group has outlined a variety of new initiatives that could, if implemented, account for a significant portion of the future Alberta government emission reductions. While many of the items are still at the feasibility stage, it is expected that many will be included in the post-2000

Action Plan being developed in 2000/2001. Examples include:

Buildings

- In addition to undertaking energy retrofits in government owned buildings, the Alberta government will be working to facilitate the retrofitting of government leased buildings. Work will soon commence on two government leased buildings, with more being assessed.

Transportation

- Opportunities around the leasing of vehicles that exhibit "best in class" fuel economy ratings
- Efforts to permanently retire the older, less efficient government vehicles
- Additional programs that emphasise driver education

Waste

- In order to better identify waste reduction opportunities, an effective method of waste tracking is required - the feasibility of such a system could be explored

Electricity

- Work will be done to explore the costs and feasibility of a green power purchase for a portion of Alberta government consumption.
- There will be a continuation of technology demonstrations in government facilities.

The Alberta government will also be participating in the VCR Inc. *Champions in Action* initiative. Combined with the on-going and new actions being considered listed above, this initiative, which puts additional rigour on climate change reporting, will feed into the preparation of the post-2000 Alberta government Action Plan.

5.0 Conclusion

The Alberta government is taking leadership by reducing its own greenhouse gas emissions. A target of 14.1 per cent reduction (74 kilotonnes CO₂ equivalent) from 1990 levels by the year 2000 has been established. Actions have been taken to meet, and exceed, this target.

In 1999/00, total emissions of CO₂ equivalent from all government operations decreased from 434 kilotonnes in 1998/99 to 422 kilotonnes of CO₂ equivalent in 1999/00, a 2.8 per cent reduction. These reductions exceed the target of 464 kilotonnes of CO₂ equivalent set for 1999/00.

The 1999/00 emissions of 422 kilotonnes of CO₂ equivalent are 19.8 per cent below 1990 levels. The reductions exceed our 1999/00 target and our overall target for 2000 of 452 kilotonnes of CO₂ equivalent by 30 kilotonnes of CO₂ equivalent. This is the third year in a row that Alberta has exceeded its targets for greenhouse gas reductions.

In summary, the targets set for 1999/00 have been surpassed. Over the year, greenhouse gas emissions have gone down 12 kilotonnes through actions such as energy efficiency initiatives and employee education programs. A cross-government team is implementing actions with support from senior executives. A baseline has been established, performance measures chosen, and targets set. Actions are showing results and these results will continue to be monitored, assessed and reported on in future progress reports. Targets will be revised and updated.

Alberta is committed to finding solutions to climate change and is taking a leadership role in the development of climate change responses both at the provincial and national levels.

(see *Appendix II* for a statement of Alberta's position on climate change)

6.0 Key Learnings

One of the underlying principles of the Alberta government's VCR Action Plan is that *what gets measured gets managed*. Through our commitment to the Voluntary Challenge and Registry Program, the Alberta government has been looking at ways to accurately track the contribution of greenhouse gas emissions arising from our own operations. Further, as part of his commitment, and of a larger one to environmental integrity, we have implemented measures that have contributed to the reduction of greenhouse gas emissions associated with our day-to-day business. This reduction is in excess of the year 2000 target that was set in 1995.

While our commitment to the VCR will continue with a post-2000 target, it is important to assess some of the learnings over the past five years, in part to recognize the areas of success, but also to identify the hurdles.

To-date, the largest contribution of emission reductions has come from energy retrofits in government buildings. Not only have these actions helped to meet our 2000 target, but they have also made economic sense. With an effective tracking mechanism for energy use, namely the consumption of electricity and natural gas, the process used to calculate building related emissions has been relatively simple and easily replicable.

While actions in government buildings will continue to account for a large portion of the emission reduction opportunities, a set number of buildings that could potentially be retrofitted remains. Alternative emission reduction opportunities will need to be sought under our post-2000 commitment. As part of this commitment, the Alberta government will also be looking at areas of government influence, including schools and hospitals, to identify emission reduction opportunities.

The second largest source of emissions, and in equal position for emission reductions is transportation. While efforts to reduce emissions by increasing the amount of new leased vehicle to replace older less efficient owned vehicles, coupled with education and awareness to improve driving habits, have been significant, an element of the transportation emission improvement can be attributed privatization. As a result of such business decisions, a disconnect has been created which has reduced the ability of the Alberta government to address the associated emissions.

In terms of emissions tracking, transportation has posed some significant challenges. In areas such as vehicle efficiency, and fuel consumption estimations using travel expense data, a variety of assumptions are made. However, improvements have been incorporated over the last few reporting years, and with the need for post-2000 reporting, efforts will be made to ensure that a replicable, transparent reporting structure exists. A large component of this effort will be hinged upon working with the Alberta Corporate Service Centre, which through the shared services initiative will be, among other things, involved in the department co-ordination of government vehicles.

Similar to transportation, the waste component of the Alberta government's VCR Action Plan offers tremendous potential, however, the ability to tap into this potential has been difficult. The bulk of this stems from the difficulties around waste tracking. While a strong commitment was made to accurately track waste in the past, subsequent reports have relied on estimations. The likely result is that past emission reductions experienced in this area have been underestimated.

In commencing with the preparation of a post-2000 Action Plan and target, the Alberta government VCR executive group has also encountered some challenges

associated with the potential implementation of emission reduction actions within existing government frameworks. One such example is government energy expenditures. The current framework may pose challenges for a potential green power purchase. For example, a green power purchase could involve an up-front premium over traditional energy costs, although it appears as though such a purchase could lead to cost-savings over the short- to medium-term, given current power pool prices. However, as green power purchases typically require a long-term arrangement compared to conventional electricity purchases, the overall premium versus cost-saving outcome is uncertain. The current energy expenditure framework may not be structured in a manner that effectively factors such uncertainties into the decision making process. The post-2000 commitment will involve the identification of such challenges, and more importantly, it will include efforts to have them addressed.

The Alberta government, by building on these key learnings, will not only continue its work to support the VCR program, but will also continue to reduce its impact on the environment through the reduction of greenhouse gas emissions arising from government operations.

***Appendix I* - GOVERNMENT OF ALBERTA NEWS RELEASE**

For Immediate Release: November 5, 1999

"Climate Change Central is a unique private-public partnership that will help us tackle a global concern with the know-how and creativity of Alberta's greatest natural resource - its people."

Ralph Klein, Premier

Premier leads Alberta government commitment to Climate Change Central

Edmonton - Building and maintaining effective partnerships with industry and community leaders will be a key goal of Climate Change Central, a new agency established by the Government of Alberta to continue the province's work in reducing greenhouse gas emissions.

Premier Ralph Klein announced a government commitment of \$2 million for each of the next three years for operational costs of Climate Change Central. The Premier also named Environment Minister Gary Mar as Chair, with a co-chair representing industry to be named shortly. The Premier will continue his leadership role in addressing climate change by serving as Executive Chair.

Vice-Chairs are Guy Boutilier, MLA Fort McMurray, and Elaine McCoy, Chair of the Alberta Economic Development Authority's Task Force on Climate Change. The two Vice-Chairs will bring continuity and extensive experience to the board. Boutilier and McCoy previously co-chaired the Climate Change Round Table and the Climate Change Central Steering Committee.

Government will work with the Alberta Economic Development Authority (AEDA) to seek candidates for the board who represent a broad range of perspectives.

"The board needs strategic thinkers - action-oriented opinion leaders who are committed and can work together as a team to tackle the issue of climate change," said Klein. "Alberta was the first province in Canada to take serious action on climate change. We want a board that can build on that leadership."

"Industry needs to be part of any decision-making process that affects how we do business and meet our communities' needs," said Doug Mitchell, Chair of AEDA. "I am pleased the Alberta government has responded with this proposal to share leadership with industry, business and other concerned stakeholders."

By the end of November, government and the AEDA will have a process for seeking nominations from scientific research communities, industry, municipal governments, and environmental and other non-government organizations. Among its first duties, the new board will review strategies previously proposed by the steering committee, and will prepare a business plan.

Climate Change Central is an Alberta solution to reduce greenhouse gas emissions. The initiative will develop strategic joint programs that focus on innovation, technology, education and public participation. For efficient program participation, Climate Change Central will operate out of both Calgary and Edmonton. While the Alberta government is providing ongoing operating funds, private sector and other partners are expected to contribute the majority of program and project resources, either in funding or in-kind support. Once established, the board will work with its partners to ensure program funding is in place.

In the weeks to come, Albertans will be able to learn more about this initiative and its progress by calling toll-free to 1-888-476-1554, or accessing the web site at [<http://www.climatechange.gov.ab.ca>].

***Appendix II* - STATEMENT OF ALBERTA'S POSITION ON CLIMATE CHANGE**

Alberta's record

Albertans want and enjoy clean air and water. Alberta prides itself in these areas, leading the country in our actions to protect the environment, from the Environmental Protection and Enhancement Act ... to the Clean Air Strategy ... to the Voluntary Challenge and Registry Program.

When it comes to greenhouse gas emissions, Alberta has always believed in the cautionary principle of taking prudent actions to minimize our impact on the environment. Alberta has always believed in doing our best to reduce greenhouse gases. That's why we are leading all other Canadian provinces in our efforts to reduce emissions. Alberta was ahead of the game when it signed on to the Voluntary Challenge and Registry Program. Our government is well ahead of its own 14 per cent emission reduction target, making us the best government in the country, and the third best organization overall in terms of reducing emissions. We have already reduced emissions by 10 per cent.

A fair solution for Albertans

We have heard talk about the national strategy for climate change. Let's not forget that Alberta players - Alberta's industry and environmental leaders - are key players in the national effort. Albertans have always been first to the plate when it comes to important national issues like this. And Alberta has been participating fully in the federal government tables on climate change.

Albertans and Alberta industry are committed to a solution - one that considers all provinces, all countries, all sectors as part of the solution. We must continue to hold the Prime Minister to his word when he told Premiers last year that there would be an equitable approach to a Canada-wide solution, one that does not place an unfair burden on one province or area.

The provinces and the people who live in the provinces play a key role in implementing greenhouse gas reduction strategies. Provinces need a role in developing an equitable and fair solution. A poorly designed solution could result in profound and unwarranted economic impacts on Canadians.

Alberta's Strategy

Alberta is committed to a long-term solution. We are committed to supporting technology and innovation in this province. We are committed to studying greenhouse gas emissions.

We are committed to helping businesses, individuals and governments take action to reduce emissions. We are committed to sustainable development. We are committed to educating the public.

Over the months to come, we will determine what resources are needed and how we can contribute to the Environmental Energy Advantage in this province. We want to continue to develop this strategy the way we always have - with our partners in Alberta.

We want to continue to be leaders and forge new ground in this area. By being on the leading edge, we can play a role in helping other provinces and other countries utilize the new technologies. We know there are many areas of the world which still use outdated technology. Although Alberta produces energy to meet world demand, we do not consume as much as many other jurisdictions. There may also be a role for Alberta to play in promoting better consumption practices around the world.

It's not a matter of a quick fix ... or an arbitrary target level. It's a matter of changing the way we view the environment in our homes and in our workplaces. Sustainable development is not simply a program but a way of life.

Alberta is not going to wait for action on the federal front. We are acting now.

We realize that global climate change is a real and serious issue - we are committed to cooperative action. We are committed to finding a solution. And over the coming months our government will be building partnerships. We will engage Albertans in promoting and developing best practices as well as educating the public and industry