



Incentives for Early Action on Climate Change

A Foundation Paper of the International Institute for Sustainable Development

PREFACE

This Foundation Paper has been prepared to contribute to the Canadian national process to address global climate change. The paper provides a review of the use of credit and banking to stimulate additional early action to reduce greenhouse gas emissions prior to 2008. As such, it is intended to be used by the National Air Issues Coordinating Committee as the basis of its decision recommendation to the Spring 1998 meeting of the Joint Ministers of Environment and Energy.

The [Kyoto Protocol](#) introduced new national targets to address the risk of global climate change. The Protocol, in its present form, represents a framework that is only the first step in a longer negotiation process. The outcomes of this process may differ from the current understanding of the Protocol. However, the Protocol's potential for binding targets does present a step-up in the intention of international community to pursue greenhouse gas reductions.

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ACKNOWLEDGEMENTS

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EXECUTIVE SUMMARY

This Foundation Paper has been prepared to contribute to the Canadian national process to address the risk of global climate change. The paper provides a review of the use of credit and banking to stimulate additional early action to reduce greenhouse gas emissions prior to 2008. As such, it is intended to be used by the National Air Issues Coordinating Committee as the basis of its decision recommendation to the Spring 1998 meeting of the Joint Ministers of Environment and Energy.

The Kyoto Protocol introduced new national targets to address the risk of global climate change. The Protocol in its present form represents a framework that is only the first step in a longer negotiation process. The outcomes of this process may differ from the current understanding of the Protocol. However, the Protocol's potential for binding targets does present a step-up in the intention of the international community to pursue greenhouse gas reductions.

The case for early action

“Early action” is greenhouse gas reduction action taking place after 1990 and prior to the 2008 to 2012 compliance period established by the Protocol. It includes activities during the pre-Kyoto period of 1990 to 1997 and the post-Kyoto period of 1998 to 2007. In the context of credit and banking, early action encompasses:

- actions by individual emitters to manage their own operational emissions;
- domestic offset projects;
- Joint Implementation (JI) projects involving Annex I (developed) countries; and
- action in the developing world under the Clean Development Mechanism (CDM) of the Protocol.

The use of incentives for early action will help smooth the transition to the national target and enhance Canada's capacity to meet the target during the compliance period. It will also allow the evolution of administrative structures as well as increasing Canada's experience in the voluntary approach to climate change.

Credit and banking

The focus of this paper is on credit and banking, since the lack of a clear policy signal by government on this incentive option has been identified as a major obstacle to companies moving greenhouse gas reduction projects from the planning stages into implementation.

Within a credit and banking framework, credits provide assurance to participants that the reductions can be registered and used against their potential future emission reduction obligations. Through banking, participants are allowed to accumulate multiple years of annual early emission reductions so as to contribute to meeting or exceeding any future obligations.

Canada can enhance the reduction contribution from the voluntary approach by introducing a credit and banking incentive. Such an approach will be attractive to both corporations with high energy costs and significant or increasing greenhouse gas emissions and to entrepreneurs seeking investments in innovative technologies. With the right signals, credit and banking can facilitate investment in:

- plant and equipment upgrades and capital stock turnover that reduces energy use and related greenhouse gas emissions; and
- offset projects that allow companies to reduce or sequester emissions outside their operations as part of their risk management strategies.

While substantial reductions can be encouraged through a credit and banking incentive, this approach cannot fulfill all of Canada's greenhouse gas reduction requirements under the Protocol. There will be an ongoing role for targeted traditional standards and regulations, where they have been shown to be effective.

Defining credit and banking

The lack of clarity around some key issues has been identified as an important barrier to the endorsement of crediting and banking in Canada. The following definitions, developed in consultation with various stakeholders groups, are intended to clarify the basic concepts of a credit and banking program for early action. Other definitions and issues will be addressed during the program design phase.

- What is a reduction? – To qualify as a greenhouse gas reduction, an action must result in the atmosphere experiencing a net reduction in greenhouse gas emissions. Actions can include reductions in greenhouse gas emissions and the removal of carbon from the atmosphere through sequestration. The reductions can occur within the participants' facilities or through offset projects outside their operations.
- How is a reduction measured? – A reduction is measured against a baseline. The baseline is determined by the emissions path that would have occurred in the absence of the early action.
- How does a reduction become a credit? – A reduction becomes a credit when i) the action has been implemented, ii) the action generates a reduction, and iii) the reduction has been verified.
- How can credit be used by an organization? – A credit can be:
 - used to ensure that the organization taking early action will not be penalized under a future regulatory regime;
 - accumulated on an annual basis (banked) and used against possible future compliance requirements; and
 - traded within a present or future emission trading system.

Approach to credit and banking

Some businesses have already demonstrated a willingness to voluntarily undertake actions to reduce greenhouse gas emissions. Government can further stimulate business in this direction by providing a credit and banking incentive. This involves two steps:

Step 1: credit for early action – Credit for early action allows companies the opportunity to register validated reduction actions for credit.

- *Advantages of credit for early action:* removes a barrier to action; does not constrain future regulatory options; and poses minimal costs to government.
- *Disadvantages:* while worthwhile, credit for early action is likely insufficient to achieve major growth in early actions resulting in emission reductions.

As such, this step represents the minimum credit incentive to encourage early action.

Step 2: banking of credit – Organizations achieving validated reductions during the early action period can receive the cumulative total of reduction credits up to 2007. These credits can be used to fulfill possible future reduction obligations or traded in an emissions trading system.

- *Advantages of banking of credit:* provides enhanced incentive to stimulate additional early action; promotes the creation of a market for greenhouse gas reductions; generates early experience in trading; and places domestic actions on the same footing as international actions.
- *Disadvantages:* may require the assignment of a portion of the compliance period budget for early actions; non-participants could face more stringent reduction targets during the compliance period; if poorly designed, poses risk of creating unforeseen loopholes; and may require greater infrastructure and support to implement program.

Credit for early greenhouse gas action has been part of the U.S. voluntary program since the mid-1990s. With this commitment, U.S. businesses have been encouraged to take early action and to incorporate greenhouse gas reductions in their decision-making.

Explicit assurance of credit and banking, as an incentive for early action, can achieve similar benefits in Canada and overcome barriers to further greenhouse gas reductions.

Recommendations:

It is recommended that:

- Government, at the earliest possible date, provide assurance of credit for early action so that participants in action are not disadvantaged in the future in relation to non-participants.
- Government state, at the earliest possible date, its firm support for banking of credits for early action and establish a stakeholder group (table) to develop a credit and banking system for Canada. This table should be responsible for completing the design of the system for implementation early in 1999.

2.0 THE CASE FOR EARLY ACTION

2.1 What is early action?

“Early action” is greenhouse gas reduction action taking place after 1990 and prior to the 2008 to 2012 compliance period established by the Kyoto Protocol. It includes activities during the pre-Kyoto period of 1990 to 1997 and the post-Kyoto period of 1998 to 2007. In the context of credit and banking, early action encompasses:

- actions by individual emitters to manage their own operational emissions;
- domestic offset projects;
- Joint Implementation (JI) projects involving Annex I (developed) countries; and
- actions in the developing world under the Clean Development Mechanism (CDM) of the Kyoto Protocol.

Action is not limited to activities having an immediate contribution to the net reduction of greenhouse gas emissions. It can also include future-oriented activities, such as the development of science and technology¹, techniques to measure and verify greenhouse gas reduction, initiatives to reduce transaction costs for project proponents, as well as educational and training programs.

2.2 Benefits of early action

Under the Protocol, Canada has the options of continuing with present initiatives until closer to 2008 or of stimulating additional earlier action. In developing its approach to greenhouse gas reduction, Canada should consider the implications of various approaches.

Delaying further action until closer to the compliance period deadline presents some downside implications:

- Environmental impacts – Greenhouse gases remain in the atmosphere for long periods of time. Because the Protocol’s compliance period does not begin until 2008, the atmosphere could potentially face 10 more years of higher greenhouse gas emissions, in the absence of early action.
- Economic dislocation – Current estimates project that Canada’s greenhouse gas emissions will be about 20 per cent above 1990 levels by the year 2010. Delaying effective action until the compliance deadline compresses the task of reducing greenhouse gas emissions into a shorter period and increases the risk of major economic and social disruptions.

¹ While not discussed in detail in this paper, the development and diffusion of climate-friendly technologies can provide a major leveraging of greenhouse gas emission reductions; this “multiplier effect” should be recognized in incentive policies.

Pursuing additional, low cost early actions can deliver some positive benefits:

- Environmental effectiveness – Early action helps to prevent the buildup of greenhouse gases in the atmosphere.
- Reduced economic impact – Prudent early action provides a smoother transition to the national target and enhances Canada’s capacity to meet the target during the compliance period. Innovative and cost-effective approaches in the near term minimize Canada’s exposure to potentially high cost greenhouse gas reductions in the future and lower the overall costs of compliance. In addition, early action can help to facilitate a staged approach to implementing infrastructure requirements.
- Conference of Parties requirements – Early action supports a commitment by Annex I countries, including Canada, to submit reports in 2005 that demonstrate significant progress toward national targets.
- Continued voluntary approach – Canada’s Voluntary Challenge and Registry (VCR) program has already achieved some progress toward reducing greenhouse gas emissions. Incentives for early actions can enhance the effectiveness of Canada’s VCR program.
- Risk management – Effective expanded voluntary initiatives allow Canada flexibility in adapting to international policy initiatives. They also help to minimize the exposure of business operations and expansion to potential environment-related trade barriers.
- Business decision-making – By shifting the focus to early action, business has an incentive for earlier incorporation of climate change considerations into the decision-making process. This shift will promote improved efficiency of existing industrial processes and stimulate new technologies that provide greenhouse gas benefits and maintain competitiveness.
- Learning – Addressing climate change involves an additional aspect of doing business. Early action increases understanding and appreciation of the possibilities and opportunities for action, enhancing Canada’s capacity to meet its international greenhouse gas commitment more cost-effectively.

2.3 Range of incentives for early action

Canada can use incentives for early voluntary action to complement other approaches, such as targeted regulation and standards that contribute to achieving the national target. To be effective in stimulating early action, incentives must provide value to potential participants. The value of incentives can range from non-financial (e.g., recognition, government cooperation) to contingent financial (e.g., credit and banking) to explicit financial (e.g., financial assistance). These five types of incentives are described below:

- Recognition – Recognition provides a non-financial incentive for greenhouse gas reductions through favorable publicity for actions taken. Canada’s VCR program uses government recognition of participants as its primary incentive for greenhouse gas action.
- Government cooperation – Government can cooperate with organizations to facilitate project development and lower transaction costs.
- Credit – Credit provides companies and organizations with value for taking early action. While a credit does not confer an immediate financial benefit for early greenhouse gas reductions, it creates potential future value to its owner. This value is based on assurance that the credited and registered reductions from early actions will count against potential future reduction obligations. Accreditation of early actions also ensures that those who act early are not disadvantaged (penalized) in relation to those who act later. Credit for early action is, therefore, an important means of managing the risks associated with climate change.
- Banking – Banking of credits allows participants to accumulate annual early emission reductions over multiple years. Participants can use accumulated credits to meet or exceed any potential future emission reduction obligations or for trading or sale in an emission reduction market.
- Financial assistance – Government can provide direct financial benefits that lower project costs, increase the earning power of projects and encourage early climate change action. Examples include direct financial assistance, rapid write-off of investments and flow-through of tax benefits to investors.

This Foundation Paper focuses on the credit and banking incentive, since the lack of a clear policy signal on this incentive option is recognized as a major obstacle to moving greenhouse gas reduction projects from the planning stages into implementation.

2.4 Credit and banking and Canada’s national target

Since the inception of the Voluntary Challenge and Registry program in 1995, VCR participants have been reporting their progress annually.

Canada can augment the reduction contribution from the voluntary approach by introducing a credit and banking incentive. Such an incentive will be attractive to corporations with high energy costs and significant or increasing greenhouse gas emissions, companies which can achieve significant greenhouse gas reductions through efficiency improvements or process changes, and to entrepreneurs seeking investments in innovative technologies. With the right signals, a credit and banking incentive can facilitate investment in:

- plant and equipment upgrades and capital stock turnover that reduces energy use and related greenhouse gas emissions; and

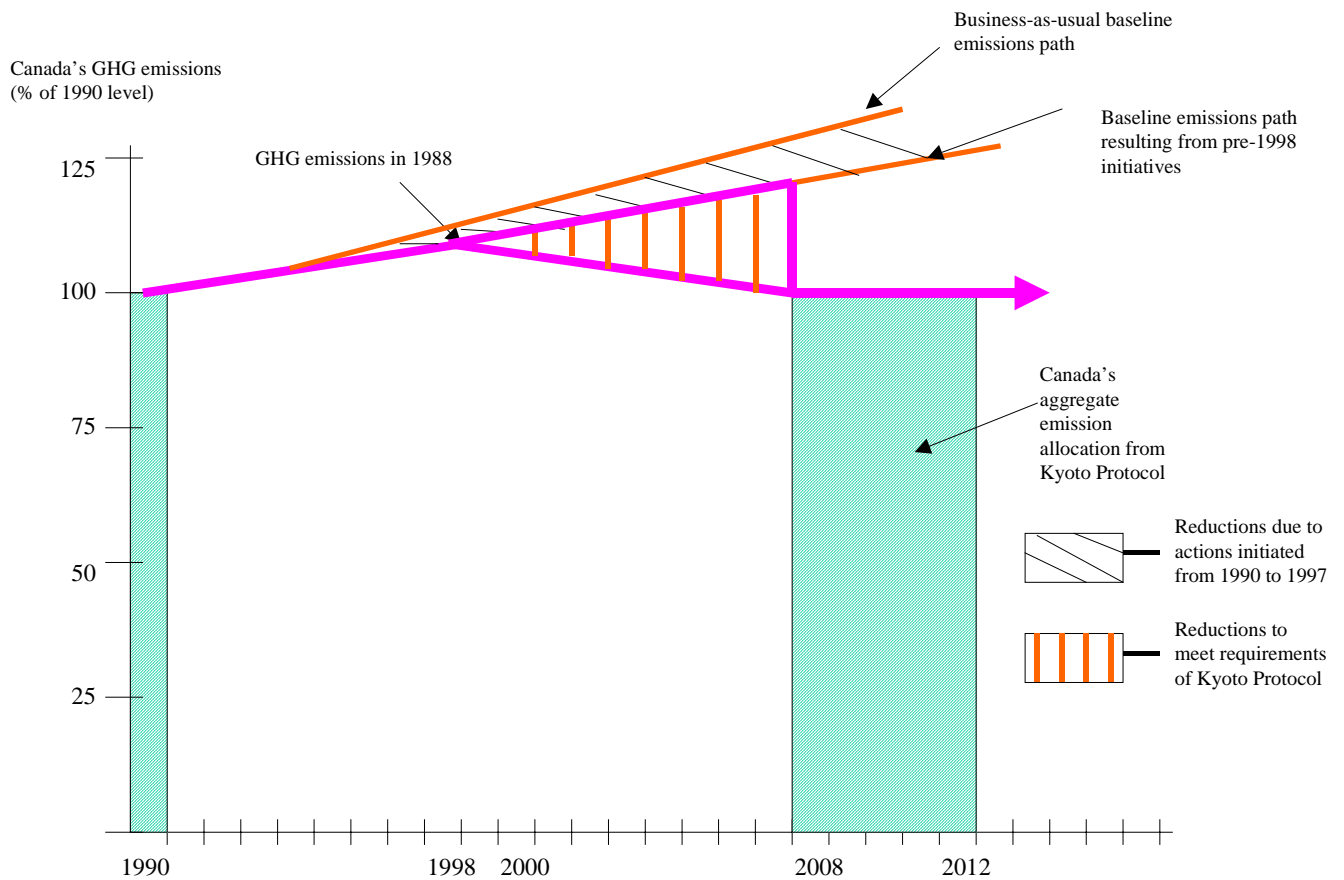
- offset projects that allow companies to reduce or sequester emissions outside their operations as part of their risk management strategies.

While substantial reductions can be achieved through credit and banking, this approach cannot fulfil all of Canada’s greenhouse gas reduction requirements under the Protocol.

There will be an ongoing role for targeted traditional standards and regulations, where they have been shown to be effective. In the past, they have been used to improve the energy efficiency of vehicles, buildings and domestic appliances.

Figure 1 illustrates the contributions of these different approaches.

Figure 1: Benefits to the atmosphere from taking early action



The chart illustrates two alternative emissions pathways for Canada. One pathway requires an immediate change from emissions growth to a steady decline in emissions from 1998 to 2008. The other pathway postpones actions to reduce emissions until 2008 and then assumes an immediate reduction to the level of the Kyoto target. The area of the enclosed triangle represents the difference in the two pathways in terms of the accumulated greenhouse gases in the atmosphere.

3.0 DEVELOPMENTS IN CREDIT AND BANKING

3.1 Growing support for credit and banking

Over the last several years, the concept of credit and banking has attracted increasing attention in Canada, the United States and elsewhere.

The United States has supported credit and banking since the introduction of its voluntary climate challenge program in the early 1990s. While many of the reductions registered in this program will not meet more stringent requirements in the future, the U.S. Energy Policy Act of 1992 allows credit for a portion of the reductions registered under [1605\(b\)](#), the U.S. Department of Energy's voluntary reporting protocol. With this commitment to credit, U.S. companies can act with assurance and incorporate the value of such greenhouse gas reductions in their decision-making.

Cumulative credit for early action is supported publicly by the U.S. administration. In his October 1997 speech on global climate change, President Clinton said, "We must urge companies to take early action to reduce emissions by ensuring that they receive appropriate credit for showing the way." This statement continued and reinforced the administration's past commitment to credit for early action.

In addition, organizations such as the [Environmental Defense Fund](#) and the Centre for Clean Air Policy have proposed frameworks for credit and banking (see section 3.2, "Models for action").

Until recently, Canadian government leaders and others expressed interest in credit but have not provided clear policy signals on this issue. However, at the November 1997 meeting of the Joint Ministers of Environment and Energy, it was acknowledged that increased recognition and credit would be necessary to promote further greenhouse gas reductions.

Because they recognize the potential opportunities associated with greenhouse gas offsets and emission reduction trading, several Canadian organizations have actively promoted crediting and banking. These organizations include the [Canadian Energy Research Institute](#) (CERI), the Greenhouse Emissions Management Consortium (GEMCo), the [Canadian Electricity Association's](#) Climate Change Steering Group as well as a number of individual companies. In addition, two pilot emission trading projects are under way – the Greenhouse Gas Emission Reduction Trading (GERT) Pilot led by British Columbia and the Pilot Emissions Reduction Trading (PERT) Project in Ontario. Both projects include credit and banking as fundamental elements of their programs.

3.2 Models for action

In designing a credit and banking system, Canada can draw from the experience of U.S. and Canadian models for action.

The U.S. models offer possible approaches related to the framework and parameters for a credit and banking program. The Environmental Defense Fund and the Centre for Clean Air Policy have proposed frameworks for credit and banking. Under these frameworks:

- participation is voluntary;
- each program establishes a form of targeting for the period 1998 to 2007 (For greenhouse gas reductions below the specified level, businesses receive reduction credits that can be applied against post-2008 obligations.); and
- the credits awarded in the early period may be limited and subtracted from the total national emissions budget allowed under the Protocol's compliance period.

For a more detailed description, see appendix 8.3.

The Canadian models of PERT and GERT focus on emission reduction trading. However, these programs will provide valuable experience in the practical aspects of program design and implementation. For example, the GERT project, a voluntary early action initiative led by British Columbia, is intended to:

- provide participants with practical experience in emission reduction trading;
- assess environmental and economic benefits of trading;
- test and evaluate the technical, administrative and legal elements of a trading system;
- maximize involvement of the private sector by emphasizing the use of business principles to achieve environmental and economic objectives;
- encourage identification and joint investment in greenhouse gas reduction and sequestration activities; and
- help to build the foundation for a possible future trading system.

The GERT and PERT projects will provide guidelines and experience for future cooperation and agreement required between industry participants and different levels of government.

For a more detailed description, see appendix 8.4.

3.3 Status of early actions related to the Protocol

Currently, the results of early actions are specifically recognized as contributing to the Protocol only in the case of the CDM. The CDM program states: "qualifying reductions occurring in the period 2000 to 2007 can be used by an Annex I country to meet a portion of its obligations under the first compliance period (2008 to 2012)." Numerous rules and standards, which have yet to be established in negotiations starting in mid-1998, will have to be met for an emissions reduction to be certified as a CDM action.

Under the Protocol, JI is described as allowing "Annex 1 countries to transfer or acquire emission reductions to help meet their reduction obligations." It is unclear if JI actions

occurring before 2008 to 2012 will count against greenhouse gas obligations during the compliance period.

To expand the options for greenhouse gas reductions, Canada and other developed countries must encourage and reward early actions within their domestic policy frameworks.

The current status of credit and banking is shown in Figure 2.

Figure 2: Current status of credit and banking

Actions	Current Status of Incentives		Effective for Risk Mgm't Strategy	Trading	Policy Domain
	Credit	Banking			
Emission reductions within own facilities and domestic offsets	Under discussion	Under discussion	Possibly	Early pilot phase	Domestic national policy
Annex I JI offsets	Unclear	Unclear	Possibly	Under discussion	"Umbrella" group (1)
CDM offsets	Potentially	Potentially	Potentially	Under negotiation	COP process

(1) The umbrella group of countries includes Japan, U.S., Canada, Australia, New Zealand with Russia, Poland, Hungary and Ukraine.

4.0 DEFINING CREDIT AND BANKING

The lack of clarity around some key issues has been identified as an important barrier to the endorsement of crediting and banking in Canada. The following definitions, developed in consultation with various stakeholders groups, help to clarify the basic concepts of a credit and banking program for early action. Other definitions and issues will be addressed during the program design phase.

- What is a reduction? – To qualify as a greenhouse gas reduction, an action must result in the atmosphere experiencing a net reduction in greenhouse gas emissions. Actions can include reductions in greenhouse gas emissions and the removal of carbon from the atmosphere through sequestration. The reductions can occur within the participants' facilities or through offset projects outside their operations.
- How is a reduction measured? – A reduction is measured against a baseline. The baseline is determined by the emissions path that would have occurred in the absence of the early action.
- How does a reduction become a credit? – A reduction becomes a credit when i) the action has been implemented, ii) the action generates a reduction, and iii) the reduction has been verified.
- How can credit be used by an organization? – A credit can be:
 - used to ensure that the organization taking early action will not be penalized under a future regulatory regime;
 - accumulated on an annual basis (banked) and used against possible future compliance requirements; and
 - traded within a present or future emission trading system.

5.0 CREDIT AND BANKING – STEPS FOR CANADA

Some businesses have already demonstrated a willingness to voluntarily undertake actions to reduce greenhouse gas emissions. Government can further stimulate business in this direction by providing a credit and banking incentive. This involves two steps:

Step 1: credit for early action – Credit for early action allows companies the opportunity to register validated reduction actions for credit. Under a possible future regulatory regime, the credit could be used to either:

- be added back into the company’s emissions level at that time, to ensure equitable allocation of allowances between those who have taken early action and others; or
- count against a tax liability, in the case of a charge.

In either situation, participants would not be disadvantaged with respect to non-participants for having taken early action.

The risk of being disadvantaged -- or “penalized” -- for taking early action has been identified as a barrier by organizations wishing to move beyond “no regrets” measures. Some companies will not consider additional greenhouse gas action unless they receive assurance that such action is eligible for credit. In other cases, assurance can increase the earning power of projects that provide climate change benefits and facilitate the development of more projects. According to the Greenhouse Emissions Management Consortium (GEMCo), assurance of credit would unleash \$7 million or more in greenhouse gas offset projects by Canadian companies.

- *Advantages of credit for early action:*
 - removes a barrier to action;
 - does not constrain future regulatory options; and
 - poses minimal costs to government.
- *Disadvantages:* while worthwhile, credit for early action is likely insufficient to achieve major growth in early actions resulting in emissions reductions.

As such, this step represents the minimum credit incentive to encourage early action.

Step 2: banking of credit – This step builds on Step 1 by providing an additional incentive – credits for greenhouse gas reductions can be banked. Organizations achieving reductions during the early action period can accumulate annual reduction credits up to 2007. These accumulated credits can be used to fulfil possible future reduction obligations or traded in an emissions trading system. A credit and banking incentive offers the potential of stimulating a significant increase in the volume of early emissions reduction actions.

- *Advantages of banking of credit:*
 - provides enhanced incentive to stimulate additional early action (because annual credits are accumulated, the earlier the action takes place, the greater the number of years for a stream of reductions to be generated and banked);
 - places the domestic actions of participants on the same footing as international actions;
 - can promote the creation of a market for greenhouse gas reductions and generate early experience in trading; and
 - creates action while administrative procedures evolve.

If a credit and banking system is based on a reduced national budget during the compliance period, non-participants would face a tougher target at that time. This would provide an additional reason for organizations to take early action.

- *Disadvantages:*
 - the assignment of a portion of the compliance period budget to credit early action would increase reduction targets for non-participants during the compliance period. For example, by setting aside 5 per cent from the national budget, non-participants would be required to achieve the additional 5 per cent of greenhouse gas reductions in the 2008 to 2012 period. This zero sum game could prove onerous for emitters not participating in early action;
 - if the banking of credit is poorly designed, there is the risk of creating unforeseen loopholes, at least temporarily; and
 - may require greater infrastructure and support to implement program.

5.1 Cost implications of credit and banking

A major attraction of a credit and banking incentive policy is its low cost. Since the 1992 Rio Summit, government has been reluctant to provide direct financial assistance or other costly program incentives for greenhouse gas reduction. This situation, combined with public expectations and the need to maintain competitiveness, has stimulated the business sector to seek out cost-effective, no-regrets solutions. In some cases, the motivation for private sector initiatives has included the opportunity to protect against potential future reduction requirements and the potential future value of credits in a trading system.

In the case of a credit and banking incentive program, the financial implications of early action to government are limited to the cost of designing and administering the program. Such costs could be reduced if the participants finance validation and any third-party verification of reductions.

An ongoing concern for government is that it may incur a future financial liability as a result of a credit and banking system. Credits, as defined under the proposed program, are created to satisfy possible future regulatory obligations, to offset tax liabilities in the event of a charge or to qualify for allowances within a cap and trading system. In the event that a future regulatory system does not emerge or a future market does not

develop, the credits will have no value, and there will be no financial liability for government.

The addition of the banking provision will not result in significantly different costs, since the credits made available under this option will likely be taken from the 2008 to 2012 allowance period, due to the international obligations under the Protocol. Under a credit and banking system, the volume of emission reduction projects and trading would increase. However, government responsibilities would still be limited to the cost of administration.

Finally, the gradual scale-up of activities over 1998 to 2007 would permit the evolution and refinement of administrative procedures, leading to potential cost savings over the longer term.

6.0 IMPLEMENTATION OF CREDIT AND BANKING

The implementation of a credit and banking system incentive program requires careful consideration of design, process and supporting infrastructure requirements.

6.1 Design considerations

- Targets – Targets can range from soft (self-established voluntary targets) to medium (negotiated targets) to hard (externally imposed enforceable targets). In designing a credit and banking system, Canada can build an evolutionary approach to the use of targets. In the United States, proponents of a credit and banking system with reduction trading are recommending the initial use of soft targets with credit for early action. This approach to early action is expected to evolve toward a hard target with allocations within a future cap and trade system for the 2008 to 2012 period. This phased approach could also be attractive to Canada. The later establishment of harder targets would involve the allocation of reduction responsibilities to organizations, sectors or regions – a process likely resulting in a lengthy period of negotiation.
- Activities eligible for credit – In determining activities eligible for credit, two possible approaches can be considered:

Specific list of activities – Activities eligible for the incentive would be restricted to a pre-determined list of early actions with defined requirements and approvals. This approach simplifies monitoring and verification procedures required to demonstrate reductions, reducing transaction costs and time. While encouraging activities within this list, this approach could rule out significant opportunities for innovative and other cost-effective early actions.

Open list of activities – This approach leaves the range of actions for incentive open to participants. To be eligible for credit, the project proponent must demonstrate a real and verifiable reduction.

In the United States, the Centre for Clean Air Policy is discussing the advantage of using both approaches, each with a capped amount of credits available for eligibility.

- Time periods – Early action begins in 1990, the base year, and extends to 2007.

For the period 1990 to 1997, organizations should be recognized and credited for reductions, if these actions fulfil the validation criteria. The 1998 to 2007 period could be viewed as a single 10-year period or as a series of shorter time periods. The most likely arrangement would be two five-year periods -- 1998 to 2002 and 2003 to 2007 – or three periods – 1998 to 2001, 2002 to 2004 and 2005 to 2007. The pros and cons of these two approaches are as follows:

- *Single time period (1998 to 2007) --*

One advantage of a single time period would be its simplicity of administration. Program parameters and infrastructure requirements would be researched and refined prior to implementation; participating organizations would have rules in place for a significant period of time.

However, having all features “correct” and in place could delay program startup and some of the benefits of early action would be lost. Equally important, there is no guarantee that this approach will eliminate program design and flaws.

- *Multiple time periods –*

A credit and banking program using two or three time periods would be initiated with the key basic rules and design features in place. Experience gained in each time period would be used to evolve and modify program in subsequent periods.

Such an approach provides the following benefits:

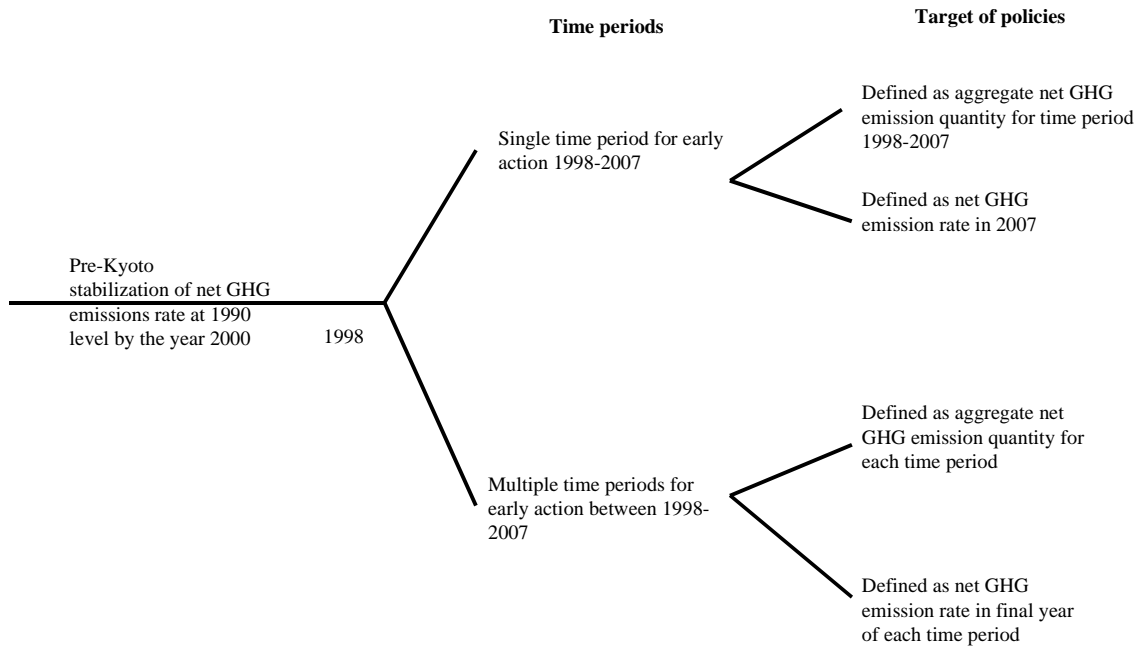
- Reduction actions could be initiated earlier in the 1998 to 2007 time period.
- Opportunities would be available to modify and upgrade rules and administrative procedures based on actual experience.
- New information and progress reporting would be accommodated over time.
- Companies could gain experience in banking and applying credit from one period to another.
- Risks to government associated with potential loopholes would be minimized.

The disadvantages or challenges of multiple time periods are:

- Government and participants must accept some risk-taking and uncertainty with rules and procedures subject to potential change.
- Government must be prepared to move quickly to initiate the program and make appropriate changes.

The choices as to time periods and target of policies are illustrated in Figure 3.

Figure 3: Time periods and policy targets



The target for policies could be for specific emission rate reductions or for total allowable emissions for a time period.

- Credit for early action during 2008 to 2012

One option is to negotiate an increased budget allocation of greenhouse gas emissions by increasing the 2008 to 2012 aggregate emissions allowance. Currently, domestic greenhouse gas reductions are disadvantaged with respect to CDM actions and, possibly, Annex I JI offsets, since the Protocol does not recognize credit and banking for domestic early actions. The Canadian international negotiating team could strive to correct this situation through the COP process and have all greenhouse gas actions treated equitably.

A second option is to operate within the existing allocation of greenhouse gas emissions. To implement this option, the United States is considering taking 5 per cent of the compliance period aggregate allowance to provide credit for early actions. An option under discussion is to allocate 1 per cent to pre-1998 actions with the remaining 4 percent divided between specific listed activities and the open category. This would limit the total volume of early action credits as well as determine, to some extent, the type of reductions achieved.

A third option would be to acquire CDM and Annex I JI credits to increase the national compliance period allowance and provide for early domestic credits. This acquisition could eliminate the need to set aside a portion of Canada's aggregate emission allowance from 2008 to 2012 to support credit and banking under the incentive for early action program.

- Early action for credit – Several proposals, currently under development, would restrict credit to specific situations. For example, credit could be made available only if a reduction is below a specific level, determined in relation to the Protocol target, or if it exceeds an organization’s need to meet a possible future reduction obligation. Another approach is to provide equal treatment for reductions of equal atmospheric impact, independent of the organization’s emissions path. In the latter case, the credit owner determines how the credit would be used (i.e., for trading or to meet possible future reduction obligations). Further discussion and development are required for the definition of early actions eligible for credit and of the conditions of such eligibility including resolution of the scope of any additionality condition. To promote early action, Canada should consider a phased approach, starting with a project baseline reduction credit and evolving to a different approach over time.

6.2 Process requirements

A number of processes are required to facilitate the implementation of credit as an incentive for early action. They include:

- Validation of reductions – This process involves accreditation of project- or initiative-related reductions. Validation will be required to be based on demonstration of permanent net emission reductions, common defined validation criteria and the opportunity for third-party verification. The ability to measure and verify emission reductions will be necessary to establish the credibility of early action with many stakeholders, including governments, environmental organizations, the public and competitors. Transaction costs associated with validation could present a barrier to action. Care will be required to balance these costs with the need for adequate rigor for credibility. As discussed under design considerations, the use of a specific list of activities with defined requirements and pre-approval may lower the cost of the validation process. In other cases, action-specific techniques may be required. Care must be taken to ensure that the reductions produce the claimed net environmental benefits and that “leakage” does not occur.
- Ownership– This process involves ensuring valid sharing of the ownership of the credited reduction. Ownership is defined contractually among parties, and ownership disputes are resolved through a civil arbitration process. Contracting parties must demonstrate that they have the right to contract for the ownership of the reduction. In cases involving the direct reduction of emissions, the establishment of ownership will normally be quite straightforward. For indirect emissions reductions, such as energy efficiency improvements within customer operations, ownership may be more difficult to demonstrate. It will be important to address the calculation and ownership of reductions from low- or non-emitting energy production processes with appropriate treatment of hydroelectric, cogeneration, nuclear, solar, wind and biomass generation sources.

- Transactions – This process involves recording that requirements are met. The eligibility to trade depends on the adoption of defined reporting standards. Information is recorded in a central transaction database. Responsibility for the database and registry could be included in an enhanced VCR office mandate.

6.3 Supporting infrastructure

In addition to design considerations and process requirements, a number of infrastructure elements are needed to implement the credit and banking incentive. These elements have been the subject of significant discussion and debate internationally and in Canada in forums such as GEMCo, PERT and GERT. The following describes five key requirements for supporting infrastructure:

- Measurement protocols

These include standard measurement approaches and tools, which must be developed and agreed upon.

- Baseline approaches (see also “Activities eligible for credit” in section 6.1)

Baselines or emission paths can be defined by an entity, a site or a project. The baseline describes the emission path from which a reduction is measured. In the absence of emitter-specific reduction obligations, the project baseline approach offers the advantage of simplicity by demonstrating a reduction in greenhouse gas emissions as a result of an early action. The project baseline would be defined and approved as part of the validation process.

Currently, there is no broadly accepted method for calculating an entity baseline which would describe emissions since 1990 and would provide a forecast of the future emissions path. Such a baseline will take time to develop and implement, as better forecasting methodologies of business-as-usual situations evolve and gain broader acceptance.

- Registry (enhanced VCR office mandate)

A credible registry will be required for the effective implementation of a credit and banking incentive program. While this registry can be established in several ways, the VCR office should be given an opportunity to contribute to the establishment of the registry. The VCR office could operate the registry or contract its operation to a third-party service provider. Canadian and U.S. experience can provide a basis for developing registry standards. A VCR-supported registry would enhance the current VCR program and ensure that:

- entity baselines are defined and approved;
- a central registry is established for transactions; and
- a national emissions reporting database with defined standards is introduced.

- Auditing

Auditing includes defined standards and procedures as well as related training and qualification of auditors.

To ensure credibility, the emission reduction credit and banking system should be auditable, defining when audits will be required for the registry, for participating entities and for credited reductions. The experience of financial institutions can guide the resolution of these issues.

- Reporting

Reporting will involve the use of defined standards and will cover performance at the levels of entities and projects.

Currently, the VCR does not provide detailed reporting standards to participants submitting annual greenhouse gas progress reports. As a result, the quality of the reports submitted varies significantly.

It is now recognized that, without reporting requirements and standards, participants will find it increasingly difficult to demonstrate real performance improvements. While a more informal approach to reporting was appropriate for the VCR in its initial stages, organizations wishing to pursue credit and banking for early actions will have to satisfy the rigor of appropriate reporting requirements. Assurance of credit and banking provides the incentive for participants to use the registry and its standards to report their early actions.

6.4 Issues and concerns

A number of issues and concerns have been identified which must be addressed during the design of the credit and banking incentive system. They include:

Issue or concern	Comments
1. Constraints on future government policies	A credit and banking incentive advances early reduction actions and does not constrain future government policies.
2. Financial obligation of government for banked credits	No financial obligation is created for government as a result of credit and banking.
3. Potential double counting of credits	Double counting must be dealt with in the design of the system.

4. Use of credits by industry for economic gaming (taking advantage of the system)	If the system design includes a phased approach (with opportunities to evolve rules between successive periods), gaming activities will be identified and corrected, as in other markets.
5. Confusion in the definition for credit and banking	This concern can be met by the clarity of the basic concepts and definitions of credit and banking.
6. Ability to count credited actions against international obligations	Resolution of this issue will be an important responsibility of Canadian negotiators involved in the COP process. They will need to work closely with allies such as the United States to develop international support for the use of Annex I JI offsets for credit during the 2008 to 2012 period.

6.5 Assessing system effectiveness

The following criteria have been developed to facilitate decision-making related to the design of the credit and banking system. These criteria can be used to assess the impact of various options in this paper and to evaluate the overall effectiveness of the system design as an incentive for early action on climate change.

The effectiveness of the credit and banking incentive program will depend on its ability to:

- stimulate effective, significant and timely reductions;
- promote innovation and creativity;
- minimize conflict and address issues and concerns;
- respond and adapt effectively to change;
- allow harmonization with evolving international criteria; and
- permit efficient administration.

6.6 Approach and schedule

The recommended approach to developing the details of a credit and banking system for Canada will involve the following steps:

1. further development of design considerations, process requirements and supporting infrastructure to more fully explore issues and options;

2. consultation with experts in Canada, the United States and elsewhere for review and input;
3. design of the recommended Canadian credit and banking incentive program;
4. regional discussions and workshops to engage stakeholders for review and input on the proposed credit and banking system;
5. completion of a recommended design, and presentation of this design to government; and
6. ongoing advice from experts on system implementation.

If initiated in May 1998, these steps could be completed by the end of 1998. The following key stakeholders should continue to be involved in developing the required details of the credit and banking system:

- government – federal and provincial governments;
- early action participants – GEMCo and individual companies;
- infrastructure representatives – VCR office;
- environmental organizations – Pembina Institute for Appropriate Development, Pollution Probe and the Sierra Club of Canada;
- representatives of emission reduction trading pilot projects – GERT and PERT;
- developers of domestic and international offset projects – currently active organizations.

7.0 RECOMMENDATIONS

This Foundation Paper has been prepared to contribute to the Canadian national process to address global climate change. The paper provides a review of the use of credit and banking to stimulate additional early action to reduce greenhouse gas emissions prior to 2008. As such, it is intended to be used by the National Air Issues Coordinating Committee as the basis of its decision recommendation to the spring 1998 meeting of the Joint Ministers of Environment and Energy.

Credit for early greenhouse gas action has been part of the U.S. voluntary program since the early 1990s. As a result, U.S. businesses have been encouraged to take early action and to incorporate greenhouse gas reductions in their decision-making.

Early actions include verifiable net emission reductions both within a participant's facilities and as a result of domestic and international offset projects. Reduction of greenhouse gas emissions and the absorption and sequestration of greenhouse gases from the atmosphere each make a contribution to meeting Canada's national obligation under the Kyoto Protocol.

Explicit assurance of credit and banking, as an incentive for early action, can achieve benefits in Canada and overcome a serious current barrier to further voluntary greenhouse gas reductions.

It is on this basis that the following is recommended:

- Government, at the earliest possible date, provide assurance of credit for early action so that participants are not disadvantaged in the future in relation to non-participants.
- Government state, at the earliest possible date, its firm support for banking of credits for early action and establish a stakeholder group (table) to develop a credit and banking system for Canada. This table should be responsible for completing the design of the system for implementation early in 1999, as outlined in section 6.

8.0 APPENDIX

8.1 Glossary of terms

Annex I Countries – Includes developed countries and some countries from central and eastern Europe and the Commonwealth of Independent States that are undergoing the process of transition to a market economy.

Banking –Through banking, participants are allowed to accumulate multiple years of annual early reductions of greenhouse gas emissions in order that they contribute to meeting or exceeding any future reduction obligations. Banking is an incentive for early greenhouse gas action.

Baseline –The baseline describes the emission path from which a reduction is measured. Baselines can be defined by an entity, a site or a project.

Clean Development Mechanism (CDM) – International offsets developed between Annex I (developed) and non-Annex I (developing) countries.

Compliance period – The years 2008 to 2012, as defined by the Kyoto Protocol.

Credit – Credit is the result of the registry and validation of an action resulting in a climate change benefit to the atmosphere. Credit provides the means for organizations to derive benefit from early climate change action. It creates contingent financial value to the owner of an accredited emission reduction. This value is based on the assurance that the registered reduction from early action will count against potential future reduction obligations.

Cumulative reductions – The sum of annual reductions added over a period of years.

Early action – Actions carried out after 1990 and prior to the 2008 to 2012 compliance period of the Kyoto Protocol. The range of actions includes activities by individual emitters to manage their own operational emissions, domestic offset project, joint implementation projects involving Annex I countries, and initiatives in the developing world under the Clean Development Mechanism (CDM).

Joint implementation (JI) – International greenhouse gas offset action carried out between Annex I (developed) countries.

Net – The overall effect of an action or project on the earth's atmospheric concentrations of greenhouse gases.

Offsets – Actions to reduce greenhouse gases carried out by an organization outside its operations, domestically or internationally.

Reduction – The result of an early action whereby the atmosphere experiences a net reduction in greenhouse gas emissions. Early actions include reductions in greenhouse gas emissions and the removal of carbon from the atmosphere through sequestration.

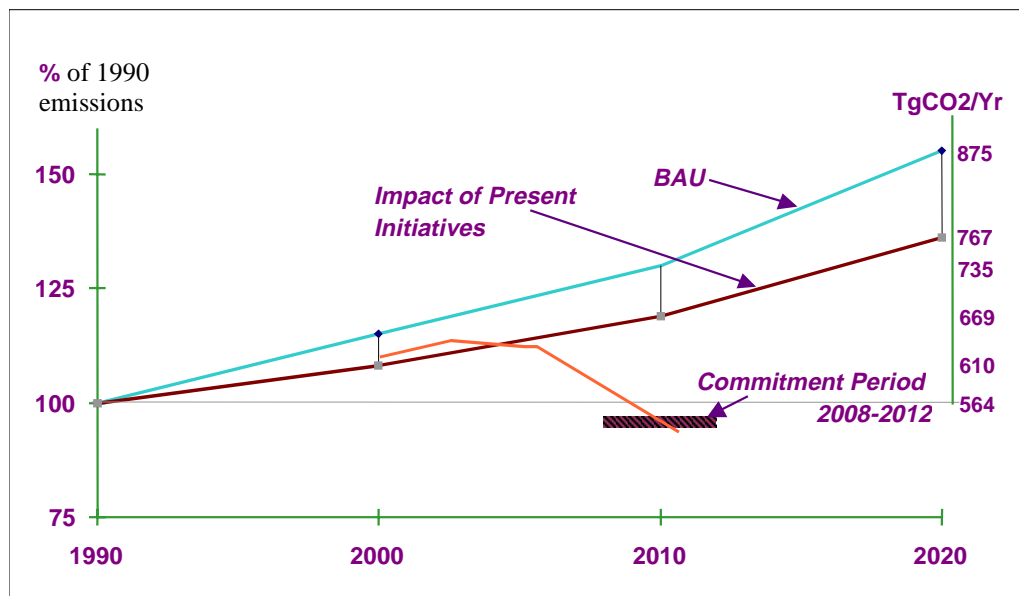
8.2 CERI Alberta Offset Development Workshop, Calgary, February 2-3, 1998 – Output and recommendations (summary of proceedings)

The Challenge

- ◆ GHG emissions are increasing in Alberta and Canada
- ◆ The Kyoto Agreement commits Canada to be 6% below 1990 emission levels in the period 2008 to 2012
- ◆ This means achieving a 20 to 30% reduction by 2008 to 2012

This presents a significant challenge requiring a significant change of course from the present emissions path.

CO2 Emissions in Canada and the Kyoto Protocol



The Opportunity - Promoting Early Action

- ◆ **Canada endorses a net emission approach linked directly to atmospheric concentrations of GHGs**
- ◆ **Net emissions approach includes contributions from a broad range of actions:**
 - Energy Conservation and Efficiency Improvements
 - Renewable Energy Supplies
 - Technology Change
 - Capital Stock Turnover
 - Behavior Modification
 - Domestic and international offsets including all sources and sinks

The Opportunity - Benefits from Early Net Reduction Actions

- ◆ **Pilot use of flexibility mechanisms including:**
 - Annex 1 Joint Implementation (JI)
 - Clean Development Mechanism (CDM)
 - Trading
- ◆ **Encourage creativity and innovation**
- ◆ **Provide bridge for further:**
 - technology development
 - efficient capital stock turnover
- ◆ **Facilitate early learning and starts transition to lower emissions path**

Offsets Play a Key Role - The Unrealized Opportunity

Program Objectives:

- ◆ **Encourage initiatives that lead to credible GHG reductions pre-2008**
- ◆ **Enhance Canada's international credibility in meeting its Kyoto commitments**
- ◆ **Encourage and reward superior performance and achievement**

Program Design Requirements:

- ◆ **Process**
 - validating net reductions
 - establish ownership
 - making reductions transactable
- ◆ **Infrastructure**
 - measurement protocols
 - baseline approaches
 - registry (enhanced VCR)
 - auditing
 - reporting
- ◆ **Incentive**
 - credit and banking for early net reductions

- other incentives

Process

- ◆ **Validation of Reductions**
 - project or initiative associated reductions are eligible (credits assigned to reductions using defined formula -- see later chart)
 - must demonstrate permanent net reductions over full life cycle
 - common defined validation criteria
 - third party verification
- ◆ **Ownership**
 - defined contractually among parties
 - arbitration mechanism to resolve disputes
- ◆ **Transactions**
 - eligibility to trade dependent on adopting defined reporting standards
 - information recorded in a central transaction database

Infrastructure

Measurement Protocols	<ul style="list-style-type: none"> • standard measurement approaches and tools
Baseline Approaches	<ul style="list-style-type: none"> • entity or project baseline to be defined and approved as part of validation
Registry (enhanced VCR)	<ul style="list-style-type: none"> • entity baselines defined/ approved • central registry for transactions • national emissions reporting database (defined standards)
Auditing	<ul style="list-style-type: none"> • defined standards and procedures • training and qualifications
Reporting	<ul style="list-style-type: none"> • defined standards • entity level reporting and initiative level detail

Incentives

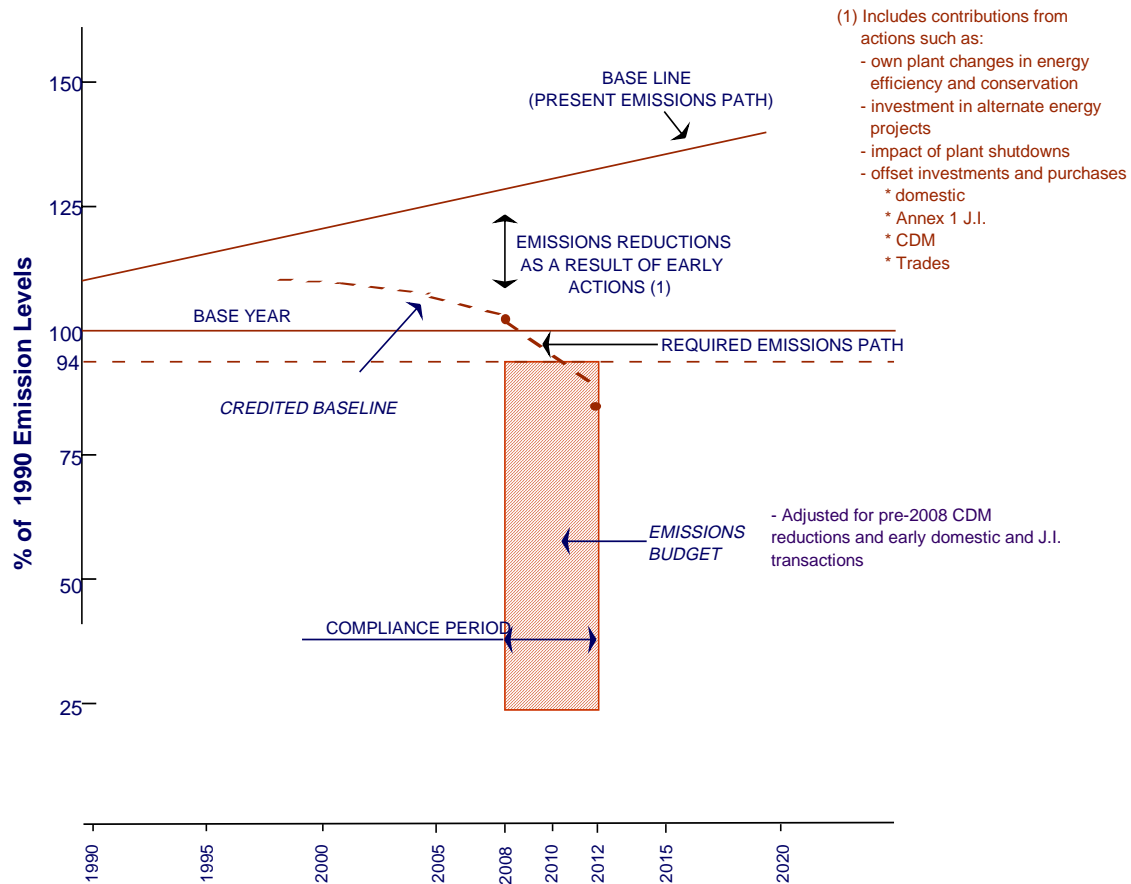
Credit for early action including:

- ◆ **Validated early reductions are credited in 2008 baseline**
 - “credited baseline” - see following diagram
- ◆ Cumulative pre-2008 CDM validated international reductions will automatically be included in Canada’s international budget allocation
 - assigned to the appropriate entities
- ◆ **Early domestic and Annex 1 J.I. reductions treated similar to pre-2008 CDM reductions**
 - banking and budget adjustment

Examine and incorporate additional forms of incentives to promote early action:

- ◆ **Recognition for participants**
- ◆ **Government assistance**
 - bi-lateral agreements
- ◆ **Financial assistance**

Changing Emission Paths - Incenting Early Action



Recommended Action at the Next Joint Ministers Meeting:

- ◆ **Governments officially endorse credit for early action and develop a supporting program**

Our Request

- ◆ **That your organization send a letter to the Government of Alberta supporting incentives, specifically credit to promote and reward early actions**
- ◆ **That your organization and members take other opportunities to promote and support this initiative**

8.3 U.S. models for action

In the United States, two respected environmental policy organizations, the Environmental Defense Fund (EDF) and the Center for Clean Air Policy (CCAP), recently presented models for action to major government bodies on the benefits of early reduction credits, along with proposed approaches for implementing such a program.

The fundamental components of the approaches suggested by CCAP and EDF are similar. The major differences occur in the implementation and administration procedures for the Early Reduction Credit Programs.

8.3.1 Environmental Defense Fund (EDF)

- Participation is voluntary.
- To qualify for credit, a participant would have emissions less than its baseline.
- The baseline calculation methodology is specified.
- Public reporting is required and is subject to third party certification.
- Carbon sequestration, mobile emission sources and manufacturers of end use products are included.
- Participation may be by an individual entity or through “pools”.
- Credits earned by participants, individual entities or pools, are tradable.
- Early reduction credits could be used to comply with obligations during the first budget period 2008 to 2012.
- Early reduction credits might be available from:
 - A portion of the national emissions budget allowed under the Kyoto Protocol for 2008 to 2012 (limited to ensure that non-participants would not be overly burdened by having reduced allowance allocations for the first budget period).
 - A portion of the national emissions budget of other Annex 1 countries traded to the United States, thereby increasing the overall size of the U.S. national emissions budget in the period 2008 to 2012.

8.3.2 Center for Clean Air Policy (CCAP)

Program components

- The program would start in 1998 and run through 2007, with two periods 1998 to 2002 and 2003 to 2007.
- The program is voluntary, but participants cannot opt in and out for specific periods.
- Companies would report on a comprehensive, company-wide basis. Adjustments would be made to reflect changing assets over time. Credits would not be given for shutting down or selling off facilities, but would be given for replacements.
- Early credits would be measured against a straight line drawn between 1998 actual emissions and the 2008 cap (United States: 7 per cent below 1990). Companies with emissions below the line will be able to bank credits. This limits credit to “extra” efforts, which change the emission trajectory down towards the target. Note: this design feature is under review at this time.

- For the utility sector, a generation performance standard, expressed in terms of carbon per kWh would be established by drawing a straight line between the company's performance rate in 1997 to a desired national performance level in 2008. This approach would encourage dispatch of cleaner units and the construction of new, cleaner plants.
- The credits earned would be subtracted from the total pool of allowances for the 2008 to 2012 period. This means early reducers are rewarded relative to those who do not participate.
- In order to ensure a smooth transition between pre- and post-2008 periods:
 - Total volume of credits available for "early reductions" might be limited to 5 per cent of total pool available for the budget period 2008 to 2012;
 - Credits banked in the 1998 to 2002 period might be eligible for use in the 2008 to 2012 period, while those banked in the 2003 to 2007 period would be eligible in the second budget period.
 - CDM credits are "additional" and added to the company's 2008 to 2012 allowance allocation.
- The possibility of including reductions achieved prior to 1998 – those registered under the 1605(b) program:
 - A policy decision will be made to reflect the quality of reductions registered under 1605(b);
 - 1 per cent will be set aside as early credits will be issued for pre-1998 reductions on some yet to be developed basis.

Program mechanics

- Detailed information on the proposed administration of the CCAP program approach is not yet available. However, it would appear to operate on an individual company basis, without any involvement of trading pools.
- Apparently, the program would be administered by a federal agency (Environmental Protection Agency or Department of Energy). This would streamline the evolution of regulatory procedures as well as ensure uniformity of approach.

8.4 Canadian models for action

8.4.1 Greenhouse Emissions Management Consortium (GEMCo)

The Greenhouse Emissions Management Consortium (GEMCo) is a not-for-profit Canadian corporation formed by companies that wish to demonstrate industry leadership in developing voluntary and market-based approaches to greenhouse gas emissions management. The effort to limit greenhouse gas emissions has emerged as a major political and environmental challenge for the Canadian and other governments of developed nations, and a pressing economic factor for Canadian industry.

GEMCo was established in 1996 by Canadian energy companies that had been loosely collaborating since early 1995 and who have included consideration of investment in

greenhouse gas emission offsets – emission reductions, avoidance or carbon sequestration activities that typically take place outside their normal operations – in their corporate environmental management strategy. GEMCo’s membership incorporates both potential investors in and providers of projects with high emission mitigation potential, and currently includes: British Columbia Hydro, Canadian Utilities Ltd. (including Alberta Power; Northwestern Utilities Ltd. and CU Power International), EPCOR, Nova Gas Transmission, Nova Scotia Power, Ontario Hydro, SaskPower, TransAlta Corporation, and the Westcoast Energy Group of Companies (including Centra Gas BC, Alberta and Manitoba; Northeast Pipelines; Pacific Northern Gas, BC; Union/Centra Gas, Ontario; Westcoast Energy Inc.; Westcoast International; and Westcoast Power Inc.).

GEMCo members employ between 40,000 and 60,000 Canadians and provide energy services to over 15 million customers in Alberta, British Columbia, Manitoba, Nova Scotia, Ontario, Saskatchewan, and the Yukon and Northwest Territories. The membership owns and operates over 80 per cent of Canada’s natural gas transmission and distribution infrastructure; over 90 percent of Canada’s independent power production capacity; and over 50 percent of Canada’s electricity generating plant (including the largest coal producer and four largest generators of coal-based electricity in the country). These firms also control smaller but high growth enterprises with operations in countries including Argentina, Australia, Brazil, Chile, China, Great Britain, India, Malaysia, New Zealand and the United States.

The majority of GEMCo members have experienced absolute greenhouse gas emissions increases over the period 1990 to 1997, and anticipate this trend to continue through the year 2000, due to existing market-driven commitments to system expansion.

8.4.2 Pilot Emissions Reduction Trading (PERT) Project

The Pilot Emissions Reduction Trading Project is an industry led, multi-stakeholder environmental initiative that is evaluating emission reduction trading as a tool to assist in the reduction of smog and other air pollutants in the Windsor-Quebec corridor. The PERT project is developing principles and program elements for creating, recognizing and trading Emission Reduction Credits (ERCs) as a commodity, readily marketable and applicable toward certain regulatory or voluntary emissions limits in Ontario and adjoining airsheds.

The implementation of emission reduction trading between companies is intended to both complement existing legislation and help shape future legislation and commitments on emissions.

The pilot project is based on a similar program formed in the Northeast United States where participants have found cost-effectiveness and operating flexibility in almost 100 trades involving over 10,000 tons of pollutants.

To support and reward industry involvement in PERT, the Ontario Ministry of Environment has negotiated a Letter of Understanding which will convey to PERT

member companies tangible benefits for reductions that go beyond the requirements of environmental regulations or voluntary agreements.

8.4.3 Greenhouse Gas Emission Reduction Trading (GERT) Pilot

Objectives of the pilot

The GERT pilot, led by British Columbia, brings together representatives of provincial, federal, and local governments, the private sector, labour and environmental groups in a voluntary initiative. GERT is intended to:

- provide all participants with practical experience in emission reduction trading;
- assess environmental and economic benefits of emission reduction trading;
- test and evaluate the technical, administrative and legal elements of an emission reduction trading system;
- maximize involvement of the private sector by emphasizing the use of business principles to achieve environmental and economic objectives;
- encourage identification and joint investment in greenhouse gas emission reduction, avoidance and/or sequestration activities; and
- help build the foundation for a possible future emission reduction trading system.

Guiding principles for GERT

The design and operation of GERT will be guided by the following principles:

- Maximize learning potential: GERT should be structured to provide opportunities to develop experience with a wide variety of projects, methodologies, etc;
- Be cost-effective – GERT should be designed to minimize the transactions costs of trading as well as the costs of administering its operation;
- Ensure credibility – GERT should be structure to provide for the transparency and integrity of its operation and the trades which take place during its term; and
- Recognize national and international agreements – GERT should be designed and operated in a manner that is consistent with evolving international and domestic greenhouse gas trading rules.