

Early Crediting and Baseline Protection

Issues of Immediate Concern

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Prepared by

Chris Rolfe, Staff counsel
West Coast Environmental Law

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Executive Summary

The *Kyoto Protocol* will require Canada to reduce its greenhouse gas emissions to six percent below 1990 levels during the years 2008 to 2012. The *Kyoto Protocol*

represents a significant challenge for Canadian policy makers. Although many economic analyses indicate that the *Kyoto Protocol* emission target can be met at no net cost to the economy, the target will become more difficult to meet the longer Canada delays reducing its emissions.

Recognizing the need for early action, Canada's Ministers of Energy and Environment agreed to establish by early 1999 a system for crediting verifiable early actions to reduce greenhouse gas emissions. This brief makes various recommendations regarding credit for early action, focusing on decisions that may possibly be made during early 1999. As the focus of discussions shift and new analysis comes to light this document will be updated. Revisions are listed in the revisions section.

Despite the urgent need for early action to reduce greenhouse gas emissions, this brief is in part intended to alert readers to the potential negative implications of developing a credit for early action system. A poorly designed credit for early action system could prove to be ineffective environmentally, inefficient economically, and inequitable politically. It could potentially shift considerable wealth to some firms while at the same time imposing corresponding costs on the government or economy. Decisions regarding baseline protection and credit for early action should not be taken lightly or without a proper understanding of their implications.

There are potentially three elements of the credit for early action system: baseline protection; early action crediting; and, sector specific incentives. This brief discusses the first two of these elements, focusing on baseline protection because that is likely to be the focus of decisions in the spring of 1999.

Baseline Protection

Baseline protection is intended to remove a disincentive to early greenhouse gas emission reductions created by the possibility that a future regulatory system might use a "historic allocation." A historic allocation occurs where allowable emission levels or emission permits are allocated to emitters based on their emissions in some historic baseline year. This means that an emitter might receive a lower emission limit or fewer permits because it took action prior to the baseline year. Baseline protection protects emitters from this possibility, thus removing a disincentive to early action.

"Reconstructed" baselines will likely be most effective in removing the disincentive to early action. If future regulatory emission limits are based on emission levels in a future baseline year, emitters will be able to retrospectively "reconstruct" their emission baseline to the level that would have existed if they had not taken qualifying action.

To remove a disincentive for future action, baseline protection need only be prospective, i.e., if baseline protection is announced in 1999, it only needs to apply

to actions taken after the announcement. In the absence of baseline protection prior to 1999, some companies may be prejudiced for having taken early action, but there are a number of problems with guaranteeing baseline protection from January 1, 1990 to 1998:

- Providing baseline protection for pre-1999 actions will not help Canada achieve compliance with the *Kyoto Protocol* and, indeed will make compliance more difficult for some companies.
- Early (pre-1999) actors are not necessarily prejudiced in the absence of baseline protection.
- Baseline protection for 1990-1998 does not remove the prejudice to early actors; it simply changes who is prejudiced.
- January 1, 1990, is an arbitrary date, and is not fully consistent with Canada's international obligations.

Some industries have argued that they should receive both baseline protection and some sort of valuable crediting for early action. Depending on the details of early crediting and baseline protection, allowing firms to receive a double benefit from baseline protection could prove to be an unnecessarily generous give-away. Giving emitters baseline protection alone, or a choice of baseline protection or credit, creates significant incentives for early action.

Early Crediting

An early crediting system gives firms credit for emission reductions. The credit could be calculated based on a schedule of credits given for specific actions, or by reference to measured emission reductions below a baseline. Baselines could be set in a number of different ways and could reflect emissions at an entire entity, a specific facility or related to a specific project. The form of credit could range from mere recognition, to credit against future regulatory tax obligations, to direct financial payments.

Caveat: early crediting could prove to be costly, ineffective and unnecessary

In the summer of 1998 a number of environmental, industry and government organizations began working on development of a credit for early action system. Initially most parties assumed that an effective early crediting system, while not easy to develop, could be developed, and that it was the only politically feasible way of creating effective incentives to reduce greenhouse gas emissions throughout the economy. With the increased understanding of early crediting systems and developments, it is now necessary to question the feasibility and desirability of early crediting, and question whether policy makers would be better off shifting their focus to development of market instruments that will provide clearer signals to reduce greenhouse gas emissions.

There are a number of significant issues associated with early crediting:

- It will likely prove impossible to develop an early crediting system that does not, at least to some extent, use a valuable resource to encourage emission reductions that would have occurred anyway. While such non-additional emission reductions help Canada achieve its emissions target, providing credit for such reductions does not help lower Canada's emissions trajectory.
- Credit may be disproportionate to an emission reduction's impact on compliance with the *Kyoto Protocol* target.
- Early crediting may shift emission reduction costs onto firms with higher adjustment costs.
- While credit for early action creates an incentive to early action, it does not create the clear price signals needed to ensure the most cost effective emission reductions. Most importantly, early crediting does not internalize costs of emissions. The specific design of an early crediting system may also encourage "gaming," i.e., changes to production processes or corporate structures that result in credits but no real emission reductions.
- Early crediting is more complex and less effective than emissions trading or carbon taxes. The time spent developing early crediting may divert policy makers from developing policies that will be far more cost effective in reducing emissions in the short and long term.
- Once established, an early crediting system will create incentives for early action, but until a system is developed emitters may delay making emission reduction decisions until they know the early crediting rules.
- Early crediting may increase resistance to sector specific regulations or emission standards.
- A clear government commitment to develop market instruments in anticipation of ratifying the *Kyoto Protocol* and implementing the market instruments by 2001 would provide a far stronger incentive for early action than an early crediting program.

If early crediting does proceed

Having questioned the possibility of developing a workable early crediting system, it is recognized that early crediting is currently the focus of much activity in Canada. It is also recognized that the Canadian federal government and many provincial governments are reluctant to move towards a mandatory emissions trading system or carbon tax. West Coast Environmental Law believes that the focus on early crediting is inappropriate and that Canada would be better following the lead of European nations and developing and implementing an emissions trading or carbon tax system. However, if early crediting does proceed, some early crediting systems will be more or less effective than others.

In particular, providing credit for past action raises a number of problems:

- Given a limited budget for credit, it depletes the incentive for action.
- A valuable asset (tax dollars or emission rights) is squandered in "buying" something that government already has rights to.
- There is an increase in the burden (tax or mandatory emission reductions) put on firms that have not been in a position to realise emission reductions in the 1990 to 1998 period.
- If credits are calculated by measuring total cumulative emission reductions, the credits generated by a past action may far exceed that action's impact on Canada's ability to achieve the *Kyoto Protocol* targets.
- If the baselines for calculating credits are lax, or a "one-size-fits-all" approach to baselines is used, the main impact of crediting early action may be to provide a windfall for some emitters without shifting the baseline.

List of Recommendations:

Baselines

1. Governments should make an immediate commitment to baseline protection from 1999 forward. No baseline protection should be provided for actions prior to 1999.
2. Baseline protection should be given by reconstructing baselines on the basis of projects which have had real, measurable and verifiable impacts on emissions.
3. Emitters should not receive a double benefit for an emission reduction action in the form of baseline protection and credit.
4. Additionality should not be a required condition of projects for which baseline protection is given.
5. If a historic allocation is used, baseline protection rules should allow independent renewable producers and demand side management providers to receive an allocation based on emission reductions they have caused at fossil fuel fired electricity generation plants.
6. The reconstruction of baselines should only reflect emission reductions that are net of any leakage.

Early Crediting

If there is a continued effort to design an early crediting system,

1. The system should use entity level crediting.
2. Consideration should be given to providing credit proportionate to the extent an action will help Canada achieve compliance with the *Kyoto Protocol*. This entails a focus on annual reductions rather than cumulative reductions.
3. Reductions from actions occurring prior to January 1, 1999 should not be credited.
4. Statutory rules should be established for determining to whom government will issue credits in cases of contested ownership.
5. Effort should be focused on developing approaches to measuring emissions performance which do not create perverse incentives.

6. Consideration should be given to setting baselines based on entity-wide greenhouse gas emission audits and pollution prevention plans.
7. The level of effort implicit in baselines should exceed the level required to shift Canada's emissions trajectory, i.e., credits should only be given for emission reductions which are clearly additional.

Revisions

As the focus of discussions have shifted and new analysis comes to light this document has been updated.

Significant revisions made in the March 31, 1999, version include:

- A new section has been added under the heading "Caveat: Early Crediting could prove to be costly, ineffective and unnecessary." (See page 15) This section raises the concern that early crediting may create greater resistance to regulatory controls.
- The "Setting Baselines" section has been expanded to discuss adjustment of baselines for credit generation in the post 1998 period to reflect reductions achieved in the 1990 to 1998 period. (See page 21 and following.)
- The conclusion has been expanded to suggest a balance sheet approach to looking at early crediting which can help determine if early crediting will be effective in helping Canada achieve the Kyoto Protocol emission reduction target. (See page 25)

Significant revisions made in the May 12 version include:

- A section on baseline protection for indirect emission reductions caused by independent renewable power producers and demand side management providers has been added. (See page 9)

Introduction

The *Kyoto Protocol to the United Nations Framework Convention on Climate Change* will require Canada to reduce its greenhouse gas emissions to six percent below 1990 levels during the years 2008 to 2012. Given that 1995 emissions were already 9.4 % above 1990 levels, and given projected 2010 emissions of nineteen percent above 1990 levels, the *Kyoto Protocol* represents a significant challenge for Canadian policy makers. Although many economic analyses indicate that the *Kyoto Protocol* emission target can be met at no net cost to the economy, there is no doubt that the target will become more difficult to meet the longer Canada delays reducing its emissions.

Recognizing the need for early action, on April 24, 1998, Canada's Ministers of Energy and Environment "agreed to establish by early 1999 a system for crediting verifiable early actions to reduce greenhouse gas emissions...." As of March 1999, provincial and federal governments are scrambling to deliver on this directive and

establish some elements of a credit for early action system during the spring of 1999. Most recently a small group of industry and environmental group representatives have proposed the Canadian Early Emission Reduction Program, an integrated credit for early action proposal, intended to elicit further analysis and discussion.

This brief makes various recommendations regarding credit for early action, focusing on decisions that may possibly be made during early 1999. Despite the urgent need for early action to reduce greenhouse gas emissions, this brief is in part intended to alert policy makers, interested members of the public and media to the potential negative implications of a credit for early action system. Current proposals for credit for early action may prove to be ineffective environmentally, inefficient economically, and inequitable politically. They could potentially shift significant wealth to some firms while imposing corresponding costs on the government or economy. Decisions regarding baseline protection and credit for early action should not be taken lightly or without a proper understanding of their implications.

As the focus of discussions shift and new analysis comes to light this document will be updated. Revisions have been listed in the revisions section, above. Future revisions, and other papers on credit for early action (e.g. comments on the Canadian Early Emission Reduction Program) will be posted to West Coast Environmental Law's website, www.wcel.org.

The Elements of a Credit for Early Action System

There are potentially three elements of a credit for early action system:

- **Baseline Protection.** Baseline protection is intended to remove a disincentive to early greenhouse gas emission reductions created by the possibility that a future regulatory system might use a "historic allocation." A historic allocation occurs where allowable emission levels or emission permits are given to emitters based on their emissions in a historic baseline year. This raises the possibility that an emitter might receive a lower emission limit or fewer permits if it took action prior to the baseline year. Baseline protection protects emitters from this possibility, thus removing a disincentive to early action.
- **Early Action Crediting.** Early action crediting involves giving emitters some form of credit — possibly direct financial payment, possibly a credit against future carbon taxes or a credit against future regulatory requirements — for early greenhouse gas emission reductions. Unlike baseline protection, credit for early action is designed to provide an incentive for early greenhouse gas emissions regardless of future regulatory scenarios.
- **Sector Specific Incentives.** While early action crediting is intended to encourage an unlimited range of emission reductions activities among all sectors or all industrial sectors, it is possible to design incentives for specific activities in specific sectors. Examples included improved tax write-offs for energy efficiency investments, or vehicle "fee-bates" which reduce the price of fuel efficient cars while increasing the

price of gas guzzlers.

This brief discusses the first two of these elements, focusing on baseline protection because that is likely to be the focus of decisions in the spring of 1999.

Although baseline protection and early action crediting are distinguished as being aimed respectively at removing a disincentive and creating an incentive, both baseline protection and credit creation produce incentives and remove disincentives. For instance, if future regulations use a historic allocation, baseline protection guarantees that an emitter who takes early action will have either a smaller shortfall between its emission limit and actual emissions or it may even have a valuable surplus of allowable emissions which can be traded. Thus, baseline protection creates an incentive. Similarly, credit from early actions may potentially overcome any prejudice created by a historic allocation, thus creating an incentive. Finally, if the credit system or baseline protection apply to actions prior to 1999 they obviously do not remove a disincentive or create an incentive as no incentive will change the past. Table 1 describes the different purposes and impacts of credit for early action system elements.

Table 1

	Baseline Pro Pre-1999	Baseline Pro Post-1998	Credit Pre-1999	Credit Post-1998
Removes Prejudice for Pre-1999 Action	Primary Purpose	N/A	Potentially	N/A
Removes Disincentive for Post-1998 Action	N/A	Primary Purpose	N/A	Potentially
Creates Incentive for Post-1998 Action	N/A	Potentially	N/A	Primary Purpose
Creates Reward for Pre-1999 Action	Potentially	N/A	Primary Purpose	N/A

Baseline Protection

What is Baseline Protection?

Baseline protection is primarily intended to remove a disincentive created by the possibility that Canada will opt to reduce its greenhouse gas emissions in a particular way. It removes the disincentive to early greenhouse gas emission reductions created by the possibility that a future regulatory system might use a "historic allocation." A

historic allocation occurs where allowable emission levels or emission permits are given to emitters in proportion to their emissions in a historic baseline year. This raises the possibility that an emitter might receive a lower emission limit or fewer permits if it took action prior to the baseline year. Baseline protection protects emitters from this possibility, thus removing a disincentive to early action.

One of the more likely scenarios by which Canada will reduce its future industrial greenhouse gas emissions is the imposition of a cap and emission allowance trading system. In a cap and emission allowance trading system, the government establishes a cap on total allowable emissions from large greenhouse gas emitters during a defined time period. It then allocates allowances to emit greenhouse gases, with the total emissions permitted by all allowances being equal to the cap. Those sources that can reduce emissions at low cost can do so and sell surplus allowances to other sources whose emissions would otherwise exceed the allowances allocated to them.

One possible method of allocating future emission allowances is by giving emitters allowances in proportion to their emissions in a particular baseline year. In the absence of baseline protection, this will mean that firms who took emission reduction action prior to the baseline year receive a lower allocation of emission allowances. For instance, emission allowances might be distributed to firms in 2005 in an amount equal to 95% of their emissions in the 2003 "baseline year." If a firm is able to defer making emission reductions at no or little cost it will be in a better position if it defers its emission reductions until sometime after 2003 rather than taking early action and reducing emissions prior to 2003.

Baseline protection removes the resulting disincentive to early action. If a firm takes qualifying emission reduction actions in 1999, and 2003 is used as a baseline year, the firm's baseline year emissions will be adjusted upward to reflect what its emissions would have been in the absence of the qualifying action. It should be noted that support for baseline protection does not mean support for the allocation of emission allowances on the basis of historic emissions (the regulatory scenario which makes baseline protection necessary). A historic allocation is inequitable and increases overall emission reduction compliance costs; nonetheless, it is a possibility and, as a result, an immediate commitment to baseline protection is necessary.

Recommendation:

Baseline protection should be established to remove the disincentive to actions that occur from today forward.

Use of Reconstructed Baselines

Baseline protection should take the form of "reconstructed baselines." In other words, if a historic allocation is used, emitters will be able to retrospectively adjust — or reconstruct — their emission baseline to the levels that would have existed if they had not taken qualifying actions in the post-1999 period. For emission reduction

actions to qualify they will need to result in real, measurable and verifiable emission reductions. The reconstructed baseline approach is essential to removing the disincentive to action at firms with expanding production and emissions while at the same time ensuring that baselines are not grossly inflated to justify an over-allocation.

Recommendation:

Baseline protection should be given by reconstructing baselines on the basis of projects which have had real, measurable and verifiable impacts on emissions.

Baseline Protection for Actions Prior to 1999

To remove a disincentive for future action, baseline protection needs only to be prospective, i.e., if baseline protection is announced in 1999, it only needs to apply to actions taken after the date of the announcement. Many greenhouse gas emitters are lobbying government to give them baseline protection for actions that occurred from January 1, 1990, forward. They argue that, in the absence of baseline protection prior to 1999, they will be prejudiced for having taken early action. While this may be true in some cases, there are a number of problems with guaranteeing baseline protection from January 1, 1990 to 1998:

- **Baseline protection for the 1990 to 1998 action could lead to the squandering of Canada's emissions budget without helping Canada achieve compliance with the *Kyoto Protocol*.** Providing baseline protection for pre-1999 actions will not help Canada achieve compliance with the *Kyoto Protocol* and, indeed will make compliance more difficult for some companies. If a future historic allocation is used, providing baseline protection for emission reductions in the 1990 to 1998 period could mean that as much as three percent of Canada's *Kyoto Protocol* emissions budget is allocated on the basis of 1990 to 1998 emission reductions. Allocating emission allowances to companies based on emissions that no longer exist means that someone else will receive fewer emission allowances. Thus, sectors that did not — and possibly could not — undertake emission reduction activities in the 1990 to 1998 period will be responsible for larger emission reductions in the future. If the value for a one tonne emission allowance is between ten and thirty dollars, baseline protection for the 1990 to 1998 period could impose a liability of between one and three billion dollars on firms that were either unable to or have not reduced emissions in the 1990 to 1998 period.¹
- **Early actors are not necessarily prejudiced in the absence of baseline protection.** The justification for extending baseline protection back to 1990 is that if baseline protection is not given for the 1990 to 1998 period, emitters who took action in that period will be prejudiced in the event of a historic allocation. This justification is incorrect in many cases. If baseline protection is only offered from 1999 forward, a firm which took action in the 1990 to 1998 period (the "pre-1999 actor") will only be worse off compared to a company which did not take action (the

"non-actor"), if the non-actor is able to reduce its emissions cost effectively after 1999. Often this will not be the case: the non-actor simply does not have the same cost-effective or profitable emission reduction opportunities as the pre-1999 actor, or it may have foregone the opportunity to make a cost effective emission reduction. Moreover, often the energy savings or other reduced costs from taking early action will far outweigh any prejudice from receiving a lower emission allowance allocation.

- **Baseline protection for 1990-1998 does not remove the prejudice to early actors; it simply changes who is prejudiced.** Any cut-off date for baseline protection creates a situation where, in some cases, companies which took early emission reduction action could be prejudiced for having taken action prior to the cut-off date. Using a January 1, 1990, cut-off date does not remove this prejudice. Instead it prejudices parties that took action prior to 1990.
- **January 1, 1990, is an arbitrary date.** Although 1990 is the baseline year for most *Kyoto Protocol* pollutants, providing valuable credit back to January 1, 1990, is not fully consistent with Canada's international obligations. As noted above, reductions of CO₂, CH₄ and N₂O occurring in 1990, and reductions in HFCs, PFCs and SF₆ made prior to 1996, have reduced Canada's emissions budget, possibly making compliance with Kyoto more difficult!² (This is not intended as a criticism of the firms that took these emission reduction actions. They are actions that are good environmentally and generally show good business sense, but the use of a baseline year inevitably creates this paradox.)

Even if the start date were shifted to January 1, 1991, there is no particular reason for using the international baseline year as the starting date for a domestic program. January 1, 1990 is over two years before the negotiation of the *Framework Convention on Climate Change*, and four years prior its coming into force. It is almost five years prior to the meeting at which Canada's provincial and federal energy and environment ministers challenged industry to participate in the Voluntary Challenge and Registry program.

January 1, 1999, or the date of an announcement on baseline protection are justified as baseline protection cut-off dates because providing baseline protection from today forward is absolutely necessary to remove a disincentive for action.

- **Baseline protection for the 1990 to 1998 period means some firms could reap windfalls.** It should be recognized that providing baseline protection in the 1990 to 1998 period could have major re-allocative effects, leading to windfalls for some firms. In the 1990 to 1998 period several sectors have been able to make dramatic emission reductions at low or negative costs. Providing baseline protection to these firms could lead to firms in these sectors being allocated emission allowances that far exceed their actual emissions.
- **Baseline protection for the 1990 to 1998 period means that a historic allocation will have greater re-allocative effects.** Allocating emission allowances on a historic emissions basis will inevitably lead to situations where some firms are prejudiced

and others reap windfalls, but these re-allocative effects will likely be aggravated by offering baseline protection prior to 1999. If emission allowances are allocated on the basis of historic emissions in a period as far back as 1990, there will be less of a connection between actual emissions and allocations. This is likely to aggravate the degree to which firms receive allocations that bear no resemblance to their needs or a fair sharing of emission reduction costs.

Recommendation:

Governments should make an immediate commitment to baseline protection from 1999 forward. No baseline protection should be provided for actions prior to 1999.

Double Benefits

Some industries have argued that they should receive both baseline protection and some sort of valuable credit for early action. Allowing firms to receive a double benefit from baseline protection would be an unnecessarily generous give-away. Although baseline protection is often described as being intended to "remove the disincentive" to early action, giving emitters baseline protection alone, or a choice of baseline protection or credit, creates a strong incentive for early action:

- If all or a portion of future emission allowances are allocated on a historic emissions basis the emitter can opt for baseline protection. Baseline protection will assure the emitter that any permanent emission reduction will lead to either a windfall of emission allowances that exceeds the emitter's actual emission levels or less of a shortfall between the allocation and actual emissions.
- If future emission allowances are not allocated on a historic emissions basis, the emitter can opt for credit creation and receive direct value for emission reductions. The early actor will also benefit from either a smaller compliance shortfall or over-compliance. If, for instance, performance standards are combined with credit trading, early actors will be able to generate credits from over-compliance. Even without credits, they will be amply rewarded for early action.
- If future emission allowances are auctioned or a carbon tax imposed, the early actor will be rewarded with reduced financial liabilities.
- Whatever the form of future regulatory requirements or economic instruments, emitters will be able to take advantage of low cost emission reductions during capital stock turnover.

Recommendation:

Emitters should not receive a double benefit for an emission reduction action in the form of baseline protection and credit.

Requirement for Additionality in Context of Baseline

Protection

West Coast Environmental Law has consistently advocated that *credit* should only be given where emissions are reduced below a stringent baseline which, at the very least, represents emissions below business as usual levels. In other words, credit should only be given for emission reductions which would not have occurred in the absence of the early crediting: creditable emission reductions must be "additional." However, the rules for determining which emission reductions can be counted in a reconstructed baseline should not be so restrictive. The paramount purpose of baseline protection should be to remove any disincentive for future emission reductions. To do this, emission reductions resulting from activities after 1998 should not be subject to an additionality test. Inclusion of an additionality test in baseline protection rules could lead to a situation where companies decide not to invest in marginally profitable emission reductions because they would fail an additionality test and lead to a lower allocation.

Recommendation:

Additionality should not be a required condition of projects for which baseline protection is given.

Offsets and Baseline Protection

A number of Canada's major greenhouse gas emitters have invested in offsets. Offsets are emission reductions which occur at one source or are due to activities at one source, but which are claimed by another source that has purchased the emission reductions. For instance, a high emitting fossil fuel producer might pay a farmer for the right to claim credit to emission reductions resulting from changes in the farmer's agricultural practices. The reductions which the emitter has purchased are known as offsets, because they offset the emitter's actual emissions. The emitter invests in offsets because it lowers its costs of achieving a particular environmental goal.

If baseline protection rules were to allow incorporation of offsets into baselines the rules would presumably be along the following lines. A firm could buy a portion of another source's baseline, adding that source's emissions onto its own (for the purposes of baseline calculation). In the event of a historic allocation, the purchasing company could receive an allocation based on its emissions plus the emissions of the other source.

Although offsets or emission reduction trading may have a role in future Canadian domestic policies, it is usually assumed that offsets are not relevant for the purpose of baseline protection. An "actual emissions only" approach to baseline protection helps make baseline protection simple and avoids a number of undesirable problems:

- Including offsets in baselines complicates the allocation of emission allowances, likely involving government in disputes over baseline ownership.
- It would be inappropriate to incorporate baselines from sources not otherwise counted for the purpose of allocation (e.g., sources outside a cap and emission allowance trading system). If these sources were allowed, emitters would be able to inflate their allocation without undertaking a corresponding liability. For instance, it would be inappropriate for an industrial emitter to purchase the emissions baseline associated with enteric fermentation in livestock (e.g., methane from cows) and add these emissions into the emitter's baseline for the purpose of calculating the industrial emitter's allocation of emission allowances. This would be inappropriate because a cap and allowance system can not be feasibly applied to enteric fermentation, and allowing the industrial emitter to use these emissions in its baseline would mean the industrial emitter receives a valuable allocation but no liability.
- If sources that are not otherwise included in a cap and emission allowance trading program are allowed to opt into the program, and if these firms are able to receive baseline protection for the opted-in source's early emission reductions, firms would be able to inflate their allocation without contributing to Canada's compliance with the *Kyoto Protocol*. A large industrial emitter could simply pick baselines from sources that are already in the process of making business as usual emission reductions. The large industrial emitter would receive valuable allocation while contributing nothing to Canada's compliance with the *Kyoto Protocol*. Allowing this sort of behaviour could have significant effects on burden sharing. It would reduce the compliance costs of large point sources included in an emission allowance trading program, but increase the burden on other Canadians.

It should be noted that eliminating consideration of offsets from baseline protection rules will not prohibit a firm from contractually exchanging an investment in an emission reduction for a stream of excess emission allowances that result from the combination of the emission reduction and baseline protection. This sort of arrangement can be done independent of any provisions in baseline protection rules, and is likely included in most well drafted agreements to purchase emission reductions.

Recommendation:

Baseline protection rules should not recognize emission reductions purchased from another source.

Indirect Emission Reductions

While baseline protection rules should not recognize emission reductions purchased from another source, they should provide baseline protection to firms that cause emission reductions at other sources. Under normal baseline protection rules, a utility which reduces its emissions by investing in a wind farm or run of the river hydro would likely get baseline protection for the emission reductions which result

from the investment. Similarly, an industrial source which improves its efficiency and reduces direct emissions would get baseline protection. But what if the investment in wind energy were by an independent power producer? What if the investment in energy efficiency were by a facility that consumes electricity and caused emission reductions at other sources? Being zero emitters, the independent renewable energy producer or the investor in energy efficiency have no baselines to protect, but should they receive an allocation based on the emissions that would have occurred elsewhere if they had not taken their action?

Rules that allow non-utility DSM projects or producers of renewable power to claim baseline protection are not necessary to "remove the disincentive." However, they are necessary to put independent renewable power producers, and independent demand side management initiatives, on a level playing field with utilities undertaking the same actions. In absence of such rules renewable producers and independent DSM providers would only be able to share in the benefits of baseline protection if they could establish they were undertaking the projects in a contract for the utility, to reduce the utilities' emissions. This would allow the utility to extract "economic rent" from the DSM provider or renewable producer. On the other hand, the complexities of providing baseline protection for such projects are no greater where they are owned by a utility than where they are not owned by a utility. (In both instances, there will be a need to grapple with identification of the marginal source of electricity.) Moreover, if baseline protection proceeds without early crediting, this will ensure that there is an incentive for renewables and demand side management whether or not the activities are undertaken by or for a utility.

Recommendation:

If a historic allocation is used, baseline protection rules should allow independent renewable producers and demand side management providers to receive an allocation based on emission reductions they have caused at fossil fuel fired electricity generation plants.

Counting Leakage in Baseline Protection

The reconstruction of baselines should only reflect emission reductions which are net of any leakage. This is necessary to avoid a "double counting of baselines" or perverse incentive to shift emissions to other sources. In the absence of such a rule, a firm which switches from bunker oil fuel to electricity coming from a coal-fired generation unit would be able to use a high reconstructed baseline associated with its pre-fuel switch emissions, while the utility which has the increase in emissions would be able to use the high baseline associated with its post-fuel switch emissions.

Recommendation:

The reconstruction of baselines should only reflect emission reductions that are

net of any leakage.

Early Crediting

An early crediting system gives firms credit for emission reductions. The credit could be calculated based on a schedule of credits given for specific actions, or by reference to measured emission reductions below a baseline. Baselines could be set in a number of different ways and could reflect emissions at an entire entity, a specific facility or related to a specific project. The form of credit could range from mere recognition through credit against future regulatory or tax obligations to direct financial payments. Most commonly it is assumed that credit would take the form of a credit usable against a carbon tax or exchangeable for emission allowances in a cap and emission allowance trading program.

This next section begins by discussing some of the problems associated with early crediting, and questions whether Canada should proceed with development of an early crediting system. Recognizing that the Canadian government may continue to focus on the development of early crediting, this part also makes recommendations for an early crediting system, if one is established.

Caveat: Early Crediting could prove to be costly, ineffective and unnecessary.

In the summer of 1998 a number of environmental, industry and government organizations began working on development of a credit for early action system including both baseline protection and early crediting. This work centred around Canada's National Climate Change Process Credit for Early Action Issue Table.³ Initially most parties assumed that an effective early crediting system, while not easy to develop, could be developed. Much of the interest in credit for early action was motivated by a sense that it was "better than nothing" and was far more politically feasible in the short term than other means of creating incentives for greenhouse gas emission reductions. Most recently a small collaborative representing various industries and several environmental groups has proposed the Canadian Early Emission Reduction Program (CEERP). Many details of this program remain unresolved, and the groups which have developed it have presented it a "straw dog", i.e. a proposal presented for the purposes of furthering discussion and analysis. West Coast Environmental Law's comments on CEERP will be available on the Internet by mid April.

With the increased understanding of early crediting systems and development of emission trading and carbon tax systems in other countries, it is now necessary to question the feasibility and desirability of early crediting, and question whether policy makers would be better shifting their focus to development of market instruments that will provide clearer price signals to reduce greenhouse gas

emissions. Proposals such as CEERP have to be subjected to some fundamental questions: "Are they the best regulatory option?" "Are they better than nothing?"

West Coast Environmental Law will continue to work with other environmental groups, government and industry to try and develop a workable early crediting system. However, we are concerned that an early crediting system that applies to all sectors, or even the entire industrial sector, may prove unworkable and/or may impose high costs on Canada without helping us achieve compliance with the *Kyoto Protocol*. Early crediting may have benefits, but it also has very significant costs, and policy makers should be aware of these.

The following section identifies some of these costs and risks associated with early crediting, and identifies potential solutions. These solutions do not point consistently in one direction. Some suggest ways of developing an early crediting program; others suggest shifting from development of an early crediting program to development of emissions trading or other fiscal instruments. West Coast Environmental Law recognizes that early crediting is, at best, a second best approach compared to the actual establishment of emissions trading or carbon taxes. We recommend that Canada follow the lead of various other countries in establishing trading system or carbon tax systems rather than focusing on early crediting. Moreover, if Canada does maintain its focus on development of early crediting, it will be essential to carefully evaluate whether proposed systems will be effective in helping Canada reduce greenhouse gas emissions more cost effectively.

Squandering valuable credits without receiving value added.

It will likely prove impossible to develop an early crediting system that does not, at least to some extent, use a valuable resource to pay for emission reductions that would have occurred in the absence of early crediting, i.e., non-additional emission reductions. While non-additional emission reductions undoubtedly help Canada achieve its emissions target, providing credit for such reductions does not help lower Canada's emissions trajectory. Under some early crediting proposals there is a risk that most of the emission reductions credited would have occurred in the absence of the system. If this happens, the net effect will be to waste a valuable resource and make eventual compliance with the *Kyoto Protocol* more difficult.

Under most early crediting proposals, the form of credit is very valuable. As noted above, credit in an early crediting program could take the form of direct payment, credit against a future tax obligation (e.g., a carbon tax credit) or credit against a future regulatory requirement. One of the most frequently made suggestions is that five percent (140 Mt) of Canada's emissions budget under the *Kyoto Protocol* would be used to reward action. If the price for an international emission allowance is \$15 to \$25 per tonne, this would amount to an asset worth between two billion and four billion dollars being allocated to "buy" emission reductions.

Given the terrible cost of climate change, this might amount to money well spent if

we could be sure that the emission reductions purchased would not have occurred anyway. However, in an early crediting system it will be difficult to set baselines in a manner that differentiates between reductions that would have occurred anyway, and those that would not have occurred anyway. Lax baselines (for instance, baselines which give credit for any improvement in efficiency) are likely to waste a valuable public asset on something that Canada could have received for free.

Even if baselines are stringent, they may give significant credit for non-additional emission reductions. Most US credit for early action proposals apply a one-size-fits-all baseline to all entities. For instance, a proposal before the US Senate credits all absolute emission reductions; another proposal rewards improvements in performance that exceed three percent per year. Although these proposals are better than lax baselines, a one-size-fits-all baseline will inevitably lead to some credit being given for emission reductions which would have occurred anyway. Some sectors have had dramatic reductions in emissions in the last decade and are projecting dramatic reductions. Under a one-size-fits-all approach to baselines they would receive credit, reducing the credit available to encourage additional emission reductions.

West Coast Environmental Law is unaware of any studies which track different rates of emissions reductions in different firms. If there is a wide divergence among rates of improvement in different firms and this appears largely related to differences in technological opportunities, a one size fit all approach will be less likely to change behaviour. The one-size-fits-all baseline will reward firms that would have been below the baseline in the absence of early crediting and is likely to prove too difficult to achieve for the firms over the baseline. If, on the other hand, most firms are very similar in emissions performance with only a few "outlying" firms that have made major emission reductions, the problem of spending credit on non-additional emission reductions will be less significant.

While it is difficult, and possibly impossible, to design an early crediting system which will completely avoid crediting non-additional emission reductions, there are several elements of an early crediting system which will help contain the problem.

First, credits can be calculated relative to a firm's or entity's overall emissions rather than rewarding credits on a project by project or facility by facility basis. If baselines are sufficiently stringent, company-wide reporting is likely to reduce the risk of crediting non-additional emission reductions. This is because many individual facilities and projects are aggregated together in a corporate emissions profile, and there is less risk that firms will simply pick the few projects or facilities that meet baseline requirements. The use of entity baselines is discussed further below.

Second, if Canada develops an early crediting system, baselines can be set on a case by case basis using clear, consistent and stringent criteria. For instance, any firm participating in early crediting could be required to commission an independent audit of its operations, and the baseline could be set to reflect emissions achievable if all

emission reductions with a ten-year payback were implemented. Baselines based on audits are discussed further below.

Third, if Canada develops an early crediting system, no credit should be given for actions occurring prior to 1999. Credit for emission reductions from actions that occurred prior to 1999 inherently involves credit for reductions that would have occurred anyway.

Credit may be disproportionate to an emission reduction's impact on compliance with the Kyoto target

Under most proposed early crediting systems, credit is given in proportion to total cumulative reductions from the year in which credit generation begins until the final year of the early crediting system. Under some proposals this means that an action which yields a one tonne per year emission reduction in 1990 would yield eighteen tonnes of credit if the system remains in place until 2007. Yet the action will only reduce Canada's emissions by five tonnes during the 2008 to 2012 *Kyoto Protocol* compliance period. Similarly, if credit is given for emission reductions which do not continue through the five year *Kyoto* commitment period, the credit given will have no relation to how much a particular action helps Canada achieve its *Kyoto* commitments.

This problem is particularly acute in the context of sinks.⁴ Under Article 3.3 of the *Kyoto Protocol*, credit is given for changes in carbon stock during the 2008 to 2012 period.⁵ Even if carbon is sequestered permanently, a particular rate of change in carbon stock will not be maintained permanently. The rate at which carbon is sequestered in any forest or area of farmland changes over time and eventually stops. If credit is given for a project which increases carbon stock prior to 2008 but which stops sequestering in 2008, the project will have no impact on the ease of Canada achieving the *Kyoto Protocol*. Indeed, if due to forest fire, logging, drought or innumerable other possibilities, the carbon sequestered prior to 2008 is released after 2008, it is possible⁶ that the sequestration project will make it harder for Canada to achieve compliance with the *Kyoto Protocol*.

Certain rules in an early crediting system can help ensure that credit given for an emission reduction bears some relation to the reduction's impact on Canada's compliance with the *Kyoto Protocol*. First, credit can be based on permanent emission reductions achieved below an entity's baseline in the last year of the early crediting system rather than cumulative emission reductions. Second, if credit is given for cumulative reductions, the system can begin in 1999. Finally, special rules for sinks will need to be developed, recognising that sequestration can be reversed and that rates of sequestration will eventually slow.

Early crediting may shift emission reduction costs onto firms with higher adjustment costs.

An early crediting system may increase either the tax burden or the costs of compliance on firms and sectors that have not generated early action credits if:

- a. the credit takes the form of a financial payment, credit against a future carbon or energy tax or credit against regulatory requirements in the 2008 to 2012 commitment period; and,
- b. either credit is given for non-additional emission reductions or the credit given exceeds the extent to which a project helps Canada achieve compliance with the *Kyoto Protocol*.

However, as noted above, it will be difficult to design an early crediting system that does not give credit for non-additional emission reductions; many crediting systems potentially give credit in excess of a reduction activity's impact on emissions in the first compliance period; and, most call for credits in the form of credit against regulatory requirements in the 2008 to 2012 period. In this situation, government, having used some of its limited 2008 to 2012 allowable emissions budget to provide credits, will have to make regulatory standards more stringent for other sources. While these sources will be able to purchase credits from companies that have received credit, the net effect will be to increase costs for the buyer and decrease them (or lead to a windfall) for the seller. Similarly, in the case of credit against a carbon tax, government would need to increase the level of the tax in order to achieve the same emission reduction. If a straight financial payment is made, the cost will be covered by increased taxes on all sectors.

To some extent this shifting of burden may reward companies that have shown a strong commitment to reducing their emissions, but it may also simply reward sectors for having the good fortune of having had profitable emission reduction opportunities. If the sectors that have not generated early action credits have not done so simply because they have fewer low-cost emission reduction opportunities, the overall result may be to increase the burden of emission reductions on firms with the highest emission reductions costs.

The main mechanisms for ensuring that early crediting does not increase the burden on other firms is to ensure that credit is only given for additional emission reductions and that credit is proportionate to the extent to which an emission reduction helps Canada achieve compliance with the *Kyoto Protocol* (see above).

Early crediting is less economically efficient than alternatives and can create perverse incentives

An early crediting system is a distant second-best alternative to government adopting fiscal and regulatory instruments that encourage or require immediate greenhouse gas emission reductions. While credit for early action creates an incentive to early action, it does not create the clear price signals needed to ensure the most cost effective emission reductions. If credit is against some future regulatory or tax liability, individuals and small emitters are unlikely to respond well because they

lack the sophistication to determine the present day value of a credit against a future potential regulatory requirement. Early crediting only creates an incentive for creditable emission reductions, and many cost effective emission reductions will not be practically creditable because they are too difficult to calculate and verify. Most importantly, early crediting does not internalize costs of emissions. It rewards large emitters who make reductions but not producers or consumers of goods that have always been produced with minimal emissions. No price signal is created to shift consumption to the latter goods. For these reasons, emissions trading or a small carbon tax will be more effective and efficient tools to reduce greenhouse gas emissions.

The specific design of an early crediting system may also create market signals that encourage action that is neither economic nor reduces emissions. For instance, if baselines are an absolute emission level not tied to production levels, they may encourage production shifts away from facilities that are trying to earn credit or outsourcing, and they may not encourage improvements in efficiency at firms with rapidly expanding production and emissions. If baselines are tied to production (i.e., if credits are given for improvements in emissions per unit of production) there may be an incentive to "game" i.e., to play games with production, for instance, re-organize corporate holdings, out-source, or shift to production of products with lower emissions (letting another firm pick up the slack in production of high emission products). These activities may have no impact on actual Canadian emissions.

The inefficiency of an early crediting system as compared to market instruments such as carbon taxes and emissions trading is a fundamental criticism of early crediting, and cannot be avoided. However, if Canada develops an early crediting system, any system will need to be designed carefully so as to avoid creating incentives that encourage gaming rather than real emissions.

Early crediting is complex and may divert government resources from programs that would be more effective and efficient

Not only does an early crediting system not create the clear market signals compared to mandatory emissions trading or carbon taxes, it is likely to prove considerably more complex to design than any viable emissions trading program or carbon tax. How baselines are set determines who can easily generate credits, so this debate is likely to be almost as difficult as any allocation debate in a cap and emission allowance trading program. Moreover, as compared to allowance trading or carbon coupon trading, early crediting will have the added complexities of requiring protocols for measuring emission reductions, formulas for discounting early reductions, rules for determining if an emission reduction is permanent, and more complex rules for dealing with leakage.

It is little wonder that ten months since the Canada's environment and energy ministers directed the development of an early crediting system, little progress has

been made in development of a workable system. There is a real risk that the task of developing early crediting may divert attention from more fruitful policy initiatives.

Recognizing that emissions trading or carbon taxes are likely to be more efficient and more effective in ensuring early action, as well as less complex than early crediting, most nations are starting to establish trading systems or impose carbon taxes rather than work on early crediting. Indeed, only Canada and the US are considering early crediting. The main impetus for early crediting in the United States is the desire to create a powerful constituency in favour of ratifying the *Kyoto Protocol*. (If firms hold credits that represent a credit against future regulatory requirements they will favour ratification, as this will give their credits value.) This is less of a factor in Canada, where ratification is likely to be tied to ratification by our trading partners.

Other nations are rejecting early crediting, and are instead developing systems that will ensure real early emission reductions. The Danish Parliament recently passed legislation establishing a cap on greenhouse gas emissions from their electricity sector. Norway is aiming to implement a cap and trade system by the end of the year 2000. Other nations are implementing carbon charges (the Scandinavian countries have already done so) and creating tax incentives to reduce greenhouse gas emissions. Germany is currently introducing an energy tax; Italy has just approved a carbon tax; and, the UK has stated that it will do so in 2001. New Zealand is considering a system where firms can either opt into a trading system or pay a carbon tax.

Complexity is inherent in early crediting and development of early crediting is very likely to divert effort away from more effective emission reduction tools. The delay in developing effective tools is likely to add significantly to Canada's cost of compliance with the *Kyoto Protocol*. Government would be better limiting a credit for early action system to baseline protection and begin developing a carbon tax or emissions trading system.

Early crediting may increase resistance to regulatory reforms

Regulation is an important means of ensuring early action. Indeed, Canada's emissions forecasts assume the adoption of more stringent energy efficiency regulations in the short term. Provided they do not impose major paper work requirements, often new environmental regulations are resisted vigorously by firms who are required to make changes, but given tacitly support (or not opposed) from firms that are in compliance. Early crediting may change this dynamic, leading to a situation where new regulatory initiatives will be vigorously opposed by firms even if they do not require any changes in behaviour. Companies will resist regulations that lead to an end to their credit generation stream.

This concern is offset somewhat by the fact that firms which have banked credits will likely see an advantage to regulatory programs that create demand for credits

(such as cap and allowance trading systems) and thus give banked credits value. However, they are likely to resist regulations specific to their sector. As noted above, sector specific regulations are likely to play an important role in ensuring early action prior to development of broad economic instruments and in some cases after then.

A focus on early crediting may create disincentives for early action

Once established an early crediting system will create incentives for early action. But until a system is developed it will create a potential disincentive to early action. For instance, if emitters fear that only reductions occurring in 2000 or later will qualify for credit, they will likely delay taking action until after 2000. Similarly, in order to maximise potential credits from gaming, emitters may delay making emission reduction decisions until they know the early crediting rules.

Once again, the possibility that firms may delay investments in emission reductions until the rules for early crediting are known is a fairly fundamental criticism of early crediting. Governments could announce that, if crediting proceeds, it will apply to emission reductions starting from today forward, but this will not remove all disincentives created by uncertainty. The alternative is to announce that credit for early action will be limited to baseline protection.

Early crediting may not be necessary

In determining whether or not to proceed with development of early crediting, policymakers need to consider whether a stopgap measure is necessary prior to implementation of an emissions trading system or carbon tax. Early crediting may not be necessary if government announces its intention to provide baseline protection and its commitment to development of an emissions trading program or carbon tax. Provided these two elements are in place, emitters will have a number of incentives for early action:

- If all or a portion of future emission allowances are allocated on a historic emissions basis the emitter can take advantage of baseline protection. Baseline protection will assure the emitter that any permanent emission reduction will lead to either a windfall of emission allowances that exceeds the emitter's actual emission levels or less of a shortfall between the allocation and actual emissions.
- If a system of performance standards combined with credit trading is used, or if emission allowances are allocated based on production levels, emitters that take early action can be assured that any permanent emission reduction will lead to either a windfall of excess credits or allowances or less of a shortfall between the allocation or standard and actual emissions.⁷
- If emission allowances are auctioned, a carbon coupon trading system is imposed or a carbon tax is imposed, emitters can be assured they will have a lower liability in relation to taxes or auction costs.
- Whatever the form of future regulatory requirements or economic instruments,

emitters will be able to take advantage of low cost emission reductions during capital stock turnover.

A clear government commitment to develop market instruments in anticipation of ratifying the *Kyoto Protocol* and implementing the market instruments by 2001 would provide a far stronger incentive for early action than an early crediting program.

If early crediting does proceed

Having questioned the possibility of developing a workable early crediting system, it is recognized that this is currently the focus of much activity in Canada. West Coast Environmental Law believes that this focus is inappropriate and that Canada would be better served by following the lead of most European nations and New Zealand, i.e., begin developing and implementing an emissions trading or carbon tax system. However, if early crediting does proceed, some early crediting systems will be more or less effective than others. This section suggests various elements that may make early crediting workable.

Entity level crediting

An early crediting system could potentially reward credits for emission reductions at a project, facility or entity level. For instance, the Greenhouse Gas Emission Reduction Trading Pilot (GERT) calculates credits with reference to specific projects. A company that improves the efficiency of a single boiler can generate credit even if the company's overall rate of improvement in emissions performance is abysmal. Alternatively, crediting could occur for emissions from an entire plant or facility (facility level crediting) or for all facilities and operations of a company (entity reporting). All early crediting proposals in the US involve crediting reductions on the basis of entity wide reductions.

If early crediting proceeds, entity level crediting has three advantages. First, it avoids the risk of crediting activities that merely shift emissions within an entity. Second, entity wide reporting encourages firms to look for opportunities for low cost emission reductions throughout their entire operations. Third, provided that baselines are sufficiently stringent, entity wide reporting is likely to reduce the risk of crediting emission reductions that would have occurred anyway. This is because large numbers of projects are aggregated together in an entity approach, and there is less risk that firms will simply pick the few projects that meet baseline requirements.

Recommendation:

If there is a continued effort to design an early crediting system, the system should use entity level crediting.

Cumulative vs. Annual Reductions

As noted above, most proposed early crediting systems award credit based on cumulative total reductions from the year in which credit generation begins until the final year of the credit for early action system. This means that the credit flowing from a particular emission reduction measure may bear little relation to the impact of that measure on achieving compliance with the *Kyoto Protocol*. Alternatively, credits could be rewarded based on the extent to which an entity has contributed to Canada's compliance with the *Kyoto Protocol*. Credits could be given proportionate to the total permanent emission reductions below a baseline achieved in the last year of the early crediting system. The difference between these two approaches is shown in Figure 1. Assuming that early crediting begins in 1999 and is in place until 2003, the proposed system gives credit proportional to the difference between points B and C rather than the area ABC. Credit is only given for actions that will continue to yield emission reductions (or increases in sequestration) in the 2008 to 2012 period. This maximises the incentive for sustained emission reductions and ensures the credit generated by an action is commensurate to the impact of an action on achieving the Kyoto target.

Recommendation:

If there is a continued effort to design an early crediting system, consideration should be given to providing credit proportionate to the extent an action will help Canada achieve compliance with the *Kyoto Protocol*.

Rewarding Past Action vs. Creating an Incentive

There are a number of major negative impacts from crediting pre-1999 action, and the rationale typically given for crediting actions from 1990 forward are severely

flawed.

If the primary purpose of early action crediting is to shift Canada's emissions trajectory there is little basis for rewarding past action. Providing credit for past action raises a number of problems:

- Given a limited budget for credit, the incentive for action is depleted.
- A valuable asset (tax dollars or emission rights) is squandered in buying something that government already has.
- There is an increase in the burden (tax or mandatory emission reductions) put on firms that have not been in a position to realise emission reductions in the 1990 to 1998 period.
- If credits are calculated by measuring total cumulative emission reductions, the credits generated by a particular action may far exceed the action's impact on Canada's ability to achieve the *Kyoto Protocol* targets.
- If the baselines for calculating credits are lax, or a "one-size-fits-all" approach to baselines is used, the main impact of crediting early action will be to provide a windfall for emitters that implemented profitable emission reduction actions.

The reasons most often given by industry for crediting actions from 1990 to 1998 are:

- The credit for early action Table agreed to credit post-1990 action in its September 1998 Progress Report.
- Post-1990 crediting is consistent with Canada's international obligations.
- Government has committed to "recognizing" early action.

All of these justifications are flawed. First, the Credit for early action Table decided that "the system will include eligible reductions occurring since 1990." This decision was taken in the context of a system where credit might take the form of "recognition or medals." There is little reason for objecting to recognition of emission reductions which occurred after 1990 or even giving plaques or medals to those firms which took early action. But, as noted above, there are very strong reasons for not providing more valuable forms of credit for early action.

Second, providing valuable credit back to January 1, 1990, is inconsistent with Canada's international obligations. As noted above, reductions of CO₂, CH₄ and N₂O occurring in 1990, and reductions in HFCs, PFCs and SF₆ made prior to 1996, have reduced Canada's emissions budget, possibly making compliance with Kyoto more difficult!⁸ Moreover, even if the start date were shifted to January 1, 1991, there is no particular reason for using the international baseline year as the starting date for a domestic program.

Third, it is historic revisionism to suggest that the federal government has committed to "recognizing" actions in the 1990 to 1998 period through credits. The source of this alleged commitment appears to be various letters of understanding between

government and industry groups. A 1995 agreement between the Motor Vehicle Manufacturers Association and Natural Resources Canada is typical. It states that NRCan "recognizes voluntary measures as an important contributor to the achievement of public policy objectives." In context, it is clear that these commitments were never intended to amount to a commitment to credit early actions. Moreover, they typically date from 1995 or 1996, not 1990. Indeed, 1990 precedes the announcement of the Voluntary Challenge and Registry by almost five years. It precedes filing of most corporate action plans by six or more years.

Recommendation:

If there is a continued effort to design an early crediting system, reductions from actions occurring prior to January 1, 1999 should not be credited.

Ownership

In some cases it may be difficult to determine which parties should receive credit for a particular emission reduction. As the issuer of credits, government will inevitably need to deal with ownership. In many cases, ownership may be clear, but emission reductions are a highly intangible form of property for which the common law rules of ownership are somewhat uncertain.

In the absence of statutory rules for ownership (similar to the statutory rules developed to deal with other intangibles such as intellectual property) there is a risk that spurious claims for ownership may make some emission reduction activities less viable. For instance, if there are no rules for ownership and government refuses to provide credit in a situation where ownership is disputed, spurious claimants could threaten to make claims for ownership, extorting payment from the parties that have invested in an emission reduction activity.

Rules for determining the initial ownership of credits or emission reductions — in particular from demand side management and renewable energy projects — will need to be developed. Basic rules of ownership are essential to any well functioning market. Once rules for initially determining ownership are established, parties should be free to transfer credits through contract.

Recommendation:

Establish statutory rules for determining to whom government will issue credits in cases of contested ownership.

Performance vs. Absolute Baselines

Baselines can be set on the basis of changes in total emissions or changes in emissions per unit of production. Absolute emissions are what matters from an environmental perspective. However, a system which gives emitters credit for

reductions with no or little consideration of production levels will tend to reward industries with declining production, create an incentive to shift production to other locations and may mean that early crediting is a completely ineffective incentive for industries that have growing production and emissions. Rewarding improvements in performance (e.g., reducing its ratio of greenhouse gas emissions per unit of output) below a baseline ensures that early crediting will still be an incentive for growing companies, and it rewards changes which are good for the economy as well as the environment.

On the other hand performance standards are difficult to apply in practice. Measuring performance is complicated by shifts in product, e.g., shifting production from fine writing paper to newsprint. These shifts can reduce an entity's emissions, but they may do little for Canada's emissions inventory if other firms increase their production of writing paper. Shifts in production from an energy intensive product to a different, less energy intensive product should not be rewarded, unless there is evidence of a real overall emission reduction (e.g., the two products may be highly substitutable and there has been a shift in the market consumption). Any early crediting system that credits based on improved performance will need to develop rules to deal with shifts in product. While this may be very simple for industries that produce relatively homogenous products (e.g., electricity, aluminium, kraft pulp, natural gas), it will be more difficult for sectors with more heterogeneous products (e.g., the chemical sector).

Whether or not baselines are set on an absolute emissions basis or a performance basis, rules will need to be developed to avoid crediting changes that do not affect overall emissions. For instance, baselines will need to be adjusted to reflect purchase and sale of assets by an entity and shifts in manufacturing processes (e.g., outsourcing of energy intensive components).

Recommendation:

If there is a continued effort to design an early crediting system, effort should be focussed on developing workable approaches to using baselines based on emissions performance.

Setting Baselines

As noted above, both lax baselines and one-size-fits-all baselines will inevitably reward actions that would have occurred anyway. This squanders a valuable government asset, decreases the amount of credit available to encourage actions which require an added incentive, and increases the emission reductions costs on other firms and sectors while providing a few emitters with windfalls.

On the other hand, a one-size-fits-all approach to baselines is easier to apply, is transparent, and may be perceived as being more equitable. The acceptability of one-size-fits-all approach hinges on the extent to which firms have wide variability in

their rates of non-additional emission reductions. If firms have widely divergent business as usual emission patterns, a one-size-fits-all approach is likely to reward a larger number of non-additional emission reductions. If, on the other hand, most firms have very similar emission patterns, a one-size-fits-all approach is less problematic. For instance, if ninety percent of firms achieve a performance improvement of 1.5% per year, and credit is given for all performance improvements beyond two percent, the amount of credit wasted on non-additional emission reductions may be acceptable. While there is limited information on variability in firms' business as usual emission patterns, Canadian Industry Program for Energy Conservation (CIPEC) reports 1990 to 1994 improvements in energy efficiency/intensity between sectors that vary between a decrease in efficiency of 4.9% (glass) to an improvements of 19.2% (pulp and paper).⁹ This suggests that a one-size-fits-all baseline would tend to largely reward non-additional emission reductions.¹⁰

It may be possible to overcome the problems associated with a one-size-fits-all baseline by setting baselines at a level that represents good, climate friendly practices. Any corporation participating in credit creation could be required to carry out a greenhouse gas emission reduction audit and greenhouse gas pollution prevention plan. The plan would identify all emission reduction opportunities, with an analysis of their cost and financial payback. The baseline from which creditable emission reductions are measured would be equal to the performance achievable by a firm if it implements all measures that have a pay back of a specified amount — e.g., ten years.

This approach has a number of advantages:

- It provides a degree of consistency while recognizing special circumstances.
- It minimises or eliminates the potential for windfalls and crediting of non-additional projects, thus maximising the extent to which early crediting reduces actual emissions, and minimising increases on the burden placed on other sectors.
- It avoids the pitfalls of the "open ended negotiation" approach advocated by some industries.¹¹
- It provides valuable information to industry, identifying cost effective emission reductions.
- It provides valuable information to government, helping accumulate information on cost curves.

The use of energy or greenhouse gas emission audits has a number of precedents. For instance, in Denmark companies can apply for a carbon tax refund if, among other things, they have an energy auditor certify that they have made all reasonable energy efficiency investments. In 1992, Germany proposed a regulation which required mandatory heat audits and mandatory implementation of measures that pay back over the "fiscal life time" of the facility. Twenty US states require pollution prevention plans which identify and assess the financial and technical feasibility of

all emission reduction or toxic use reduction opportunities.

If there is minimal variability between firms' emissions patterns, such that a one-size-fits-all approach is acceptable, one approach that has merit is the use of performance baselines in the post-1999 period which vary according to performance improvements in the 1990 to 1998 period. Entities that have rapidly improved emissions performance from 1990 to 1998 would be required to make more modest performance gains to create credits. Companies are given a tangible and valuable reward for improvements in the 1990 to 1998 period, but actual credit is reserved for encouraging actions that will reduce Canada's emissions. This may overcome the political problem of industry's demand for recognition of past action. It also makes sure that a company which made major carbon intensity improvements in the 1990 to 1998 period is still in a position to gain credit in the post 1999 period even though it has utilized its "lowest hanging fruit".

The following is an example of the approach of adjusting post-1998 baselines to reflect emission reductions in the 1990 to 1998 period. It assumes that baselines are set to reflect the level of performance improvement necessary to achieve Canada's six percent reduction target by 2007. The Canadian industrial sector's real GDP grew at an average of 2.3% from 1990 to 1998. If this continues till 2007, the sector as a whole would have to achieve an average emissions performance improvement of roughly 2.6% p.a. from 1990 to 2007 in order to meet the Kyoto target by 2007. Thus, government might state that entities which met the 2.6% p.a. emissions performance level in the 1990 to 1998 period could gain credit if they improved their emissions performance by more than 2.6% per annum in the 1999 to 2007 period.

Companies with lower rates of emission performance improvement in the 1990 to 1998 period could be required to achieve greater improvements in the post-1998 period. For instance, an entity which only reduced its emissions per unit of production by 1.0% p.a. in the 1990 to 1998 might need to reduce such emissions by 4.0% p.a. in the 1999 to 2007 period in order to generate credit. (This is the rate that would be necessary to reduce emissions by six percent from 1990 levels if the company's production grows at a rate equal to the Canadian average.) On the other hand a company which achieved an emissions improvement of 3.0% per annum from 1990 to 1998 would only need to improve its performance by 1.0% in the post-1998 period in order to gain credit).

While this approach has merit, its acceptability will depend on likely variability in future performance improvements. If variability is as significant as suggested by CIPEC, the one size fits all approach is unacceptable.

Recommendation:

If there is a continued effort to design an early crediting system, consideration should be given to setting baselines based on entity wide, energy audits and pollution prevention plans. Any consideration of a one-size-fits-all approach to

baseline protection will need to carefully examine the extent to which baselines simply reward non-additional emission reductions.

Setting the Level of Effort

Whatever approach to baseline protection is adopted, it will be necessary to choose an appropriate "level of effort." Table 2 attempts to define how the different approaches to baseline setting (the horizontal axis) might lead to different baselines according to different levels of effort (the vertical axis). The low level of effort gives credit for any actions that reduce emissions. The medium low level of effort only gives credit for actions that exceed the level of effort necessary to shift Canada's current emissions trajectory (i.e., it only gives credit for additional emission reductions). The medium high level of effort only gives credit for actions which exceed the level of effort necessary to stabilize emissions, and the high level of effort only gives credit for actions which exceed the level of effort necessary to put Canada on track to compliance with *Kyoto*. Where a particular approach and level of effort corresponds to an approach in the US, the name of the approach is highlighted in bold.

Choosing an appropriate "level of effort" is also important to making the credit for early action system as effective as possible in bending Canada's emissions trajectory. If credit were given for all improvements, there would always be an incentive to make marginally profitable improvements that lead to incremental improvements in efficiency. It would also mean that credit is given for a large number of non-additional emission reductions that are already part of Canada's emissions trajectory. Assuming, that there is a limit to the total credits available this would mean less of an incentive for more significant improvements in efficiency that have higher costs. On the other hand, if the bar is set too high, many firms may decide that credit is unachievable or too expensive. As a result they might not pursue even marginal improvements.

Recommendation:

The level of effort implicit in baselines should exceed the level required to shift Canada's emissions trajectory, i.e., credits should only be given for emission reductions which are clearly additional.

Table 2: Correlation of Baseline Approaches and Levels of Effort

	Approach to Baselines				
Level of Effort	Absolute Entity (no accommodation for growth or special circumstances)	Entity Emissions per Unit Output (no accommodation for other)	Project	Entity – Based on Projected Emission Trends	Performance Baselines Based on Energy Audits

		special circumstances)			
Low	Current absolute emissions increase at rate equal to average increase if no autonomous efficiency improvements.	current emissions per unit of output.	No additionality criteria.	N/A	Performance Baseline equal to Current Performance.
Med. Low	Baseline which grows at the average rate of increase in emissions in Canada.	Baseline equals 1998 emissions per unit of output with annual improvement equal to average autonomous energy improvements.	Project baseline includes additionality criteria.	Baseline Equals Projected Emission Trends for Entity under BAU	Performance Baseline based on emission levels if all projects with 2-5 year pay back implemented.
Med. High	Baseline equals absolute emissions in 1998.	Baseline equals 1998 emissions per unit of output with annual improvement equal to average rate necessary to stabilize Canadian emissions at 1998 levels given projected economic growth.	N/A Applying a stricter additionality requirement would create a perverse incentive to invest in projects that are not lowest cost.	Baseline equals firm's projected BAU emission trends minus percent equal to percentage difference between Canada's 1998 actual emissions and projected Canada's projected emissions for year.	Performance Baseline based on emission levels if all projects with 5-10 year pay back implemented
High	Baseline equals straight line between 1998 emissions and 6% below 1990 emissions.	Baseline equals 1998 emissions per unit of output with annual improvement equal to average rate necessary to reduce Canadian emissions at	N/A Applying a stricter additionality requirement would create a perverse incentive to invest in	Baseline equals firm's projected BAU emission trends minus percentage equal to percentage difference	Performance Baseline based on emission levels if all projects implemented that are profitable given ten to twenty dollar per tonne carbon tax.

		1998 levels given projected economic growth.	projects that are not lowest cost.	between Canada's projected emissions for year and straightline between 1998 emissions and 6% below 1990 emissions in 2008.	
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Conclusion

The federal government should proceed immediately with announcing its commitment to providing baseline protection from 1999 forward through the reconstruction of baselines. At the same time the federal government should announce its intention to implement an emissions trading or carbon tax system by 2002. In the face of a strong commitment continued work on credit for early action will be unnecessary.

If the government does not follow this recommendation, the design of a credit for early action should not be taken lightly. No design should proceed without thorough analysis of its likely effectiveness in helping Canada achieve compliance with the *Kyoto Protocol*, its impact on equitable burden sharing and its cost-effectiveness (i.e. the value of the credit given under the program per tonne of additional emission reductions achieved). In assessing this effectiveness it may be useful to conceptualize the impacts of an early crediting system on a balance sheet. Credits useable against future regulatory requirements or taxes are a liabilities that will need to be borne by government and ultimately tax payers or emitters. To be worthwhile a system will need to cause additional emission reductions which exceed this liability. Table 3 provides a conceptual balance sheet for analyzing early crediting systems.

TABLE 3

	Assets	Liabilities
Assets and liabilities in absence of early crediting	Assigned amount under <i>Kyoto Protocol</i>	Projected emissions 2008-2012 in absence of projected (non-additional) improvements in performance
	Emission reductions in 2008 to 2012 due to non-	

system	additional improvements in performance.	
	Non-additional carbon removals in 2008 to 2012 by biological sources counted under the <i>Kyoto Protocol</i>	Non-additional carbon emissions 2008 to 2012 from biological sources counted under the <i>Kyoto Protocol</i>
	JI emission reductions units, international emission allowances, and CDM certified emission reductions transferred to Canadian international account	JI Emission reductions units and international emission allowances transferred from Canadian international account
Liabilities with no corresponding asset created by early crediting		Credits for reductions/sequestration that are not relevant for <i>Kyoto Protocol</i> . e.g. credit for activities implemented jointly, credits for biological sinks not included under articles 3.3 or 3.4 of the <i>Protocol</i> .
		Credits for pre 2008 reductions from non-additional emission reduction activities, e.g. credit for activities from 1990 to 1998, credits for reductions below baseline that would have occurred anyway. (Greater if one-size fits all baseline used; greater if credit given for pre-1999 activities; smaller if stringent baseline used.)
		Credits for emission reductions or increases in sequestration which do not extend past 2008
		Credits from gaming with no real reduction.
Liabilities with corresponding¹² asset created by early crediting	Additional emission reductions in 2008 to 2012 resulting from credits given prior to 2008	Credits given for additional emission reductions prior to 2008. (Greater if cumulative emission reduction approach taken; greater if early crediting extends for over 5years.)

Assets with no corresponding liability created by early crediting	Additional emission reductions in 2008 to 2012 for which no credit generated (Greater if baselines stringent because additional reductions may be needed to reduce emissions below baseline)	
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Endnotes

1. This is based on estimates in Price Waterhouse Coopers "Quantifying Greenhouse Gas Reduction," October 28, 1998 (the PWC Study). The PWC Study estimated the cumulative emission reductions by Voluntary Challenge and Registry (VCR) registrants. The PWC Study counted cumulative emission reductions up to 1996 or 1997, depending on when a company had filed its latest Action Plan. The estimated cumulative reductions for the VCR are 57 Mt of carbon dioxide equivalent. Annual emission reductions attributable to VCR actions likely started small, increased to the end of the time period covered by the PWC Study (1996 or 1997), and increased by even more in 1998 (this is because there would be an increasing number of emission reduction activities which yield reductions). It is also likely that more emission reductions will be registered if baseline protection is offered for pre-1999 actions. For the purposes of determining the allocative effects of baseline protection for the 1990 to 1998 period, it is assumed that the annual emission reductions under the VCR were 25 Mt per year in 1998. In fact it could be higher. The PWC estimate is based on emission reductions registered by VCR registrants only. Given the value of allocations it is likely additional actions and participants will be registered under the VCR. It is also assumed that all emission allowances in the 2008 to 2012 period will be allocated on a historic emissions basis, and that the allocation ratio of baseline emissions to allocated allowances is 100:80. The following calculation gives the percentage of Canada's overall emission budget that would be allocated on the basis of emissions which do not actually exist: 25 Mt per year times five years (the budget period) times 80% (the fraction of first compliance period budget over current Canadian emissions) divided by 2800 Mt (Canada's First Compliance Period budget). This amounts to three percent of Canada's budget. If each tonne of reductions is worth ten to thirty dollars this means that the value of the extra allocation given due to baseline protection in the 1990 to 1998 period is one to three billion dollars.

2. 1990 is the baseline year under the *Kyoto Protocol*. Reductions occurring in 1990 would reduce our baseline emissions and therefore make our 2008 to 2012 budget more difficult. Canada has an option of using 1995 as its baseline year for HFCs, PFCs and HF_6 (We are unlikely to do exercise this option as SF_6 emissions were reduced by 1 Mt dwarfing increased emissions from HFCs and PFCs).

[3.](#) Canada's National Climate Change Process involves fifteen "Issue Tables" made up of representatives from environmental, government and industry groups. Each issue table is tasked with developing recommendations to the government on specific climate change topics.

[4.](#) Sinks refers to biological processes which remove greenhouse gases from the atmosphere and sequester elements of the gas. For instance, growing plants remove carbon dioxide from the air and sequester carbon in wood, leaves, and soil. This carbon is released if the tree burns down.

[5.](#) It should be noted that the international community is awaiting advice from the Intergovernmental Panel on Climate Change regarding treatment of sinks. However, the interpretation of Art. 3.3 was confirmed at the Fourth Conference of Parties to the Framework Convention on Climate Change, November 1998.

[6.](#) The international law treatment of forest fires, harvest related emissions, and disease is currently uncertain.

[7.](#) For a description of various possible emissions trading systems see National Roundtable on the Environment and Economy, *Canada's Options for a Domestic Greenhouse Gas Emissions Trading Program* (Ottawa: Renouf Publishing, 1999).

[8.](#) See above at footnote 2.

[9.](#) Canadian Industry Program for Energy Conservation, *1994-1995 Annual Report*, (Toronto: CIPEC Secretariat, 1995).

[10.](#) To gather relevant information it would be necessary to make assumptions as to whether credit is given for performance improvements, absolute improvements or some mix of the two.

[11.](#) Some industries have advocated simply negotiating baselines prior to development of guiding policies. This could rapidly devolve into an "anything goes" approach to baseline setting, while not significantly shifting Canada's emissions trajectory. (Once one firm has justified an absolute baseline with moderate reductions based on business as usual projections that see little growth, other firms would be able to argue for rapidly increasing business as usual emissions based on growth in production.) Such a system could also become mired in litigation due to inconsistent or arbitrary treatment of different emitters.

[12.](#) Corresponding assets may not be equal to liability.