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TABLE RONDE NATIONALE SUR L'ENVIRONNEMENT ET L'ÉCONOMIE

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National Round Table on the Environment and the Economy

Report of the September 18-19, 1998 Workshop
Mississauga, Ontario

Prepared for:

Multistakeholder Expert Group on Domestic Emissions Trading

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November 1998

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Part A: Workshop Background and Process

Since its formation in 1988, the National Round Table on the Environment and the Economy (NRTEE) has been involved in many public policy issues in Canada. The Round Table's work has familiarized Canadians with these issues and provided valuable input to decision makers. Climate change is one important area in which the NRTEE has actively participated; among other things, it recently established a multistakeholder expert group to design and assess options for a domestic emissions trading program for greenhouse gases. In addition to enhancing public debate on the topic, the results of this work will contribute to the national process now underway to determine how the Kyoto Protocol will be implemented. A domestic emissions trading program is expected to be seriously considered as a key component of Canada's strategy.

1. The NRTEE Project on Domestic Emissions Trading

The NRTEE Project on Domestic Emissions Trading is examining the potential of both credit trading and allowance trading systems to control greenhouse gas emissions in Canada. Potential systems are being evaluated against criteria related to: economic efficiency, equity, technical feasibility, political feasibility, and administrative feasibility.

Much of the work for the project is being undertaken with the assistance of the NRTEE's multistakeholder expert group on domestic emissions trading. After an initial meeting of the group in the spring of 1998, the NRTEE identified 14 possible designs for a domestic emissions trading system for greenhouse gases in Canada. The expert group was consulted about these potential options and the consultation process allowed the NRTEE to focus its future work on six of the proposed options.

During the summer of 1998, the NRTEE prepared a series of background papers describing each of these options. Nine additional papers were also prepared, which examined key design issues that would need to be addressed in several, or all, of these options.

In September 1998, the multistakeholder expert group was again convened to discuss the six options, agree on a subset of options that would undergo further analysis, and examine mechanisms to address the ten key design issues. This document is the record of the September workshop discussions and recommendations.

2. Purpose of this Workshop

The objectives of this workshop were:

- to identify and agree on a subset of the NRTEE's six potential domestic emission trading systems (or modified versions of those systems) that should undergo further analysis, and
- to use the information contained in the nine NRTEE issue papers to flesh out more robust versions of the subset of options selected to facilitate further analysis.

3. Workshop Process

The workshop began with a review of domestic emission trading options; participants then selected a subset of options for further discussion and analysis, as described below. Plenary discussions of domestic emissions trading design issues were interspersed with small group working sessions in which the options and design considerations were discussed in detail. The two-day workshop concluded with a discussion of areas that require further analysis and what the next steps might be.

4. Option Selection

Robert Hornung of the Pembina Institute and Erik Haites of Margaree Consultants, authors of the NRTEE's background papers on system options and design issues, reviewed the following six options with workshop participants:

1. Voluntary Credit Trading Program
2. Voluntary Credit Trading with Mandatory Performance Standards
3. Cap on Carbon Content Trading of Fossil Fuels Produced and Imported
4. Cap and Allowance Emissions Trading
5. Cap and Allowance Emissions Trading and Credit Trading (includes transportation)
6. Cap and Allowance Emissions Trading, Including Cities, and Credit Trading

A seventh option (that is, option #5 above but excluding transportation) was identified as having merit, and it was agreed that this option and option #5 should be considered together as variations on one system.

Each participant was asked to do two things:

1) select the option that s/he was most interested in exploring and designing for the purpose of the workshop, and
2) indicate the option that s/he considered to be the least practical or to have the least value for further assessment at the workshop.

These selections were tallied up and the fourth and sixth options were dropped due to lack of interest. Participants then chose one of the remaining options on which to work. Based on numbers and group composition, several participants volunteered to move to a group with smaller numbers.

The options selected and examined by workshop participants in small groups are summarized below. The scope and elements of several of these four options changed significantly once the small groups began to address design issues. This is evident in the detailed small group reports presented in Part B.

5. Domestic Emission Trading Options Discussed at this Workshop

Voluntary Credit Trading

A voluntary credit-trading program is an option in the context of a potential future national commitment to limit greenhouse gas emissions. Typically, credits must be real, measurable, and additional, and actions to sequester greenhouse gases must lead to long-term sequestration. A registry would track the credits created, changes in ownership and credit uses. Such a program would likely be established, managed and financed by participants. It should include the widest possible range of sources and sinks in order to (a) gain experience with issues specific to different sources and sinks and (b) get as much diversity in control costs as possible.

Voluntary Credit Trading with Mandatory Performance Standards

Two types of mandatory performance standards are envisioned in this option: 1) large energy users would be subject to performance standards for energy-related emissions per unit of output, and 2) manufacturers and importers of appliances, energy-using equipment, and vehicles would be subject to performance standards for the products they sell in Canada. Application of these standards serves to indirectly control residential, commercial, institutional and motor vehicle emissions. Credits are created by reducing emissions below the level specified by the standard, and could be sold to participants whose emissions exceed the standard. Governments need to set the standards to ensure actual emissions are less than the national commitment, and standards would be adjusted periodically for changes in technology or the national commitment. Although mandatory performance standards combined with a voluntary credit-trading program would cover virtually all energy-related greenhouse gas emissions, this option does not precisely cap emissions by participants.

Cap on Carbon Content of Fossil Fuels Produced and Imported

In this option, a cap is imposed on the carbon content of fossil fuels sold in Canada by producers and importers. An important design consideration is whether to implement at the source or at the initial processing plant for oil and natural gas production, but ideally it should be implemented as far "upstream" as possible – that is, close to the wellhead or mine mouth. Irrespective of the point of implementation, ongoing testing is required to determine carbon content of the fossil fuel involved. Allowances for carbon content of fossil fuels produced and imported into Canada could be sold at auction or distributed *gratis*. An upstream carbon content trading program would cover virtually all energy-related CO_2 emissions in Canada. However, energy users would face increased prices for fossil fuels, thus giving them an incentive to conserve and switch to less carbon-intensive energy sources.

Cap and Allowance Emissions Trading, with Voluntary Credit Trading

The basic structure of a cap and allowance trading program requires the establishment of an emissions cap to limit emissions by all participants. Emission allowances are then distributed to each participant *gratis* or by auction. Each participant must hold enough allowances to cover actual emissions in a given year, as measured through continuous monitoring or calculated by fuel meters. Trading of allowances is permitted. Participants are defined at the company level, and a minimum annual emissions level would be established. This option would cover major industrial point sources of emissions. In one variation, transportation-related emissions would also be covered through the imposition of caps on the carbon content of transportation fuels sold be refiners. This program would cover approximately 70 percent of Canada's energy-related greenhouse gas emissions and about 55 percent of Canada's total greenhouse gas emissions. In another variation, transportation-related emissions would not be covered by the program. Sources not covered by the cap can be incorporated into the program through a voluntary credit trading system.

6. Small Group Discussions

Workshop participants divided into four small working groups, with each group looking at one of the four options described above. All working groups were asked to address the following questions:

- Are there any substantive changes you would make to the domestic emissions trading system option proposed?
- How should the option address the key design issues highlighted in the NRTEE's background papers prepared for the workshop? (Workshop participants were given presentations on each of these papers in special plenary sessions over the two day workshop.)
- What are the key design features on which you can reach consensus?
- What are the key design features or issues on which you were unable to reach consensus and which you think should be the focus of further discussion and analysis?

Summaries of the discussions of the four small working groups are provided in the following text.

Part B: Domestic Emissions Trading Options – Designs and Associated Issues

Option 1. Voluntary Credit Trading

Group Members:

Jean Bélanger, Chair, NRTEE Economic Instruments Committee
John Dillon, Business Council on National Issues
Robert Flemington, VCR, Inc.
Linton Kulak, Shell Canada, Ltd.
Leigh Mazany, Department of Finance Canada
Bob Mitchell, Alberta Department of Energy

Facilitator: Rob Macintosh
Recorder: Lara Cartmale

1.0 Suggested Changes or Enhancements to the Proposed System

While this group suggested no major changes to the program design sketched out in the NRTEE paper prepared for the workshop, it did provide additional detail to some elements of the design. The group also elaborated a number of key principles that they felt must underpin any attempt to design a voluntary credit trading system. These principles included the following:

- **There is a need for self-imposed accountability in a voluntary credit trading system.**

  While participation in the system is voluntary, an effective system will require the development and self-administration of rules that provide structure and rigor to the system.

- **Complementary measures are required.**

  A voluntary credit trading system should only be one component of a broader voluntary action strategy to reduce greenhouse gas emissions. It is a useful part of such a strategy because it can lower transaction costs, and facilitate learning and action.

- **Leadership is important and should be rewarded in a voluntary credit trading system.**

2.0 Key Design Features and Principles

System Scope

There was general agreement with the scope of the program proposed in the NRTEE discussion paper. The following points were highlighted:

- It was agreed that the system should include as many non-combustion sources as possible, as long as they meet the criteria developed to determine what emission reductions are creditable.
- It was agreed that the geographic scope for any domestic credit trading system is the entire nation. Sub-groups could be regional or sectoral in nature, but should be totally integrated nationally.
- It was agreed that the system should be integrated with the Clean Development Mechanism and international emissions trading.

Criteria to Determine Creditable Emission Reductions

The group fleshed out the NRTEE discussion paper with its discussion on the criteria that a voluntary credit trading system might use to determine what specific emission reductions would be creditable under the system. Some of the key points raised are noted below.

- It was agreed that national criteria for credit creation should be consistent with international criteria.
- It was agreed that criteria could be applied on both a case-by-case or pre-approved ("bounty") basis, that these approaches are complementary and that both could be utilized. The group also concluded that:
  - When credit eligibility is determined on a case-by-case basis, the criteria could develop over time, and the first players into the system can influence the "rules" and standards. Credit would be based on cases and precedents (like common law), and at least 100 cases would likely be needed.
  - When credit eligibility is determined under a "bounty" system, specific actions that are desirable for people to take are identified and barriers to participation are removed. This could include the use of "pre-approved" categories of actions or projects, projects that must be verified by a third party, or "benchmark" projects. Mandated performance standards could also be defined, against which credits would be measured.
- It was agreed that both in-house reductions below a corporate baseline representing an equitable share of the national reduction commitment, and third-party project-based offsets could produce tradeable credits. There should be no difference in the criteria for credit eligibility for these two approaches.

Incentives

The group fleshed out the NRTEE discussion paper by discussing the types of incentives required to encourage participation in a voluntary credit trading system. Some of the examples provided included:

- A system to provide credit for early action
- Government acting as a "kick start buyer"

  Governments could encourage participation in a voluntary trading system by giving value to credits in the marketplace. This would be like a "call for credits," and represents a facilitating role that could be played by the provincial, federal and municipal governments.

- Continued freedom from "command and control" approaches

  One way to do this would be to establish specific performance criteria that, if met, would allow participants to continue to participate in Canada's greenhouse gas emission reduction efforts on a voluntary basis. This would require clear goals against which performance can be assessed, as is the case with voluntary initiatives in the Netherlands. Regulation would serve as a fallback for those who fail to perform.

Liability

The group agreed with the suggestion in the NRTEE discussion paper that the party liable for the emission reductions should be determined in the negotiation of a contract for the purchase of emission reductions.

3.0 Unresolved Design Issues and Items Requiring Further Information and Analysis

Complementary Policies

While the group discussed the need for complementary policies, no specific recommendations were proposed. As a result, there is still a need to determine what other complementary policies might be applied. This is part of a broader discussion concerning the extent to which voluntary actions represent a sufficient contribution to national climate protection objectives.

Lifetime of the System

Group participants thought it was important to know if voluntary credit trading would be a transitional or an ongoing initiative. Many companies want to exhibit good behaviour on the climate change issue and this approach allows the demonstration of good behaviour by corporations, governments, and others. The group noted that the expected lifetime of the system might have an impact on incentives for participation. For example, if there is a possibility that a regulatory approach might be forthcoming, there may be a strong incentive to participate to avoid the imposition of such an approach. The group also noted that work is needed to determine the lifetime of a credit, regardless of the lifetime of the system.

Monitoring and Reporting

The group identified a need for additional work related to monitoring, reporting and the creation of a registry. It was also agreed that more work is required to determine who "holds" the infrastructure (government, industry, other?). It was unclear if this is an administrative detail or a critical issue. Finally, the group noted that a decision would be needed on whether or not third party auditing of emission reductions would be required.

Goals for the System and Participants

The group discussed whether or not goals should be established for the entire credit trading system to help provide an incentive for participation and to determine what "success" looks like. (e.g., Is it "X" tonnes of carbon reductions? "Y" number of trades?). It was agreed that any goals and targets should be practical and credible and should effectively "drive" action. It was also agreed that there must be a relationship between setting goals for broad emission reductions (the program) and drivers for buyers to want to trade credits. In addition, it may also be useful for individual participants in the system to establish their own goals, although it was agreed that there needs to be more discussion about whether these goals should be self-imposed or required as part of the system.

The Additionality Criterion

The Kyoto Protocol clearly states that a project under the Clean Development Mechanism must be additional and must represent incremental activity (i.e., it would not have happened anyway). In the domestic context, if a credited action represents "business as usual" and emissions do not actually come down from what they would have been, someone else will have to produce the incremental emission reductions required for Canada to meet its commitments. This becomes an equity issue. However, participants also identified concerns about the practicality of testing for additionality, indicating the desire to not create barriers to participation in a voluntary credit trading system. The group agreed that defining "real" emission reductions and methods to operationalize the additionality criterion need to be examined in detail. The group also indicated that further work was needed to determine whether shutdowns would meet additionality and other criteria for credit creation.

Eligible Entities

The group recognized that the system design must consider who can participate. Although no consensus was reached on eligible entities, proposals ranged from allowing anyone to participate to the suggestion that participants must have greenhouse gas emissions below a specific "baseline" level before being allowed to buy, sell or trade credits.

Non-Combustion Sources and Sinks

The group agreed that non-combustion sources and sinks must both be part of the system. It was also agreed that as many sources as possible should be included, although it was recognized that more work is needed to assess where technological restrictions (such as difficulties in measurement) will impose some limits. For example, Canada is currently the only country that includes loss of soil sequestration capacity in its inventory, but this component is not part of the existing international agreement. Including soils on both sides of the ledger has considerable potential value but the question is whether people would invest in this measure if international credit cannot be obtained.

The Role of Life-Cycle Emissions

Several issues are associated with the use of life-cycle analysis in the design of an emissions trading system: how extensive is the analysis, what is the "real" or "net" reduction at the end, and how much of the life-cycle emissions associated with a project are eligible for credit? More work is required in these areas. It was felt that the complexity of life cycle analysis could discourage a voluntary approach since both an acceptor and a donor are needed. As a result, it was agreed that any such analysis should focus on the big picture, but not get carried away with every single detail. The "80-20" rule provides practical guidance for the use of this tool. The group also concluded that, in general, credit for life-cycle emission reductions would have to be given at the point where action is taken.

4.0 Feedback and Questions from Plenary Sessions

- **Incentives** – While strong incentives are needed, they must also represent a good business case (i.e., cost-effectiveness). Under a voluntary program, there are no binding limits on emissions. This means there is not a strong demand for credits. Thus, incentives are needed to kick-start the program – reducing future risk, etc. is not enough.
- **Defining a goal** – Goals are important. Broad goals could be set relative to the Kyoto Protocol, and then individual participants could define their own goals. Still, an incentive is needed to set goals and then trade to reach them. It may be appropriate to have a goal for 2000 or 2005. Targets could be set now to get us closer to the Kyoto commitment, which may mean a formalized target process is needed. Governments have to look at the lowest cost options for establishing such goals or targets, which may include Memoranda of Understanding (MOUs).
- **Determining baselines** is a difficult task that, if not done properly, could undermine the process.
- **Liability in a voluntary system** – Who is responsible for the market – the buyer, seller or the federal government? Is the arrangement simply "buyer beware"? This issue becomes important after 2008.
- **What is voluntary?** Is the adoption of a limit or a target voluntary? One of the keys to making a voluntary system work is the number of interested participants.
- **Is a voluntary system transitional or permanent**? This will ultimately be a political discussion. If the system is credible and can show measurable progress, it could become permanent. There are various kinds of "voluntary" and, in the absence of a coercive factor, it is important to make a strong business case for participation. Long-term business sustainability, not just the relatively short-term goal of meeting the Kyoto commitment, should be supported through short-term voluntary agreements. Some participants see a voluntary system as a necessary transition step to regulated cap and trade systems.
- **Credit creation on a life cycle basis** – There is some concern about double counting if the life cycle approach is used to create credits.
- **The free-rider problem** – Some mechanisms, such as peer pressure, are available to deal with non-participants in a voluntary program. This is a function of leadership and reflects the need to have a credible mechanism to quantify actions for verification. Negotiation would be a long-term process. Targets and MOUs are not essential, but could make things work faster.
- **Additionality** – More work is needed to address the problem of a sector meeting its target by scooping up emission reductions that are not additional and passing the burden of new incremental emission reductions onto other sectors.
- **Tiered system** – There are different levels of accountability and commitment and, although this was not discussed, there could be different levels based on prior rigor with less questioning and less need for technical commitment or review.

Option 2: Voluntary Credit Trading with Mandatory Performance Standards

Members:

David Coates, Ontario Hydro
Doug Harper, Ontario Ministry of Environment
Bill Palmer, CHEMInfo
Steve Pomper, Alcan Aluminium Ltd.

Facilitator: Angelo Proestos
Recorders: Bill Palmer, Pat Moore

1.0 Suggested Changes or Enhancements to the Proposed System

The group had a number of suggestions to enhance the system proposed in the background paper. A key suggestion was that this option should be renamed "Mandatory Performance Standards with Credit Trading." The group also proposed the following changes:

- Two types of mandatory standards should be considered to deal with most sources:
  - standards that apply to production processes, and
  - standards that apply to final consumption of products (such as cars, refrigerators, etc.)

- Standards that apply to production processes could be an absolute emission level per annum, rate base or some other factor, all of which tie into Canada meeting its overall obligation. More work is required to describe the linkage between rate-based standards and Canada's Kyoto obligations. Furthermore, a logical cutoff for the application of these standards is required. For example, standards related to production processes might only apply to energy users and emitters that break through a certain threshold in relation to the overall Canadian target (e.g., 100,000 tonnes of CO_2-equivalent). In establishing a cutoff, the capacity to achieve the standards must be considered. There should, however, be no constraints to participation in the system by those who are not covered by the performance standards.

- Product standards should be applied to products that make a significant contribution to Canada's greenhouse gas inventory. These standards are likely to be rate-based. If the product does better than the standard, it should generate credits for the life-time of the product.

- Government's role should be to set the standards. A government agency should also accredit auditing companies to oversee adherence to protocols and validate the measurement and calculation of emissions. There may also be a need for a dispute resolution mechanism.

- Credits should be company-specific for large energy users and relate clearly to the Kyoto commitment.

2.0 Key Design Features

The group noted that mandatory standards must be set correctly to ensure that inventories are calculated properly. This prevents credit from being obtained for "business as usual" practices and underscores the need for actual action to be taken to reduce emissions before credit is given. In general, mandatory standards should be established on a process basis rather than on a company basis to avoid proprietary issues. This may be an issue with a company like DuPont that produces hundreds of different products.

It was generally agreed that creating and selling credits should be open to everyone, not just those subject to the mandatory performance standards. In this way, the standards can provide reasonable guidance but others can also be part of the process. Other players can go through a verification process to generate a "non-performance related" credit, which could be available for sale to those in the performance standard loop. This approach ensures access to the least-cost reductions. Credits created under this system could be applied in 2008. If there were exceedances, emitters would have to have credits in hand or borrow from the future period (if allowed).

It was noted that setting mandatory standards that connect emission limits to the national commitment, eliminates one main drawback of a credit trading program.

Specific Key Design Features

Geographic scope – Unrestricted

Basket of gases – Both combustion and non-combustion gases

Competitive market – Many participants, no barrier to entry

Incorporate multiple trading programs – Yes, all should be in one market on a CO_2-equivalent basis.

Emissions monitoring – Yes; use mass balance or other appropriate tools and nationally acceptable calculation methodologies outlined in the performance standard.

Reporting – Yes

Legal liability for the credit allowance validity – "Buyer beware," but ultimate responsibility will be with the seller. Buyers should generally be liable and liability should not be retroactive.

Audit Verification – Yes

Market Institutions – Yes

Operation of a Registry – Yes, ideally only one

Price Disclosure – Futures market, yes; between two parties, no.

Transaction Costs – It is hoped these will be low; generally no price disclosure.

Banking of Credits to Future Period – Yes, although indefinite banking becomes difficult.

Allowances and Credit Life – Indefinite

Borrowing from Future Periods – No

Compliance Period – Annual

Penalties for Non-Compliance – Yes; this should be negotiated and there are many possibilities.

Allocation of Allowances – Does not apply

Allocation of New Sources – Should be negotiated to include new source standards that are more stringent than existing standards (i.e., barrier to entry). Alternatively, the overall average comes down to accommodate new entrants.

Expansion of the System – Yes

GWP Values – Not retroactive; if changes are needed, they should apply to a future period

Changes to Emissions Caps if International Commitments Change - Yes

3.0 Items Requiring Further Information and Analysis

1. How should new sources be dealt with?
   Allow for growth by allowing for a change in the mandatory standard.
2. How should a stream of credits from products be treated?
3. How should life-cycle considerations be addressed – through the consumer/product owner or manufacturer/producer?
4. When is it possible to make use of credits?
   How can we create a stream of credits in cases where credits have not yet been achieved; e.g. a product such as energy-efficient refrigerators. In such cases, credits are not in a bank up-front, but are achieved on an annual basis. The question is, when can the credit be gained? When the product has been in place for a year? Who gets credit for a more fuel-efficient vehicle – the manufacturer or the purchaser? Real time would be used for some processes (e.g., utilities) while for others (such as manufacturers), credits would be after-the-fact due to the lifetime of the products they produce.
5. How should additionality be addressed?
6. What actions are allowed to obtain credit (e.g., shutting down plant)?
   Emitters must meet a negotiated performance standard and if they do not, they buy or sell credits. Even if a plant is shut down and there is an agreement on standards, then the emissions avoided as a result of the shut-down should be counted as credits.
   Credit is received when an action is taken that reduces emissions (rate or emissions) below a definable baseline vs. shutting down the plant, which should receive a credit. If the rate base is not reflective of actual emissions (that is, minus six percent), then no actions may have to be taken to get down to the desired level.
7. How should emissions be monitored?
8. Is there an overall ceiling for greenhouse gas emission reductions due to production increases? How are credits allocated in this case?
9. The terms "voluntary" and "credit" must be clearly defined. Trades will be made if a participant is either short of credits or has a surplus of credits, which means most of the time, but the proposed program could be attacked because it has no driver.
10. How should the import trade issue be handled? Standards for some commodities are fairly simple (such as coal and oil that are imported or exported), but for some complex products, the process could be more difficult.
11. How can non-combustion sources be included in the program (see section 5.0 below for an example)?
12. How good are our inventories? It is hard to set up a cap and allowance trading program if the inventory numbers aren't good. It is easier to account for reductions from a credit trading program in which each company documents change from its base level.
13. How should credits from other countries be treated? Credits that are created in other countries such as Russia and are recognized by an accredited agency can be used, but this is risky. Riskiness of the credits is incorporated into the contract between buyer and seller and there can be compensation if credit proves not to be fungible under Canadian terms. In a perfect world, all Annex I countries would recognize all credits on the same basis

4.0 Feedback and Questions from Final Plenary

- An advantage of placing liability on the buyer is that it prevents a shell game of sellers switching legal names.
- How many performance standards would need to be developed? This requires additional analysis.
- Further discussion and clarification are needed to better define the following terms: cap, allowances, performance standards, emission limits and credits.

5.0 Other Background Information

This group presented the example of coal mining to illustrate how non-combustion sources could be included in a system based on mandatory emission limits (standards) with open trading.

- Each non-combustion source represents a "card in a deck," which is put into two piles: one pile for initial inclusion and one pile for those not part of the system. The piles are not static, but merely represent the initial "deal." The general review criteria that are used under current GERT/PERT systems should be used to determine what is in and what is out.
- Each of the sources on the non-combustion list **can** be evaluated. Where the number of participants is low (industrial), this is easier to review; probably the first.
- Nova Scotia's deep-mine coal has higher methane emissions per kilogram, compared to Alberta's strip-mined coal.
- Coal will have attached to it the associated methane. On a level (emission rate) playing field, Nova Scotia coal, with its higher "attached methane," would incur higher costs due to the methane attachment; for example:

  100 tonnes CO_2/TJ + x tonnes CO_2-eq/TJ, increment for methane
- If allowances need to be purchased by the buyer to cover the excess emissions, the coal would have to be sold at a lower price. If the coal company purchases the allowances, it would incur additional costs, thus reducing the competitiveness of Nova Scotia mines.
- This will test political will to maintain consistent emission rates, as production and employment could decline as a result; however, the same principle applies now to sulphur content of coal: lower sulphur, higher price.
- As emissions inventories become more difficult, emission rate approach with open trading becomes more attractive.

Option 3. Cap on Carbon Content of Fossil Fuels Produced and Imported Into Canada

Group Members:

Jim Campbell, Natural Resources Canada
David Goffin, Canadian Chemical Producers Association
Al Howatson, Conference Board of Canada
Bruno Jacques, Environment Canada
Chris Rolfe, West Coast Environmental Law Association

Facilitator: Erik Haites
Recorder: Katharine Hayhoe

1.0 Suggested Changes or Enhancements to the Proposed System

The group offered four main changes to the system proposed in the discussion paper:

- The upstream allowances on greenhouse gas content should cover 100 percent of emissions from crude oil, petroleum products and coal.
- Incorporate all appropriate non-energy sources of greenhouse gas emissions. Use the CHEMinfo paper to determine which sources can be incorporated into the system through emissions trading and substance trading, and which sources can only be incorporated through credit trading.
- Ensure participants have full access to international flexibility mechanisms and markets.
- Firms that use fossil fuels as non-energy feedstocks should receive credits that they can use or sell for carbon that will be sequestered in products for more than 20 years.

2.0 Key Design Features

The suggested enhancements to the proposed system were further refined to address the following key design issues:

A. Overall System Management.

To make the proposed system work smoothly and efficiently, an agency ("Carbon Canada") is needed to:

- serve as a regulatory body;
- determine monitoring requirements;
- decide on a reporting system;
- conduct audits, verify reported emissions, and enforce penalties;
- hold permit auctions; and
- operate (or contract for) a registry, as it is not currently possible to dovetail with the VCR.

B. Allocation of Allowances for the Carbon Content of Fossil Fuels.

Allowances for the carbon content of fossil fuels must be dealt with separately from allowances related to non-energy sources of greenhouse gas emissions. The following design features should be considered in allocating allowances for the carbon content of fossil fuels:

- Allowances for fossil fuel producers and importers should be auctioned.
- The total number of allowances allocated to importers and producers of fossil fuels should be equal to the carbon content of fossil fuels and products sold in Canada.
- Revenues raised through the auction of allowances should be redistributed, and further study of the options for doing this is required (e.g., reducing distortionary taxes, etc).
- Recognition that although "auction" implies no trade (each user buys the allowances it expects it will need), in reality, brokers will buy at auction and subsequently sell allowances to firms that need them.

C. Allocation for Allowances for Non-Energy Related Emissions.

To deal with allowances for non-energy related emissions, the following design features should be considered:

- Allowances should be auctioned for all non-energy sources marked "emissions trading" or "substance trading" in Table 3 of the summary report prepared for this workshop.
- Credit trading should be applied for methane (CH_4) from landfills, open pit mining, enteric fermentation, and animal manure; and PFCs from aluminum smelting. In these cases, credits should be issued if emitters reduce emissions below baseline levels. These baselines would be established using proxy activity data to estimate emissions. for example, one could use "quantity of waste" as a means to estimate landfill emissions; apply average emission factors to all beef and dairy cattle; and use models to calculate PFC emissions. Under this system, credits would be interchangeable with allowances and could be sold for profit.

D. Creation of Carbon Sequestration Credits for Products with Lifetimes Greater than 20 Years.

The group made the following suggestions to address this proposed change:

- Credit creation as described in Option #3 of the NRTEE paper on fossil fuels used as non-energy feedstocks is preferred, with some adjustments.
- It was agreed that the burden of proof of carbon sequestration should be borne by industry. It was felt that the transaction costs, relative to the cost of purchasing allowances, was likely to be small.
- Carbon sequestered in products with lifetimes shorter than 20 years should be included in the emissions inventory. Carbon sequestered in products with a lifetime of more than 20 years should not be included in the inventory unless the products are incinerated. At that point, landfills and incinerators should be made responsible for these emissions.
- Criteria for credit creation should be based on international rules.

The following table summarizes the design issues addressed for this option, along with the group's choices for dealing with each issue and their additional comments.

Key Design Issues and Proposed Choices to Address Them

Issue	Choice	Comments
Geographic scope	- National program - Tied to international market	- doesn't matter if other countries have completely different approach to emission reductions - requirement is that emission units are the same
Basket of gases and sources	- 100% coverage of all emissions from fossil fuels - 100% coverage of other GHG emissions from listed sources	- upstream allowances on carbon content of crude oil, petroleum products, and coal - allowance trading used for all sources marked "emission or substance trading" in Table 3 of summary report - credit trading for landfills and ruminant CH_4 emissions**
Creation of competitive market	- Allocation of permits through auction - With 350-700 sources, shouldn't be a problem	- concern whether sudden implementation of stringent emissions cap would limit supply of permits and hence competitiveness**
Incorporation of all programs into single market	- all allowances and credits in same units - GWP used to equate gases	
Metering & testing for carbon content	- Use company records as first basis	To prevent scamming: - crosscheck company and buyer records - allow for external auditing
Liability – seller or buyer?	- Seller	- person selling allowances pays penalty if they don't have enough left to cover their own emissions
Price disclosure	- automatic at auctions	
Transaction costs	- kept low by auction approach	- could be complicated if credits from other systems taken into account; in this case, privatization suggested
Banking	- post-2008 – yes, as long as it's consistent with Kyoto - pre-2008 through 2008 – maybe	- more analysis needed regarding continuing banking pre-2008 through 2008 - more of a political choice
Allowance or credit life	- unlimited for now - follow Kyoto rules	
Borrowing	- No	- avoid problem of how to deal with companies who go out of business
Compliance period	- 1 year	- have 30-60 day grace period at end of accounting year to allow companies over their limit to buy exactly what they need to come into compliance
Penalties for non-compliance	- As stated in the description of the option.	
Allocation to new sources / expansion of system	- Adjust cap, allow new companies to participate in next auction	
GWP values	- Yes – follow Kyoto	

** Issue discussed more fully below

3.0 Unresolved Design Issues

Design Issues that Need Additional Work

During the group's discussion, it became clear that a number of design issues remain unresolved and need to be addressed.

1. **How to cover upstream oil and gas emissions**

   - Should allowances be allocated to firms or wells? There are 100,000 point sources, but fewer than 1000 companies operate and share ownership of these point sources.

2. **How to design the auction**

   - What is the most effective auction design?
   - How would undesirable behaviour such as collusion be prevented?
   - How would the revenues be re-distributed?

3. **How to deal with certain non-energy sources and sinks of greenhouse gases**

   - Livestock manure and enteric fermentation: This sector already has an elaborate agricultural commodity production program. How would it merge with an emissions reduction program? Also, how would the average emission factors to be used to project emissions and set allowances be determined?
   - Landfills: Should emission allowances deal with large and mid-sized landfills that account for over 60 percent of national emissions, or cover all of them? How do you deal with small or closed landfills, the location of which may be uncertain?
   - Coal mining in Nova Scotia: Credit trading may not be effective or economic. What other alternatives exist?

4. **How to credit carbon sequestered in products with lifetimes greater than 20 years**

   Credits or allowances should be given for carbon sequestered through the use of fossil fuel feedstocks in products that have a design life of over 20 years, but more work is needed on how to design the system.

5. **How to manage transition to full implementation, including determining a transition date**

6. **How to create a competitive market in a situation of possible scarcity leading up to 2008**

   If there is no phase-in period before 2008 – a key year in terms of meeting the Kyoto commitments – there could be a large demand for permits and very short supply. As well, it could be difficult to achieve emission reductions in the short period of time left after that year. Ways of phasing in a system before 2008 need more exploration. A cap on carbon content that is implemented before 2008 would be needed to start generating real price signals, because that is where adjustment occurs. But doing this may create competitiveness problems for industry if other countries do not also start early.

Potential solutions to the issue of creating a competitive market in a situation of possible scarcity leading up to 2008 (point #6 above)

Several possibilities were discussed for dealing with this issue; however, each has its own advantages and disadvantages.

a) *Phase the system in gently with a less stringent cap*
This approach could begin in 2003 or 2004 with an emissions cap above 1990 levels, then gradually make the transition to the Kyoto-level cap by 2008. It could start either with very low compliance penalties that increase through 2008 and are equal to the allowance price; or allowance prices could be capped at a low level and prices raised gradually until an open auction is allowed in 2008.

This approach would give Carbon Canada and industry time to gain experience with monitoring, trading potential, revenue redistribution, and other aspects of the system. However, this approach will put Canada at a disadvantage in relation to the international market if other countries do not likewise implement their program in phases.

b) *Phase the system in with a voluntary pilot program that begins with easy-to-achieve emission caps*
This approach appears to have a number of disadvantages:
- It will not produce a price signal and therefore probably would have no impact on consumer sectors.
- It may not be possible to have a voluntary program with comprehensive coverage.
- One region or sector would need to be selected for the pilot program, which poses difficult choices.
- Domestic penalties may be required prior to 2008 to ensure compliance.
- Post-2008 banking from the voluntary program may be needed to encourage membership, but this aspect requires more study.

c) *Depend on non-energy sources and international sources for willing sellers of allowances.*
However, the international market is not a reliable source, and it would be much better to have a robust and dependable domestic system.

d) *Create a predictable, credible framework for post-2008 emission reductions with clear advance notice on what will happen in 2008.*
For example, in 2003, emission allocations would be issued for that year (in which they are voluntary) and for 2008 (in which case, they are mandatory). In this way, emitters know what is expected of them. This approach would allow trading to begin with the voluntary allocations, thereby encouraging a change in behaviour. This approach will allow industries that need to make long-term decisions regarding capital stock, etc., to make informed decisions ahead of time.

However, this approach will not produce a price signal, and there is general consensus that only a price signal will induce the consumer market (commercial, residential, transport) to react. Even with prior information, these sectors will still be unprepared for 2008. Although this approach would help industry, it will not help importers or users. Finally, there is a significant question as to whether this approach is politically feasible.

4.0 Items Requiring Further Information and Analysis

In addition to identifying several unresolved design issues, the group also noted a number of areas in which additional information and analysis are needed.

Accuracy of emission measurements

More research is needed on measuring carbon content to ensure accuracy and veracity. We also need to improve the quality of the inventory of greenhouse gas emissions, particularly emissions from upstream oil and gas sources, livestock manure, and enteric fermentation, in order to project future emissions and issue allowances or credits based on those projections.

Use of auction revenue

Specific questions that need to be addressed are:

- Should auction revenues be re-distributed to groups that suffer serious impacts?
- Will there be redistributional effects?
- Should these revenues be used to reduce existing taxes?
- What about federal-provincial revenue sharing?

Complementary policies

Complementary policies may be needed to:

a) correct market failures

There was agreement that where market failures exist, complementary policies are justified, but an assessment is needed to determine which specific markets may have potential for failure (e.g., passenger transportation and residential sectors?). Analysis of the factors that cause market failure is also needed (e.g., little short-term elasticity of demand, lack of information to make intelligent long-term decisions, etc.).

b) assist market adjustment

c) make up for time lags (capital stock adjustment, design lag)

There are long time lags in some systems, particularly ones with large investments in capital stock that take some time to adjust to prices. Do policies exist or could they be implemented to deal with such lags by beginning to change capital stock now, taking a long-term view of future markets to ensure a smooth adjustment of the economy?

d) ensure compatibility with international policies and competition (see notes below)

e) address local problems aggravated by greenhouse gas emissions trading – such as air pollution and income redistribution (see notes below)

International competitiveness impacts

There was agreement that the Canadian system needs to be fully compatible with international markets, even though domestic systems in other countries will be different and may not involve emissions trading. However, more study is needed on the competitive impacts on Canadian industry – such as the sectors most likely to be negatively affected, sectors that will benefit, regional impacts, and mechanisms for adjusting for negative impacts.

One approach to address competitiveness concerns may be to implement a harmonized scheme with the US to avoid the impact of national policies on industry and broaden the trading range.

Other questions were also raised:

- Is carbon leakage – the shifting of carbon-intensive industries to developing countries – going to be so extreme as to require legislation?
- How will Canada compete with nations such as China and Mexico if these countries have not committed to reducing their emissions in the decade after 2012?

Local environmental and economic impacts

Both economic and environmental impacts could be expected at the local or regional level from an emissions trading program. Strategies to address these impacts are needed; for example, income redistribution from emission reductions could have negative impacts in western Canada and perhaps in Cape Breton. "Pollution pockets" could be created if fossil fuel or other energy sources and their associated emissions shift into different regions. Complementary policies may be needed to deal with these types of environmental problems on a local level. More study should be done on the impacts of this and other greenhouse gas emission trading options on local air pollution.

5.0 Feedback and Questions

Transition Issues

Question: In discussion of transition strategies before 2008, is the key thing to have some mechanism that will give people an idea of what prices will be like in 2008, or to have something that will get your attention more directly before 2008?

Answer: It's important to have a real signal. It's likely that if you broadcast post-2008 prices soon, you may have changes in industry and sectors with long planning horizons, but this would not affect consumer behaviour.

Question: I'm attracted by the transition "weaning-in" phase. How are exports treated in this transition period? Why would a participant in Canada buy from a Canadian company rather than importing? Are you suggesting a levy on imports?

Answer: This needs further study, but the notion was that we would phase in the program that would be implemented in 2008. If production is all going into export, allowances for the carbon content of fossil fuels used in production would have to be held, but if it's all going out of the country then that would be all they needed. For importing, importers would need to hold allowances for carbon content of fossil fuels imported.

Linkages to Kyoto Protocol Commitments

Question: When we get into the budget period, how will assigned values be treated with imports/ exports, e.g., importing from other Annex 1 countries with assigned values? They will have different ways of handling trading. What do we do with our exports?

Answer: There are two things. Consider exports of natural gas from Canada to the US, for example. Canada is responsible for emissions within Canada, while the US is responsible for emissions after the fuel is purchased. The producer purchases allowances for carbon content in Canada as it comes out of the well, minus the carbon content going out of the country, measured at the border. If there were going to be international emissions trading between Canada and the US, some other company could buy an assigned amount rather than buying from a Carbon Canada auction.

Addressing Equity

Question: This is similar to cap and trade with one specific allocation rule. These look at different allocation responsibility and equity issues, while this option, in effect, ignores these issues.

Answer: Equity comes in the re-distribution of revenue. Here, we are redistributing dollars rather than allowances.

How Does the System Account for Corporate Expansion?

Question: What happens if a company wants to expand production?

Answer: Every year, it can buy more allowances at auctions. Companies are not given any allowances at all. They can also buy allowances and credits internationally, or buy credits from other sources (other greenhouse gases) that are not covered by the cap.

Comments on "auction with carbon content cap" approach

- Suppose you want to double production; you have to rely on someone else to make allowances available (e.g., a coal mine to shut down, or someone else to halve production). But this looks more like rationing and seems to have very little to do with emissions trading.
- This approach sends signals to trade between fuels – substance trading. The effects could be theoretically the same as an allowance trading system with *gratis* distribution, applied to emitters. With auction, this is just a much more efficient way of doing the same thing and redistributing income.
- If you want to limit the amount of fuel available and change price, this will change everyone's behaviour. The point of emission trading is to cause people to allocate among themselves the technology choice to reduce emissions, etc.
- What is the driver behind people's behaviour in emission trading that will cause them to improve their technology? In any trading system, the driver is the price of the allowance, as it is in this system. The fossil fuels don't have the same emission factor per unit energy and this system will show that. The lower emitters will have a lower increase in price than the higher ones.
- This is not a carbon tax. The difficulty with a carbon tax is that you have to adjust the tax to meet a target. Here, you don't have to care about the price of carbon. Just set the emissions levels that must be reached and the price will work out. The quantity is fixed and price adjusts.
- This <u>is</u> a carbon tax that is self-setting. Individual actors who are emitters have a variety of options on how to respond. Here, they respond to price.
- No, it's an allowance system. Individuals are buying allowance and fuel at the same time. In another system, they're just buying them at different times. In both cases, a price signal is being applied and participants have a choice as to how they react.
- This approach ensures you get to the right emission target without relying on price projections.
- Whether you set a cap on emissions or carbon content, it's the same carbon that adds up to the same carbon inventory; therefore in economics it doesn't matter where you set the cap. If you set the price first, you don't know how the quantity will work out. The objective for Canada is the quantity; therefore set it and let the price play out.
- A cap is only certain if the enforcement mechanism is certain. Enforcement is complicated and costly, and needs attention, and this approach does give people options.
- The question remains: Is this emissions trading? Will the price signal always have the same effect no matter how it comes about? For example: Plant A – an old plant – closes down as fuel prices rise and it's too expensive to operate. Plant B is very modern and cleans up to the extent that the

price signal dictates. After it's no longer profitable, plant B stops. With cap, allowance and trading, plant B would say, "I could clean up more but for this price I won't. But if plant A pays me, I'll give them my allowance." This has a different effect.

- But the fact remains that if you can't afford the allowance, what do you do? The effect is the same. The difference between a carbon tax and allowances is that you require less information regarding abatement costs for allowances than for carbon taxes.

Option 4. A Hybrid System of Cap and Allowance Trading and Voluntary Credit Trading

Members:

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Philippe Crabbé, University of Ottawa
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Ken Ogilivie, Pollution Probe
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Stuart Smith, ENSYN Technologies Inc.
Adam White, Ontario Ministry of Energy, Science and Technology

Facilitator: Robert Hornung
Recorder: Matt McCulloch

1.0 Suggested Changes or Enhancements to the Proposed System

Two hybrid trading systems were discussed in the NRTEE background papers. One of these systems, that made governments responsible for emissions from residential and commercial buildings and made municipal governments responsible for emissions from the transportation sector, was rejected in the plenary discussion. As a result, this working group was asked to look at two potential hybrid systems:

> Option 1 included major industrial point sources (cap and allowance trading), transportation (carbon content trading through refiners), and credit trading for other sources of greenhouse gas emissions.
>
> Option 2 included major industrial point sources (cap and allowance trading), and credit trading for other sources of greenhouse gas emissions.

After extensive discussion, the working group agreed that it made sense to proceed with additional analysis and work on both of these options. In particular, the working group stressed the importance of additional analysis on the most appropriate mechanism to address greenhouse gas emissions from the transportation sector.

2.0 Key Design Features

The key issue discussed was how to deal with the transportation sector. Three options were identified.

In Option 1 above, the transportation sector is addressed through the application of a carbon content trading system on oil refiners.

In Option 2, the transportation sector could be addressed through:

- complementary policies (e.g., fuel economy standards or taxes), and/or
- allow sources in the transportation sector to create credits (e.g., credits for construction of fuel efficient vehicles)

While no consensus was reached on these potential options, it was agreed that more work was required to study the interaction between the impact of any form of trading in the transportation sector and the impact of other policies (e.g., fuel economy standards) on that sector.

3.0 Items Requiring Further Information and Analysis

While the group agreed on the designs identified above as a base for further analysis, much of the discussion leading to that decision focused on more fundamental issues, including:

- Are hybrid trading systems (emissions, carbon content, credit) workable and desirable?
- If large industrial sources are required to hold allowances, should allowances initially be distributed to these sources or other sources?

In particular, the group discussed at length the strengths and weaknesses of a carbon content trading system, and the similarities and differences between a carbon tax and carbon content trading. Again, the focus was the transportation sector. Some of the points raised in this discussion included:

Advantages of using carbon content trading to address emissions from transportation:

- It incorporates all transportation-related emissions into the system. This lessens the need for complementary policies, and helps to even out the marginal cost of emission reductions ($/tonne) across sectors.
- The system can be applied to the transportation sector without resulting in rationing of transportation fuels because of the flexibility provided by the Kyoto Protocol's flexibility mechanisms.
- It sets a clear and binding environmental limit on greenhouse gas emissions from the transportation sector.
- It avoids the arbitrariness and political difficulty of increasing taxes on the transportation sector.

Disadvantages of carbon content trading as a tool to address emissions from transportation:

- It targets producers and not emitters. This is problematic because producers of transportation fuels have few options to reduce emissions aside from increasing prices for their products.
- Too large a price signal is required to actually have an impact on transportation related emissions – can't be generated simply by limits on refiners (additional policies are required).
- There is a risk that money will leave the country through the use of the Kyoto Protocol's flexibility mechanisms – a tax might keep money in the country.
- The equity implications of a carbon content trading system (equity between producers and consumers of transportation fuels is unclear).

A number of other design issues were discussed by the working group, although few of them were discussed in any detail. Some of the outcomes of that discussion are presented below:

Allocation of Allowances

The group agreed that the initial allocation of allowances in either hybrid system should be a *gratis* allocation. At the same time, however, the group recognized that many additional questions would need to be resolved, including:

- Who should receive the allowances and who should be required to hold allowances?
- What are the equity implications of the distribution?
- How should carbon sequestration be treated?
- Should the allocation reflect historical emission levels?
- How should the allocation address new sources of emissions?
- Should the method of allocation be different for non-energy sources of emissions (e.g., landfills)?
- What base year should an allocation formula be based on?
- Can the allocation formula include reference to total energy use or energy use/greenhouse gas emissions per unit of production?

While it was agreed that allowances should initially be distributed *gratis*, there was some support for considering the auctioning of allowances at a future date. It was agreed that more work was required in this area to assess:

- Who would control the revenue raised?
- What should be done with the revenue raised?
- How will the auction approach affect newcomers to the market?
- Is the market large enough to support an auction approach?
- What are the implications if some participants must secure their allowances by auction while others are allocated *gratis* allowances?

Trade and Competitiveness Implications

It was agreed that more work was needed to examine the trade implications of such a system and its treatment of exports and imports. In particular, it was agreed that any examination of this issue would require consideration of:

- differences between domestic and international systems; and
- differences between Canada's domestic system and domestic systems in other countries (particularly the United States)

Liability

It was agreed that more work is needed to address the question of liability. It was also recognized that emissions trading systems and credit trading systems may have different requirements with respect to seller or buyer liability.

Voluntary Credit Trading

Little attention was devoted to the issue of a complementary voluntary credit trading program as this was being discussed in another working group.

4.0 Feedback and Questions from Final Plenary

Some of the questions raised included:

- Who should be required to hold allowances and who should receive allowances?
- How should limits be set on emissions? (emission caps, baselines)
- How are emissions measured?
- How are non-energy sources addressed?
- Should municipal and provincial governments be required to hold allowances?

Comments and Observations from Plenary Participants:

- Any domestic system that is implemented in Canada must be compatible with an international system.
- More work needs to be done to identify the number of emitters that could participate in the system.
- The chosen tool should be the one that gives the most reductions with the most flexibility. It is easiest to choose a tool that affects the fewest decision makers (that is, find the "pinch point," which is more likely to be at the refinery, for example, than at the wellhead).
- Methods must be devised to prevent any specific sector from having double burdens (having emissions controlled through both a trading system and other, non-complementary means). For example, should consumers have to face increased costs associated with both higher fuel prices and well as more restricted choice with respect to vehicle purchases?
- Similar costs will be imposed on the ultimate consumers if they are required to undertake credit or allowance transactions themselves or if the requirement is imposed further upstream (at least some, but perhaps not all, costs will be passed on to the final consumer).
- Emitters rather than producers should be targeted because producers have fewer options available to reduce emissions (i.e., they can only send a price signal). More analysis is needed to assess the equity and adjustment implications of carbon content trading, but some feel that downstream application is necessary for any longer-term strategy.
- More study is required with respect to the equity implications of providing allowances gratis to refiners in a carbon content trading system.
- The more sectors that participate in a domestic emissions trading program, the lower the price of permits.
- We should focus on an implementable system first, then worry about political saleability.

Part C: Next Steps

Input from stakeholders at the workshop is invaluable and will help to enhance the work done by the NRTEE in the area of domestic greenhouse gas emissions trading. Background papers prepared for the workshop will be revised by the authors, drawing on this input as well as on written comments provided by workshop participants through September 30, 1998. Revisions will be complete by the end of October, at which time all the papers will be edited, translated and published by the NRTEE.

While the description of the domestic emissions trading options presented in the revised papers will be more detailed, additional work will be required to further develop these design options before a comparative analysis of the economic impacts of the different options can be completed. Accordingly, the NRTEE will create a small working group of approximately five members, drawn from the multistakeholder expert group, to assist it in the refinement and more detailed design of these options during November and December.

The product of this work will be made available to all members of the NRTEE's multistakeholder expert group for comment in January, and a workshop will be held to discuss these more detailed designs towards the end of that month. Workshop participants will review and evaluate the feasibility of the design options. A final report of their findings will be written and published. Subsequently, these detailed designs will feed into the national climate change process.