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FINE TUNING TAXES FOR ENERGY ECO-EFFICIENCY

A STUDY COMMISSIONED BY THE

NATIONAL ROUND TABLE ON THE ENVIRONMENT AND THE ECONOMY

October, 1995

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The views expressed herein are solely those of the Pembina Institute.

FINE TUNING TAXES FOR ENERGY ECO-EFFICIENCY

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FINE TUNING TAXES FOR ENERGY ECO-EFFICIENCY

1. INTRODUCTION

This study on "Fine-Tuning Taxes for Energy Eco-Efficiency", has been conducted on behalf of the "Greening the Budget" working group of the National Round Table on Environment and Economy (NRTEE). The working group is seeking pragmatic recommendations for consideration by the Round Table Plenary as it formulates its pre-budget advice to the Prime Minister.

Research for this study was conducted over a three-month period between July and September, 1995. The research process was based on literature reviews and interviews of government officials and industry stakeholders. Given the time and resources available for the task, it was determined from the outset that the study would be qualitative and directional, with the objective being to identify specific tax measures to be subjected to detailed analysis in subsequent budget planning exercises. The work also aimed to be selective, not exhaustive.

A first draft of this paper was offered as a background paper for the October 17, 1995 workshop on "Greening the Budget" hosted by the NRTEE. This final draft has been revised to reflect the feedback and discussion provided at the workshop. However, the view expressed herein are solely those of the authors.

Section 2 describes the purpose of the study, introduces the concept of eco-efficiency and the rationale for focusing on tax measures, and describes the policy background against which this study takes place. Section 3 provides the boundaries of the study. Section 4 describes the methodology used in the research, and the steps taken to arrive at the candidate tax measures to consider for fine-tuning. Section 5 summarizes the findings of the study; and provides brief profiles of each of the six candidates for fine tuning, the issues raised from an eco-efficiency perspective, and options for fine-tuning to address these issues. Section 6 summarizes these findings. Appendices A and B give more background on the rationale for eliminating measures at each screening stage. Appendices C and D provide the list of individuals interviewed and the interview guide. References are given at the end of the study.

2. STUDY RATIONALE

The purpose of this study is to examine, with a view to increasing eco-efficiency, how federal income tax measures influence investment or operating decisions in the energy sector, and energy purchasing and use decisions by consumers. Potential directions for adjusting existing tax measures to increase incentives for energy eco-efficiency are offered.

2.1 Eco-efficiency--Towards the "Factor-10" Economy:

The concept of eco-efficiency has been advanced by a number of organizations and influential thinkers, including the Business Council for Sustainable Development.

> Eco-efficiency is reached by producing and consuming competitively-priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts and resource intensity throughout their life cycle, to a level at least in line with the Earth's estimated

carrying capacity.[1]

The need for eco-efficiency arises from a recognition that while humanity has reached, and possibly already exceeded, the planet's ecological limits, the world's growing population will lead to a substantial growth in the demand for goods and services. The only feasible approach to meeting these needs within ecological limits is a radical reduction in the intensity of material and energy inputs, and waste outputs, of goods and services. Conventional approaches to growth with pollution control will not be sufficient. Analysts at the Wuppertal Institute in Germany have estimated that the material intensity of industrial countries' consumption needs to be reduced by a factor of ten--which equates with a 90-percent reduction in the industrialized world's material and energy throughput by 2040.[2] This scenario has been coined the "dematerialization" of the economy (see Figure 1).

Central to the perspective of those who espouse eco-efficiency is the view that the pursuit of eco-efficiency offers tremendous profit-making and competitiveness opportunities. "Rather than demanding continuously growing expenditures for environmental protection, this approach cuts business costs for energy, materials and pollution control, boosts productivity and slashes environmental impacts all at the same time."[3] Because many eco-efficient practices--for example, managing and packaging information and producing software; as well as alternatives to virgin raw material extraction such as recycling, reusing, and repairing--are more labour intensive and skills intensive than conventional production methods, other academics and analysts expect that the pursuit of eco-efficiency holds the potential to provide more jobs.[4]

At an elementary level, eco-efficiency entails providing more and smarter goods and services, and
==>insert Figures 1&2

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[1]. Adapted by the Pembina Institute from Getting Eco-Efficient, Report of the Business Council for Sustainable Development First Antwerp Eco-Efficiency Workshop (Geneva: Business Council for Sustainable Development, November 1993); eco-efficiency is also introduced in Stephan Schmidheiny with the Business Council for Sustainable Development, Changing Course, (Cambridge, Mass.: Massachusetts Institute of Technology, 1992) pp.9-10.

[2]. F. Schmid-Bleek, quoted in William Rees, "Sustainability, Growth, and Employment: Toward an Ecologically Stable, Economically Secure, and Socially Satisfying Future", paper submitted to the Employment and Sustainable Development Meeting (Winnipeg: International Institute for Sustainable Development, 1994); Aaron Sachs and John Young, The Next Efficiency Revolution: Creating a Sustainable Materials Economy, Worldwatch Paper 121, (Washington: the Worldwatch Institute, 1994); Getting Eco-Efficient, op.cit..

[3]. Olson, Robert, "Alternative Images of a Sustainable Future", in Futures, (Vol.26:2, March 1994), p. 160.

[4]. Getting Eco-Efficient, op.cit., p.17; Changing Course, op.cit., p. 10 and chapter 7; Sachs and Young, op.cit.; Rees, op.cit.

more income and meaningful employment, for less resource inputs (such as raw materials, energy) and less environmentally-undesired outputs (such as air emissions, water effluent, wastes, land and wilderness and wildlife disturbances, and recreational and aesthetic impairment) (see Figure 2).

The characteristics of eco-efficiency include:

* continuously improving the unit efficiency of material and energy inputs;
* ensuring that total aggregated environmental impacts and cumulative effects stay within the ecological limits of carrying capacity;
* focusing on end-use human needs and quality of life; and
* taking a life-cycle approach, accounting for upstream and downstream impacts.

If the concept of eco-efficiency is applied to the life cycle of a product or service stream, or an economic development activity, environmental and economic considerations can be integrated in a powerful and practical manner. The amount of pollution outputs (whether tonnes of greenhouse gases, tonnes of acid rain precursors or hectares of wilderness land disturbed) per unit of useful energy delivered for consumer end use can be measured and compared. Pollution outputs can also be expressed per unit of employment (i.e. per 1000 jobs) or per unit of net revenue to government. These are a few of the most practical ways to quantify eco-efficiency.

The concept of eco-efficiency offers an interesting and holistic conceptual framework for efforts to reduce greenhouse gas emissions. The emphasis on minimizing raw material and energy inputs and the use of a life-cycle approach provides a means of reducing the life-cycle greenhouse gas emissions of a final product, instead of focusing uniquely on end-point emissions.

This study confines itself to examining direct energy use and production activities. Amory Lovins identifies two approaches to reduce the environmental impacts of energy---using energy more efficiently, and producing energy in more environmentally benign ways:[5]

$$\text{Environmental Impact} = \frac{\text{Energy}}{\text{Material Throughput}} \times \frac{\text{Environmental Impact}}{\text{Energy}}$$

The pursuit of eco-efficiency in the area of energy production and use would be achieved through activities that minimize:

* the ratio of energy and other material inputs to goods and services produced, including energy production;
* environmental impacts, such as air and water pollution, wastes, and land disturbances per unit of goods and services produced; and
* end-use energy consumption.

2.2 Why focus on taxes?:

Tax measures are powerful and pervasive instruments for directly or indirectly promoting certain activities and creating disincentives for others. Although tax measures do not by their nature have direct effects on the environment or eco-efficiency, they have an indirect effect by influencing "firm production decisions, the choice of inputs, the allocations of capital across different types of assets, the allocation of capital across

[5]. Olsen, op.cit., p. 161.

different industries and the amount of resources saved for future consumption or production".[6]

While there has been considerable discussion over the last decade on the application of new environmental charges and green consumption taxes, there has been much less evaluation of the environmental signals sent by the existing tax system. A correction of existing tax signals should precede or accompany any application of new economic instruments for environmental purposes.

Tax policy has historically been used to support priority policy goals. An examination of existing and historical natural resource industry tax measures, for instance, reveals a set of incentives which have been put in place with the intent of encouraging the development and exploitation of natural resources and the building of our natural resource industries because these activities are seen to be in the nation's economic interests. Starting with tax reform in the late 1980s, however, Canada began to eliminate or reduce many tax incentives which represented a departure from a pure "benchmark" tax system.

This task has not been completed. The tax reform agenda coincides with fine-tuning the tax system for eco-efficiency where there are opportunities for simultaneously reducing tax expenditures and eliminating incentives for eco-inefficient energy production.

2.3 Relevant Government Initiatives and Commitments -- Environment

Three recent federal initiatives demonstrate that the need for work in reconciling economic and environmental signals is increasingly recognized: the 1995 *Guide to Green Government* signed by all Cabinet Ministers,[7] the 1994 federal Task Force on Economic Instruments and Disincentives to Sound Environmental Practices established by the Ministers of Environment and Finance [8] (the Task Force) and the ongoing efforts through the Canadian Council of Ministers of the Environment to elaborate Canada's National Action Programme on Climate Change[9].

2.3.1 Guide to Green Government

In 1995, federal Cabinet Ministers signed the *Guide to Green Government*, a framework to help departments identify sustainable development objectives and develop the action plans to achieve them, as will be required by the amendments to the Auditor General Act establishing the Commissioner of the

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[6]. Duanjie Chen, Jack Mintz, Kim Scharf and Sergio Traviza, Taxation of Virgin and Recycled Materials: Analysis and Policy, (Winnipeg: Canadian Council of Ministers of the Environment, 1995) p.41.

[7]. A Guide to Green Government (Ottawa: Environment Canada, 1995).

[8]. Economic Instruments and Disincentives to Sound Environmental Practices: Final Report of the Task Force (Ottawa: Department of Finance, 1994).

[9]. Canada's National Action Programme on Climate Change - 1995. (Winnipeg: Canadian Council of Ministers of the Environment, 1995).

Environment and Sustainable Development.

The *Guide to Green Government* identifies the "efficient use of non-renewable resources" as an objective of sustainable development. This can be assured by

> *sound policies which encourage efficient extraction and manufacturing processes and uses as well as by policies and programs which stimulate, where appropriate, recycling or the development of substitutes....Natural Resources Canada will reorient energy policy from a traditional focus on supply to an increased emphasis on efficiency, alternative and renewable energy sources, the environment and sustainable development.*[10]

The *Guide* also states

> *By developing converging social, economic and environmental agendas, governments can send clear signals to individuals, businesses, and interest groups on the importance of improved decision-making for sustainable development.*[11]

2.3.2 Task Force on Economic Instruments and Disincentives to Sound Environmental Practices:

The Task Force focused on fiscal instruments for promoting environmental protection, and examined both potential new economic instruments and the disincentives created by existing fiscal measures. A "Framework for Analyzing Public Policy Barriers to Sound Environmental Practices" was among the products of the Task Force, but was not actually applied by the Task Force.[12]

Energy issues were a leading area of discussion in the Task Force. A number of recommendations related to the energy sector were made, including the following two recommendations with direct relevance to this study:

> *The government should...undertake to ensure that...the tax system ensures equitable treatment of energy efficiency, renewable energy and non-renewable energy;* and
>
> *As long as the government continues to allow flow-through share financing, it should undertake to extend the availability of flow-through share financing to renewable energy and certain other carefully defined environmental industries.*[13]

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[10]. Guide to Green Government, op.cit., p.6.

[11]. Ibid., p. 11.

[12]. The Framework does not itself define what constitutes a "sound environmental practice", but proposes that the definition be based on general environmental objectives; principles for sound environmental decision making and practices; environmental priorities; and sectoral environmental objectives. For the purpose of this study, we have defined "sound environmental practice" as maximizing eco-efficiency (see discussion, section 3.1). The principles of eco-efficiency are congruent with the components of environmental sustainability of the Dutch National Environmental Protection Plan cited in the environmental objectives section of the Framework. Economic Instruments, op.cit., pp.55-56.

[13]. Economic Instruments, op.cit., pp.10-11.

In response to these recommendations, the Minister of Finance announced in the 1995 Budget that

> *The Department of Finance will continue to review the tax system to determine whether the current income tax treatment of energy efficiency, renewable energy and non-renewable energy investments is appropriate and if there are further improvements that can be made.*[14]

The Task Force indicated "strong support for continuing initiatives to study further, analyze, and advise on...the removal of barriers to sound environmental practice".[15] The studies commissioned by the NRTEE's Greening the Budget working group continue this work.

2.3.3 Action on Climate Change:

In February 1995, federal and provincial energy and environment Ministers released Canada's National Action Programme on Climate Change (NAPCC). NAPCC restricts itself to a voluntary approach to greenhouse gas emission reductions, avoiding regulatory approaches or the use of new economic instruments.

The cornerstone of the NAPCC is the "Voluntary Challenge" – a programme that encourages Canadians (primarily governments and corporations) to voluntarily seek out, implement and report on cost-effective actions to reduce greenhouse gas emissions. It is anticipated that a significant number of Voluntary Challenge Action Plans will be submitted to the federal government by the end of September 1995.

With respect to energy, these plans are likely to include: measures to improve the efficiency of energy production, distribution, transmission and use; fuel switching to less carbon-intensive fuels, and measures to capture and reuse fugitive emissions. Because voluntary action will only take place when market signals indicate that such action is cost-effective, reliance on a voluntary approach requires appropriate market signals.

To support the voluntary approach taken to greenhouse gas reductions, Canada has committed to creating the appropriate fiscal conditions to reduce "...barriers to the implementation of measures that reduce greenhouse gas emissions." Canada's *National Action Programme on Climate Change* commits to "identify and reduce real fiscal and regulatory barriers to effective market operation".[16]

This report offers one effort to examine the existing fiscal signals sent by the tax system, and to identify promising directions for adjusting existing tax measures to increase incentives for energy eco-efficiency.

2.4 Relevant Government Initiatives -- Fiscal:

Any study examining the use of tax measures needs to consider the climate of fiscal restraint at the federal

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[14]. Martin, Hon. Paul, P.C., M.P., Budget Plan, tabled in the House of Commons, February 27, 1995. Annex 3.

[15]. Economic Instruments, op.cit., p. 2.

[16]. Canada's National Action Programme, op.cit., pp. 14-15.

level and federal commitments to deficit reduction. In October 1994, the Government of Canada published a series of papers on economic and fiscal policy. The government committed itself to

> *reverse Canada's fiscal decline, first by achieving the announced target of reducing the deficit to no more than 3 per cent of GDP (Gross Domestic Product) by fiscal year 1996-97...the ultimate objective is to achieve a balanced budget and to significantly reduce federal debt as a percentage of GDP.*[17]

Pursuit of this goal is causing many fundamental changes in what the government does and how it does it. Foremost among these changes, for the purpose of this paper, is "a new vision of the federal government's role in the economy that includes substantial reductions in business subsidies."[18]

At the present time, the principle of revenue neutrality drives the Department of Finance's decisions on tax changes. While past tax changes, for example the changes to Class 34 in the 1994 Budget, attempted to maintain revenue neutrality within one tax measure, this study proposes that where revenue neutrality is a condition for tax reform, it should be considered across a package of energy sector measures. The tax expenditure reductions realized through eliminating preferential treatment for certain activities can be used towards expanded tax measures for activities which are not currently receiving appropriate treatment.

3. SCOPE

3.1 Parameters of the Study:

The purpose of this study is to examine, with a view to increasing eco-efficiency, how federal income tax measures influence investment or operating decisions in the energy sector, and energy purchasing and use decisions by consumers.

===>insert Figure 3

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[17]. Government of Canada, Agenda: Jobs and Growth. Creating a Healthy Fiscal Climate. (Ottawa: Department of Finance, October 1994). p. vi.

[18]. Martin, Hon. Paul, P.C., M.P., Budget in Brief, (Ottawa: Department of Finance), February 27, 1995.

Accordingly, it is conducted from the viewpoint of two kinds of investors:

i) the third party investor deciding between investment opportunities in a range of energy projects (both supply and demand); and

ii) the manager in a company deciding among internal capital investment opportunities (increasing supply or improving efficiency); choosing the raw material, fuel, or technology used in energy production processes; or deciding between incurring energy-operating expenses or investing in energy-efficiency improvements.

In addition to federal income taxes, many other factors influence investment or operating decisions in the energy sector, and energy purchasing and use decisions by consumers. These include:

Other categories of taxes: commodity taxes, payroll taxes, provincial taxes and royalties, and Crown corporations' constitutional exemption from taxes;

Legislation: environmental and financial regulatory controls and approval processes, environmental legislation and standards;

Other market signals: market price for different energy products and services, input prices for different energy products and services, and market failures to internalize environmental costs;

Social, institutional, and political barriers: absence of debate on eco-efficiency in Canadian business circles, tension between incremental vs visionary approaches, institutional inertia and momentum behind traditional practices, capital's adversity to risk, misinformation and inaccurate beliefs.[19]

These influences will in some cases reinforce, and in other cases counter or offset the incentives created by the federal tax system.

However, these factors are outside the boundaries established for this study, which focuses exclusively on federal income taxes (see Figure 3). The omission of these other factors from consideration is not to be interpreted as a failure to appreciate their power. It reflects instead a decision to put parameters on the study which would enable a more in-depth investigation of one significant factor.

3.2 "Fine-Tuning" Terms of Reference:

The terms of reference for this study limit our proposed adjustments to "fine-tuning" of the existing federal tax system. This is interpreted as adjustments which could be implemented in the short to medium term, without major tax policy revisions, reversals, or innovations, and with the least disruption for affected sectors.

Recommendations for new green charges, new economic instruments, or other aspects of the broader "ecological tax reform" agenda are therefore outside the scope of recommendations for this study. This is by no means to say that they do not have a role–in fact, it is highly doubtful whether the 90% reductions in

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[19]. A discussion on the social, institutional, and political barriers to sound environmental practices is found in J. Anthony Cassils, Exploring Barriers to Sound Environmental Practices, unedited NRTEE working paper, (Ottawa: National Roundtable on the Environment and the Economy, 1994).

the industrial world's material and energy throughout can be achieved without these fundamental changes in fiscal and taxation policies. Innovative economic instruments designed to promote eco-efficiency have been put in place in other jurisdictions– for example, the Swedish NOx emissions charge/rebate on energy production[20], or the U.S. SO_2 trading scheme. However, Canada appears to be much more hesitant about using economic instruments than many other jurisdictions, and the scale of ecological tax reform will necessitate additional detailed analysis, political education and debate.

In the meantime, more modest actions can and should be taken. By focusing on fine-tuning of the existing tax system, the intent is to look for opportunities to take modest steps, in an immediate time-frame, to create incentives for eco-efficiency.

4 METHODOLOGY AND APPLICATION

Two recent publications have outlined generic methodologies for evaluating public policy barriers to environmental practices: the "Framework for Analyzing Public Policy Barriers" of the Task Force, and the"Framework to Review Subsidies from a Climate Change Perspective" of the CCME's Climate Change Task Group (CCTG).[21]

This study has adopted the general approach outlined in the Task Force Framework (see Figure 4). The study has completed steps 1 to 4, and makes recommendations for step 5, to be further considered and discussed at the October 17 workshop. Step 6 recommendations and analysis will be subject to the input received at the workshop.

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[20]. The nitrogen oxide charge on energy production in Sweden applies to large energy production plants. These are charged ~US$4.80/ kg NOx emitted. The funds collected are redistributed back to the plants in proportion to their energy production. In 1992, this refund was ~US$2.00/MWh energy produced. This charge/rebate is complementary to a NOx emission permit system.

The result has been to stimulate plants to become more energy efficient because plants which emit less per unit of energy produced actually receive money from the system. The plants affected are found in five different industries: energy production, chemicals, metals, waste incineration, and pulp and paper. The charge is limited to large plants because of the high expense of monitoring actual NOx emissions. The refund approach was adopted to provide fairness in a system where small plants were not subject to the charge, but large plants were. Source: Making Budgets Green: Leading Practices in Taxation and Subsidy Reform, (Winnipeg: International Institute for Sustainable Development, 1994) p.24.

[21]. Economic Instruments, op.cit; Appendix II - Framework for Analyzing Public Policy Barriers; and A Framework to Review Subsidies from a Climate Change Perspective, by Price Waterhouse (Ottawa: Measures Working Group of the Climate Change Task Group, June 1995).

===>Figure 4: framework

The CCTG Framework, because of its emphasis on energy issues, provided many interesting insights. Although designed to review subsidies and considering only one environmental variable, it could be readily adapted to analyze tax measures. However, it is structured for a very in-depth, quantitative analysis which, given the resources required, could realistically only be applied to a limited number of measures. Since this study is a scoping study to identify a small number of measures and options for further analysis, the Task Force Framework was used instead.

The rest of Section 4 describes the method and criteria used to identify candidate tax measures for fine-tuning and indicates how they were used to identify the eight measures that are discussed in more detail in Section 5.

4.1 **Defining "sound environmental practice"**:

This study has defined "sound environmental practice" as continuous improvement in eco-efficiency. Eco-efficiency in the energy sector is achieved through activities that minimize:

* the ratio of energy and other material inputs to goods and services produced, including energy production;
* environmental impacts, such as air and water pollution, wastes, and land disturbances per unit of goods and services produced; and
* end-use energy consumption.

For further discussion, see Section 2.1.

4.2 **Assessing the sectoral policy package**:

Candidate measures for fine-tuning were selected by reviewing the *Income Tax Act* and related literature, conducting interviews, and applying the set of screens described below. The interview list and interview guide are listed in Appendices C and D, and references are provided at the end of the document.

4.2.1 Initial identification of relevant tax measures:

An initial list of tax measures were examined for eligibility for consideration. A tax measure had to meet one of the following criteria to be included in the initial list:

a) be related to energy, directly or indirectly, at any stage from research and development through to production and use, as well as energy conservation;

b) potentially affect investment and operating decisions with respect to energy, such as by providing an incentive or disincentive; and

c) potentially have an impact on eco-efficiency, as defined in Section 2.1 of this report.

A set of 26 measures (listed in Table 1) was identified as meeting these criteria.

TABLE 1: INITIAL LIST OF RELEVANT TAX MEASURES

MEASURE (in no order)
Federal Fuel Excise Tax exemptions for alternative transportation fuels
Flow-Through Shares for oil and gas and mining investments
Canadian Exploration Expense (CEE)
Canadian Development Expense (CDE)
CCA for new mines and major expansions (class 41a)
CCA on power-operated moveable equipment (class 28)
CCA for energy-conservation equipment (class 43.1)
Scientific Research and Experimental Development Tax Credit
Atlantic Investment Tax Credit
Deductibility of business travel expenses
Research and Development capital expenditures deductible in current year
CCA for mining assets (class 10, 12)
Limited partnerships
Canadian Oil and Gas Property Expense (COGPE)
Manufacturing and Processing Profits Reduction
Mine reclamation trust fund contributions deductible in current year
Royalty calculations and allowances for oil and gas and mining
Resource Allowance, in lieu of deducting royalties
Exploration Tax Credit
Earned Depletion Allowance
Provincial sales and excise tax exemptions
Tax exempt status for Crown Corporations, including utilities
Exemptions from import duties
Public Utilities Income Tax Transfer Act
CCA on water and air pollution control property (class 24, 27)
GST exemptions

4.2.2 Elimination of measures outside the boundary of the study:

This initial list of relevant tax measures was then screened to eliminate measures outside the boundary of the study (refer to Section 3.2). To remain under consideration, a measure had to meet all of the following criteria:

a) it is an income tax measure;
b) it is federal;
c) it is current--i.e., not scheduled for phase-out or for major revisions.

Table 2 indicates that 11 of the tax measures from the initial list were screened out because they did not meet one of the three criteria listed above. A more detailed explanation of the rationale for screening out these particular measures is provided in Appendix A.

4.2.3 Identification of measures for further investigation:

The revised list of measures under consideration was then reviewed from the perspective of an investor or business manager taking decisions about capital investments in energy production or use, and operating expenses related to energy use; and from the perspective of a consumer making purchasing decisions. The purpose of this stage was to identify tax measures that influence corporate behaviour on matters related to eco-efficiency.

The following types of questions were asked of each measure, in order to identify candidates for more in-depth examination: Does it attract capital investment to the energy production sector which would otherwise not likely occur? Does it encourage energy consumers (industrial, commercial, institutional, or domestic) to incur energy operating expenses, rather than spend capital on energy-efficiency investments? Does it influence the choice of raw material, fuel, or technology used in energy processes?

These questions were asked both on a measure-by-measure and on a comparative basis. As noted in the Task Force Framework, "...individual barriers within a given sector may not exist in isolation but rather reflect a particular policy bias...For example, it may be difficult to determine whether incentives to one energy source represent a barrier to sound environmental practices without understanding the full array of incentives available to other energy sources."[22]

A measure was screened out at this stage if it had one of the following characteristics:
a) it was not specific to energy production or use; or
b) it did not have a significant bearing on investment decisions.

Table 3 indicates that nine of the tax measures from the revised list of measures under consideration were screened out at this point because they did not meet one of the two criteria listed above. More details on the rationale for screening out these particular measures is provided in Appendix B.

TABLE 2: BOUNDARIES SCREENING

MEASURE	Income tax	Federal	Current
Federal Fuel Excise Tax exemptions for alternative transp. fuels	X		
Flow-Through Shares for oil and gas and mining investments			

[22]. Economic Instruments, op.cit., p. 57.

Canadian Exploration Expense (CEE)			
Canadian Development Expense (CDE)			
CCA for new mines and major expansions (class 41a)			
CCA on power-operated moveable equipment (class 28)			
CCA for energy-conservation equipment (class 43.1)			
Scientific Research and Experimental Development Tax Credit			
Atlantic Investment Tax Credit			
Deductibility of business travel expenses			
Research and Development capital expenditures deductible in current year			
CCA for mining assets (class 10, 12)			
Limited partnerships			
Canadian Oil and Gas Property Expense (COGPE)			
Manufacturing and Processing Profits Reduction			
Mine reclamation trust fund contributions deductible in current year			
Royalty calculations and allowances for oil and gas and mining	X		
Resource Allowance, in lieu of deducting royalties			X
Exploration Tax Credit			X
Earned Depletion Allowance			X
Provincial sales and excise tax exemptions	X	X	
Tax exempt status for Crown Corporations, including utilities	X		
Exemptions from import duties	X		
Public Utilities Income Tax Transfer Act			X
CCA on water and air pollution control property (class 24, 27)			X
GST exemptions	X		

X = Screened out.

TABLE 3: SCREEN FOR PRIORITY CANDIDATES

MEASURE	* Not Energy	**Not Significant
Flow-Through Shares for oil and gas and mining investments		
Canadian Exploration Expense (CEE)		
Canadian Development Expense (CDE)		X

CCA for new mines and major expansions (class 41a)		
CCA on power operated moveable equipment (class 28)	X	
CCA for energy conservation equipment (class 43.1)		
Scientific Research and Experimental Development Tax Credit		
Atlantic Investment Tax Credit		
Deductibility of business travel expenses	X	
Research and Development capital expenditures deductible in current year	X	
CCA for mining assets (class 10, 12)	X	
Limited partnerships	X	
Canadian Oil and Gas Property Expense (COGPE)		X
Manufacturing and Processing Profits Reduction	X	
Mine reclamation trust fund contributions deductible in current year	X	

X = Screened out.
*: Not specific to energy production or use
**: Does not have a significant bearing on investment decisions

Strict application of our methodology should have screened out one additional measure, the Scientific Research and Experimental Development Tax Credit, because it is not specific to energy production or use. The interviews conducted during the study, however, identified several issues related to this tax credit that create a barrier to small businesses accessing this credit. Since many companies developing new, eco-efficient, energy-efficient or renewable-energy technologies fall into this category, it was decided to forward this tax measure for more in-depth investigation.

4.2.4 Preparation of profiles of priority candidates:

As a result of the screening processes outlined above, six measures were identified as having a significant influence on incentives to pursue eco-efficiency and as worthy of more in-depth examination. These six measures are presented in Table 4.

TABLE 4: FINAL CANDIDATES FOR EXAMINING FINE TUNING POTENTIAL

MEASURE
Flow-Through Shares for oil and gas and mining investments
Canadian Exploration Expense (CEE)
CCA for new mines and major expansions (class 41a)
CCA for energy-conservation equipment (class 43.1)

A summary profile was then compiled for each of the measures identified for further investigation, using a standard list of categories. Each profile begins with a general description of the measure that incorporates the following information:

a) Description
b) Qualifying expenditures
c) Eligibility
d) Background and rationale for the measure
e) Eco-efficiency issues related to the measure

In addition, the profiles outline options for increasing the eco-efficiency incentive provided by each measure. Directional options for fine-tuning the measures were developed with the following aims in mind:

a) improve eco-efficiency by
   * reducing the energy inputs per unit of energy produced;
   * reducing the pollution produced and other environmental impacts per unit of energy produced; and/or
   * reducing end-use energy consumption;
b) facilitate short-to-medium term implementation, without major tax policy revisions;
c) provide opportunities for eco-efficiency incentives with the least disruption for affected sectors;
d) recognize limitations on the public purse to increase overall tax expenditures;
e) achieve the intended outcome; and
f) uphold principles of tax design.

The basic principles of tax design to be considered include:

Efficiency: the tax system should encourage the best allocation of resources amongst competing uses in the economy. This includes compensating for the failure of the market to internalize environmental costs.

Equity: the tax system should be fair by taxing at the same rate people in similar circumstances (horizontal equity), and at higher rates, those people who are able to pay more tax (vertical equity).

Simplicity: the tax system should be designed to minimize administrative costs for governments and compliance costs for taxpayers.[23]

These measure profiles are provided in the next section as Tables 5 through 10. They identify the tax measures, eco-efficiency issues raised, fine tuning options, and possible implications. These are summaries only; clearly, more detailed analysis and design would be required in the pre-budget process.

4.3 Identify the results of any proposed adjustment

Finally, following the final identification of proposed adjustments in the workshop, the possible implications of each recommendation will need to be considered according to the following factors:

a) implications for eco-efficiency;
b) shifts between and within sectors;

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[23]. From Chen, Mintz, et. al., op.cit., p. vi and pp. 40-46.

c) shifts between regions;
d) short-term and long-term employment impacts (positive as well as negative, within and across sectors); and
e) effects on federal tax expenditures.

The following analysis takes an initial look into possible implications of adjustment options on a directional basis.

5. FINDINGS

The screening process described above led to the identification of six measures judged to influence efforts to pursue eco-efficiency. These measures fell into four types of categories:

a) although currently providing an incentive to pursue eco-efficiency, the effectiveness of the measure is constrained by the qualifying expenditures and eligibility requirements (CCA Class 43.1 for energy conservation property);

b) the incentive provided for investment in energy-intensive and environmentally-burdensome industries is greater than the incentive provided to more eco-efficient industries or practices such that investment dollars are disproportionately attracted to less eco-efficient industries or practices (Canadian Exploration Expense, CCA Class 41a for new mines and major expansions, flow-through shares, Atlantic Investment Tax Credit); and

c) the measure is not readily accessible to many companies developing eco-efficient technologies (Scientific Research and Experimental Development Tax Credit).

A more in-depth examination of each of six eight measures is provided in Tables 5 through 10. The tables describe the qualifying expenditures, eligibility requirements, background and rationale for each of these measures. They also identify the eco-efficiency issues associated with each measure, and give one or more preliminary options for addressing these issues.

An opinion on the direction of possible implications of these options (as per Section 6.4 of the methodology) is also given, but it must be emphasized that this is not based on any detailed analysis.

The issues and possible fine-tuning options for each measure are also discussed in the ensuing sections.

5.1 CCA Class 43.1 for Energy Conservation Property

Of the measures examined, the Class 43.1 accelerated CCA for Energy Conservation Property is intended to provide the most direct incentive for eco-efficiency. By encouraging heat recovery, the use of wood waste and municipal waste, and high-efficiency co-generation and electrical generating equipment (as determined by heat rate), the measure provides an incentive to minimize energy inputs and waste outputs per unit of goods or services produced. The measure's application to alternative energy equipment such as wind, active solar, mini-hydro; and landfill gas or digester gas, also supports energy sources with significantly reduced environmental outputs in comparison to conventional energy sources.

However, the effectiveness of this measure in encouraging investment in alternative energy and energy conservation is seriously constrained by a number of factors.

5.1.1 Omission of energy efficiency retrofit projects

Although the Class 43.1 tax measure is described as applying to "energy conservation equipment", in fact this measure is geared towards investments in electricity generating equipment, as opposed to investments in energy efficiency. Some energy efficient assets used in manufacturing and processing, such as heat exchangers, are included. Energy-efficiency investments, such as retrofits to air conditioning, heating, lighting, windows, or insulation, are covered instead by the Class 1 CCA measure, which offers only deductions on a 4% declining balance basis, among the lowest depreciation rates in the tax system.

Given the emphasis being given to voluntary energy-efficiency improvements in the National Action Programme on Climate Change, this must be considered a notable omission. These efficiency improvements will require a considerable infusion of capital. The existing tax treatment does not accurately reflect the rate that should be provided under a benchmark tax system, given an average life of energy-efficiency assets in the range of 10-12 years, let alone accelerate the deduction of the capital investment as is enabled for energy supply investments. As a result, efficiency improvements are all too often limited to projects with a very short payback period (typically under three years), while other projects with a longer payback period are neglected. These longer-term measures are often more substantial and long-lasting in terms of energy savings.

The argument against including energy-efficiency investments in Class 43.1 has been that the assets are not readily separately identifiable, or that projects are not asset-based. A similar barrier has been overcome in the tax treatment of oil and gas exploration and development expenses, for which the CEE and CDE have been developed as separate tax measures because of the absence of tangible assets.

Energy-efficiency investments may therefore require a separate tax incentive tailored to their nature, or they could instead be added to the list of qualifying expenditures under Class 43.1. The tax incentive should enable investments in energy-efficiency equipment and retrofit services to be depreciated at an accelerated rate similar to that provided to investments in energy supply, or at minimum include the capitalized value of expenditures on approved energy conservation and energy efficiency projects.

5.1.2 Other issues relating to qualifying expenditures

In addition to energy-efficiency investments, there exist several other categories of alternative, environmentally-beneficial energy technologies which are not included as a qualifying expenditure in Class 43.1, for example:

* Solar space and water heating in residential, commercial, and institutional sectors;
* district heating; and
* the minimum heat rate requirements for co-generation are geared towards industrial applications, and therefore tend to exclude residential, commercial, or institutional co-generation facilities.

Qualifying expenditures should be expanded to include these classes of assets to allow investment opportunities in energy-conservation equipment to be pursued by small and medium sized businesses and residential and commercial sectors. This may be done as a separate measure, as opposed to including in class 43 (which is a manufacturing and processing class).

5.1.3 Eligible investors and comparative investment incentives

The eligibility requirements for investors are seen by many companies in the alternative-energy sector to be overly constrained, particularly in comparison to provisions such as flow-through shares offered to the oil and gas industry. The eligibility restrictions to parties whose main business is already energy means that those who are in the best position to take advantage of Class 43.1 are likely to already be in conventional energy production. They may not be interested in branching out into alternative energy projects, particularly since the tax deductions available for keeping investments in their own sector are usually much more attractive.

The eligibility for Class 43.1 investors should be expanded to include complementary non-energy companies, energy consumers, and other passive investors.

In addition, because of the very high capital-to-operating cost ratio typical of renewable-energy technologies, many renewable-energy operators are unable to take full advantage of this CCA deduction because capital costs are high and occur in early years when revenues are lower. Furthermore, there are no fuel costs to deduct against revenues in later years.

RECOMMENDATION 1: The government should commit to redressing any existing disincentives to energy efficiency investment in comparison to energy supply investments in the 1996/97 Budget; investments in approved energy-efficiency equipment and retrofit services should to be depreciable at an accelerated rate similar to that provided to investments in energy supply, or at minimum to reflect the capitalized value of expenditures on these assets. Consultations with stakeholders should take place over 1996 to develop the specifics of a tax measure.

RECOMMENDATION 2: The government should broaden the Class 43.1 accelerated Capital Cost Allowance (CCA) for Energy Conservation Property, to include other, alternative forms of energy such as district heating and non-industrial co-generation; and relax the Specified Energy Property Rules for investors.

TABLE 5: CCA CLASS 43.1 FOR ENERGY CONSERVATION PROPERTY

DESCRIPTION

The capital cost of prescribed energy conservation property may be deducted at 30% per year on a declining balance basis, subject to the half year rule (a purchase within a year is assumed to have been owned for half the year). This rate is the same as for other manufacturing and processing equipment in Class 43. Otherwise, electricity generation and distribution equipment would be in other CCA classes with rates ranging from 4-20%.

QUALIFYING EXPENDITURES

- alternative energy equipment for producing electricity, such as mini hydro, photovoltaics, wind, solar and geothermal
- electricity generating equipment that uses fossil fuels, and cogeneration equipment, both of which must exceed a minimum efficiency defined by heat rate
- equipment that uses certain waste products to produce heat for use directly in an industrial process
- equipment used to collect landfill or digester gas

ELIGIBILITY

- Principal Business Corporations, companies whose main business is energy, may apply this deduction to energy or non-energy related income
- others who use over 50% of the energy they produce from this property for their own business, may also apply this deduction against their total income (from the sale of the electricity and other)
- those who use less than 50% of the energy for their own business may only claim the class 43.1 deduction against the income from sale of the energy

BACKGROUND & RATIONALE

- originally introduced as part of efforts in the mid-1970s to diversify Canada's energy sources, beyond conventional (mostly fossil fuels), and into alternative (mostly renewable) sources
- originally temporary, then the time restriction was removed
- the rate was reduced from 50% to 30% to accommodate more types of assets (on balance; some were removed)
- participation was restricted to close the door on purely passive investors, who were investing for the main reason of getting the tax deduction (as per flow-through shares)
- heating only applications (eg. solar space heating, district heating) were previously included, then removed
- investments in energy conservation and energy efficiency projects are not included because the assets are not readily separately identifiable, or the project is not asset-based

TABLE 5: CCA CLASS 43.1 FOR ENERGY CONSERVATION PROPERTY

ISSUES

- almost exclusively oriented towards energy production, and any allowed energy efficiency assets are for manufacturing and processing only
- the following do not qualify:
  - solar space and water heating in the residential, commercial and institutional sectors
  - district heating
  - expenditures on energy conservation or energy efficiency (i.e. not energy production)
- cogeneration may be an energy efficient alternative in a residential, commercial, or institutional application, but does not tend to be able to meet the heat rate requirements, geared toward industrial applications
- those who are in the best position to take advantage of the measure are engaged in conventional energy production, and may not be interested or incented to branch out given that they are in what is viewed as a competing business, and where the tax deductions are more substantial
- the following are ineligible:
  - companies involved in complementary non-energy activities, such as aircraft turbine manufacturers
  - passive investors (who are able to participate in flow-through shares for oil and gas and mining)

FINE TUNING OPTIONS

- expand beyond electricity generation and industrial use of waste heat, to include: district heating, non-industrial space and water heating, and non-industrial cogeneration (by having a sliding scale of heat rate requirements). This may need to be accomplished via a separate tax measure or CCA class.
- relax the Specified Energy Property Rules; expand the eligibility to complementary non-energy companies, and energy consumers and allow other passive investors to participate
- include the capitalized value of expenditures on approved energy conservation and energy efficiency projects (perhaps via a separate tax measure other than Class 43.1)

POSSIBLE IMPLICATIONS	eco-efficiency	• improve, due to increased conservation, efficiency, and renewables
	sectoral shifts	• possible, from production toward conservation
	regional shifts	• the proportion of eligible parties may become less oriented towards western Canada
	employment	• should increase, due to labour intensivity of efficiency and conservation projects, and renewable energy sector expansion
	tax expenditure	• increase

5.2 Canadian Exploration Expense (CEE)

The CEE attracts investment to the fossil-fuel sector, in particular to the exploration phases of oil and gas and mining. It also helps the companies engaged in these activities to reduce costs, reduce income and taxes, and pass risk on to the government. A consensus was reached among workshop participants that there is an element of preference in the existing tax system for successful exploration activities in the hydrocarbon industry.

The tax expenditure may be in excess of that required to provide an incentive for exploration. In attracting investment capital to these sectoral activities, such investment dollars are less available to other economic development activities that would be more eco-efficient, and continue to tilt the Canadian economy in the direction of resource extraction rather than manufacturing, processing, retailing, service, and information sectors.

The CEE includes expenditures on wells that go on to be successful. These should instead be capitalized, and the related expenditures matched against revenues over the life of the asset, such as on a unit of production basis.

The CEE also includes expenditures, related to mining, that are actually development costs as opposed to exploration. These types of costs should be moved into CDE.

The ability to reclassify up to $2 million of Canadian Development Expense as Exploration Expense for the purpose of flow-through shares is a clear example of special tax treatment to incent capital investment. Such treatment is not available to non-petroleum/non-mining based energy sources.

RECOMMENDATION 3: The government should move development costs and successful wells from the Canadian Exploration Expense into more suitable Canadian Development Expense or CCA categories of deductions.

RECOMMENDATION 4: The government should eliminate the ability to reclassify up to $2 million of Canadian Development Expense as CEE for flow-through shares.

TABLE 6: CANADIAN EXPLORATION EXPENSE (CEE)

DESCRIPTION

Qualifying expenditures are up to 100% deductible; unused deductions are collected in a cumulative CEE pool and carried forward indefinitely for deduction in later years.

QUALIFYING EXPENDITURES

- expenditures incurred for:
  - prospecting, exploring for, or searching for minerals, oil or gas
  - drilling or completing an oil or gas well that is:
    - a discovery well
    - a dry hole
    - an abandoned well
  - pre-production mine development costs (such as the removal of overburden in a pre-production coal operation)
- $2 million of CDE may be reclassified as CEE via flow through shares

ELIGIBILITY

- corporations in the resource sector, known as principal business corporations (PBCs) may use this deduction fully to offset income, but may not exceed income to create a loss from this deduction
- a taxpayer's share in these expenditures, renounced to that taxpayer pusuant to a flow-through share agreement
- this deduction is optional for a non-PBC or individual, who do not have to use the entire available deduction in a given year, but may do so, and may also create a loss as a result

BACKGROUND & RATIONALE

- to encourage and enable investment in the exploration of petroleum and minerals, and bringing them to the point of production
- developed as a separate measure, due to the fact that tangible assets do not exist on which to attach a CCA rate
- intended to provide assistance, due to the low success rates relative to the level of effort involved in exploration
- continued beyond its original expiration date

ISSUES

- exploration success rates have improved considerably
- wells that go on to be successful and generate revenues continue to qualify for this deduction, rather than being capitalized and then expensed based on units of production
- incentive goes beyond exploration and into development phases
- incentive may be tilting investment towards fossil fuels and away from other activities that may be more eco-efficient
- tax expenditure may be in excess of that required to encourage exploration, reducing government investment dollars available for other activities that could be less energy-intensive
- the treatment of development expenses as exploration expenses, for the purposes of flow-through shares, results in a 100% deduction rather than 30%

FINE TUNING OPTIONS

- disqualify successful wells (which should be capitalized and then expended against revenues over the productive life of the assets)
- move pre-production mine development costs (such as for energy related mining) to Canadian Development Expenses (CDE), for deduction at 30%
- do not allow the first $2 million of development expenditures to be treated as exploration expenses for the purposes of flow-through shares.

POSSIBLE IMPLICATIONS

eco-efficiency	• improve, due to lower investment in expanding supply of fossil fuels and higher investment in increased efficiency of existing wells and other energy efficient and less polluting activities • possible negative implication if companies are induced to expend exploration dollars on unsuccessful wells (to achieve the tax write-off)
sectoral shifts	• away from fossil fuels
regional shifts	• away from Alberta
employment	• increase per dollar invested if spend on energy efficiency activities such as retrofits
tax expenditure	• decrease

5.3 CCA CLASS 41a - NEW MINES AND MAJOR EXPANSIONS

Capital investments in new mines or major expansions receive favourable tax treatment by permitting full write off up to the extent of mine income. While the ability of companies to use the full write-off is constrained by the amount of income, which is lower in earlier years, the entire amount of income may nonetheless be eliminated for tax purposes. This sort of measure is not available to other types of more eco-efficient, new operations, such as high-tech manufacturers, software developers, tourism facility operators, etc. This puts other new activities, which could be more eco-efficient, at a tax disadvantage.

Consideration should be given to reducing the rate of deduction for new mines and major expansions, and/or to extending eligibility to eco-efficient, new activities in other sectors.

RECOMMENDATION 5: The government should equalize the availability of deductions for major industry expansions by:

- **Reducing the rate of deduction for new mines and major expansions under CCA Class 41a, to a rate which more closely reflects the productive life of these assets, and/or**
- **Extend eligibility to other activities such as new, eco-efficient activities.**

TABLE 7: CCA CLASS 41A - NEW MINES AND MAJOR EXPANSIONS

DESCRIPTION	The cost of qualifying assets may be deducted at a rate of up to 100%, or to the extent of income for the year from the new or expanded mine.	
QUALIFYING EXPENDITURES	• certain mining buildings, machinery and equipment acquired for use at a new mine or major expansion of an existing mine	
ELIGIBILITY	• any corporation or other taxpayer incurring qualifying expenditures • oil sands are considered mining for tax purposes • a 25% or greater increase in a mine's capacity is generally considered to be a major expansion	
BACKGROUND & RATIONALE	• assets used in existing mines are deducted at rates prescribed by class 12 (mine shafts - 100%) or 41(various - 25%) • this measure is in place to encourage investment in new mining activity, and replaces tax holidays available during the 1980s	
ISSUES	• provides an incentive for more exploration and development of non-renewable resources • this measure is unavailable to other new or expanded activities that may be more eco-efficient, such as high-technology manufacturing • write-off rates for other assets tend to range from 4-30%, with a few exceptions • the mining industry is promoting the expansion of this measure to enable deduction against total company income, not just the income from the new mine or major expansion ("ringed fence")	
FINE TUNING OPTIONS	• reduce the rate and/or allow the assets acquired for other new activities that are more eco-efficient, such as high-technology manufacturing, to qualify for similar deduction rates.	
POSSIBLE IMPLICATIONS	eco-efficiency	• improve, if investment in non-renewable resources declines
	sectoral shifts	• away from mining
	regional shifts	• away from regions with higher potential for new mines or major expansions
	employment	• decrease
	tax expenditure	• decrease

5.4 Flow Through Shares

The availability of flow-through shares solely to the mining and petroleum sectors puts other energy industries, such as renewable-energy industries, at a disadvantage in attracting capital investments. This barrier to accessing capital is exacerbated by the restrictions on passive investors contained in Class 43.1 (see previous discussion, section 5.1).

Yet the reasons for providing the flow-through share mechanism to the mining and petroleum sectors apply equally well to the renewable-energy sectors:

a) the renewable energy industries are similar to many environmental industries in that they are generally comprised of small and medium sized enterprises;
b) although renewable energies are a well-established industry worldwide, here in Canada they are perceived as new. Investors see the risk of investing in renewables as much higher than the risk of investing in conventional energies. Flow-through shares are a way of compensating for their perceived risk; and
c) flow-through shares are used as a means of attracting investment in exploration companies which typically experience net losses over periods of many years. Although the profit profile for renewable energies will depend on the specific technology, in general renewable-energy technologies take a number of years before generating positive returns on investment.

The availability of this measure to petroleum and energy-related mining sectors should either be eliminated, or the availability should be extended to the renewable-energy sector, energy-performance contractors and energy-service companies. This would serve to equalize the availability across the energy sector.

RECOMMENDATION 6: The government should equalize the availability of flow-through shares across the energy sector. Government revenues could be maintained by applying more restrictive criteria or rates to the deduction equally, across a broader base of eligible industries.

TABLE 8: FLOW-THROUGH SHARES

DESCRIPTION	Qualifying expenditures may be renounced (i.e. passed on instead of claimed) to a shareholder, who may claim that expenditure against income.	
QUALIFYING EXPENDITURES	• all expenditures incurred in exploration of mineral or oil and gas resources • the first $2 million expenditures incurred in development of mineral or oil and gas resources (which are treated as exploration expenses in the hands of the individual investor)	
ELIGIBILITY	• any corporation or other taxpayer incurring qualifying expenditures may renunciate those expenditures • any party (passive investor) who has purchased flow-through shares in a corporation is eligible to claim renunciated expenditures	
BACKGROUND & RATIONALE	• designed to provide an incentive for equity-based investment in companies engaged in exploration and development of minerals and petroleum, and to assist junior exploration companies • the uptake has been mostly in mining exploration (as opposed to development or petroleum)	
ISSUES	• provides an incentive for more exploration and development of non-renewable resources • attracts investment specifically to these sectors, without a similar mechanism available to those testing and developing renewable resources or energy efficiency technologies and services	
FINE TUNING OPTIONS	• equalize the availability of flow-through shares across the energy sector, such as by eliminating the measure or making it available for investment in renewable energy sources	
POSSIBLE IMPLICATIONS	eco-efficiency	• improve, as investment dollars move from non-renewables to renewables
	sectoral shifts	• non-renewable to renewable
	regional shifts	• some away from west and north and remote areas and towards population centres
	employment	• increase per dollar spent, if spent on energy efficiency
	tax expenditure	• decrease if measure eliminated, increase if measure extended to other applications

5.5 ATLANTIC INVESTMENT TAX CREDIT

The qualifying expenditures for the Atlantic Investment Tax Credit are narrowly focused on energy intensive resource extraction activities. While the rationale for this tax credit is to encourage economic development in an economically-depressed region, investments in renewable energy and energy retrofitting can offer more jobs per dollar of investment, and have lower capital costs. Investments in many other areas of economic development un-related to primary resource extraction should be given equal encouragement and incentives for the tax system as the job intensity of resource extraction industries is among the lowest of any sector.

The list of qualifying expenditures should include expenditures on renewable sources of energy, energy-efficiency retrofitting, and other non-energy-intensive activities.

RECOMMENDATION 7: The government should expand the list of qualifying expenditures for the Atlantic Investment Tax Credit to include expenditures on renewable sources of energy, energy-efficiency retrofitting, and other non-energy-intensive activities.

TABLE 9: ATLANTIC INVESTMENT TAX CREDIT

DESCRIPTION

Qualifying expenditures receive a 10% tax credit, which is refundable at a 40% rate for qualifying taxpayers.

QUALIFYING EXPENDITURES

- expenditures on new buildings, machinery and equipment employed in the following activities:
  - oil and gas
  - mining
  - manufacturing and processing (except for electricity production, processing gas for a utility, and construction)
  - logging, farming and fishing
- expenditures on energy efficiency connected to the above activities would also qualify

ELIGIBILITY

- any corporation or other taxpayer incurring qualifying expenditures may claim the tax credit
- the refundable portion is only available to Canadian Controlled Private Corporations (CCPCs) and individuals

BACKGROUND & RATIONALE

- this tax credit exists to encourage economic development in economically depressed regions
- there used to be a broader system of Investment Tax Credits for regions across the country; the rates were decreased and then the tax credits phased out (except for the scientific research and experimental development tax credit)
- rate applied to the Atlantic region has been reduced over time

ISSUES

- the definition of what qualifies, in order to stimulate regional economic development is narrowly focused on energy intensive resource extraction and manufacturing and processing activities

FINE TUNING OPTIONS

- expand the list of qualifying activities, or replace some of the existing ones, with: renewable sources of energy, energy efficiency, and other non-energy intensive activities

POSSIBLE IMPLICATIONS

eco-efficiency	• improve, while still enhancing economic development
sectoral shifts	• possibly away from resource extraction and toward other activities
regional shifts	• focus should remain on Atlantic region
employment	• increase per dollar invested in more labour intensive activities
tax expenditure	• stay same or increase, depending on whether replace some activities that currently qualify with others, or add to list

5.6 Scientific Research and Experimental Development Tax Credit

The administrative burden of applying for and demonstrating eligibility for this tax credit, particularly given the frequent changes to its rules, makes this measure difficult to access for small businesses. Many of the businesses involved in developing eco-efficient alternative energy and energy-efficiency technologies are small and medium sized, and lack the internal experts and resources to access this tax credit.

The application and administration procedures for this tax credit should be simplified, and a consistent and predictable set of requirements should be maintained.

The tax credit as it is currently applied tends to favour early-stage research and development, as opposed to later stages when commercially viable products are being developed. Renewable-energy and energy-efficiency organizations are often smaller with limited finances; therefore they need to concentrate on reaching a commercially-viable product within a relatively short period of years.

The qualification criteria should be expanded to increase the focus on later-stage development of products.

RECOMMENDATION 8: The government should simplify the approval and administrative burden of the Scientific Research and Experimental Development Tax Credit. The complexity of the process is a barrier which is more significant for small businesses than for large enterprises. In the energy sector, in general, the large players are traditional providers and the smaller, disadvantaged players are alternative energy businesses.

TABLE 10: SCIENTIFIC RESEARCH AND EXPERIMENTAL DEVELOPMENT TAX CREDIT

DESCRIPTION	Qualifying expenditures receive a partly refundable tax credit at a basic rate of 20%, with a special rate of 35% with certain restrictions.

QUALIFYING EXPENDITURES	• include both capital and operating expenditures for basic research undertaken for:
	  • the advancement of scientific knowledge
	  • applied research
	  • development of processes, products, or materials
	• expenditures that do not qualify include: sales promotion or market research, quality control or testing, style changes, commercial production, andmost buildings

ELIGIBILITY	• any corporation or other taxpayer incurring qualifying expenditures may receive the basic 20% tax credit • Canadian Controlled Private Corporations (CCPCs) with an aggregate taxable income less than $200,000 in the preceding year may receive the 35% tax credit on the first $2 million of qualifying expenditures
BACKGROUND & RATIONALE	• designed to provide an incentive for investment in scientific research and experimental development
ISSUES	• rules are often changing and application and administration is complex; this discourages small businesses (such as small renewable energy operators) from trying to access this tax credit • activities that tend to qualify are oriented to the early stages of research and development, versus the stages of developing products for later commercialization
FINE TUNING OPTIONS	• ease the administrative burden of this measure • consider increasing the relative proportion of later stage versus early stage R&D projects, to assist the development of viable products and processes

POSSIBLE IMPLICATIONS	eco-efficiency	• could improve, if more renewable energy and energy efficiency projects occur
	sectoral shifts	• perhaps toward renewable technologies
	regional shifts	• not likely
	employment	• eventually, could increase if more labour intensive activities arise as a result of SRED
	tax expenditure	• same or relatively minor increase

6. SUMMARY

This study has examined energy taxes from a new perspective--with the intent of seeking to remove disincentives to investment capital being attracted towards more eco-efficient energy production and use. In doing so, it builds on previous federal initiatives to correct disincentives to sound environmental practices, including the Task Force on Economic Instruments and Disincentives to Sound Environmental Practices, objectives in the *Guide to Green Government*, and the ongoing efforts to elaborate Canada's National Action Programme on Climate Change.

For the purpose of this study, "sound environmental practice" has been defined as continuous improvement in eco-efficiency.
Two approaches to reduce the environmental impacts of energy use and production are identified—using energy more efficiently, and producing energy in more environmentally benign ways. The pursuit of eco-efficiency in the energy sector would therefore be achieved through activities that minimize:

* the ratio of energy and other material inputs to goods and services produced, including energy production;
* environmental impacts, such as air and water pollution, wastes, and land disturbances per unit of goods and services produced; and
* end-use energy consumption.

The authors adapted the generic methodology for evaluating public policy barriers to environmental practices developed by the Task Force on Economic instruments and Barriers to Sound Environmental Practices.

This methodology was applied to examine a number of tax measures considered to be related to energy from the research and development through to production and use stage, or which might affect investment and operating decisions with respect to energy. Of an original 26 measures, six federal income tax measures were identified as either being disincentives to investment in more eco-efficient activities, or as being open to modification to provide a greater incentive in such investment. A summary of the recommendations related to these six measures follows.

Energy Efficiency

The notable absence of tax incentives for energy-efficiency investments is one of the key findings of this study. The existing tax treatment does not accurately reflect the rate that should be provided under a benchmark tax system, given an average life of energy-efficiency assets in the range of 10-12 years, let alone accelerate the deduction of the capital investment as is enabled for energy supply investments.

Given the emphasis being given to voluntary emissions reduction through energy-efficiency improvements in the National Action Programme on Climate Change, and the limitation that the need for short payback periods now imposes on maximizing energy-efficiency retrofits, this omission must be addressed. The authors therefore recommend that the government commit to redressing any existing disincentives to energy efficiency investment in comparison to energy supply investments in the 1996/97 Budget; investments in approved energy-efficiency equipment and retrofit services should to be depreciable at an accelerated rate similar to that provided to investments in energy supply, or at minimum to reflect the capitalized value of expenditures on these assets. Consultations with stakeholders should take place over 1996 to develop the specifics of a tax measure.

CCA Class 43.1 for Energy Conservation Property

The study identifies two changes required to improve the effectiveness of CCA Class 43.1 as a tool for attracting investment to eco-efficient, alternative-energy production. First, the criteria for eligible expenditures should be broadened to include other alternative, eco-efficient forms of energy, for example district heating and non-industrial co-generation. Second, the Specified Energy Property Rules for investors should be relaxed to include complementary non-energy companies, energy consumers, and other passive investors. The latter change is particularly important given the flow-through share mechanisms available to investors in the petroleum and energy-related mining sectors.

Canadian Exploration Expense

Two changes were identified to reduce the element of preference provided to the oil and gas sector under the Canadian Exploration Expense. First, exploration costs for successful wells should be moved from the Canadian Exploration Expense to a Capital Cost Allowance category to reflect that successful wells are revenue generating assets. Second, the ability to reclassify up to $2 million of Canadian Development Expense as CEE for flow-through shares should be eliminated. These changes would bring the CEE closer to a benchmark tax system, and reduce the tax-created advantage the CEE provides to attracting investment to the fossil-fuel sector compared to other sectors.

CCA Class 41a

Assets acquired for new mines or major expansions to mines receive favourable tax treatment that is not available to other new or expanded operations that may be more eco-efficient, such as high-technology manufacturing. The study recommends that the availability of deductions be equalized for all major industry expansions by either reducing the rate of deduction for new mines and major expansions under CCA Class 41a to a rate which more closely reflects the productive life of these assets; and/or extending eligibility to other activities such as new, eco-efficient activities.

Flow-through Shares

The availability of flow-through shares solely to the mining and petroleum sectors puts other energy industries, such as renewable-energy industries, at a disadvantage in attracting equity-based investments. This is excerbated by the restrictions on passive investors contained in Class 43.1 for Energy Conservation Property (see previous discussion). The study echoes the Task Force recommendation (see p. 6) that the availability of flow-through shares should be equalized cross the energy sector. Government revenues could be maintained by applying more restrictive criteria or rates to the deduction equally, across a broader base of eligible industries.

Atlantic Investment Tax Credit

The qualifying expenditures for the Atlantic Investment Tax Credit are narrowly focused on energy-intensive resource-extraction activities. Investments in renewable energy and energy retrofitting can offer more jobs per dollar of investment, and have lower capital costs. The list of qualifying expenditures should be expanded to include expenditures on renewable sources of energy, energy-efficiency retrofitting, and other non-energy-intensive activities.

Scientific Research and Experimental Development Tax Credit

Because the application and administration procedures for the Scientific Research and Experimental Development Tax Credit are quite complex and cumbersome, this tax credit is less accessible to small companies than to large ones. Many of the companies developing eco-efficient alternative-energy and energy-efficiency technologies are smaller companies. Simplification of the SREDTC procedures is recommended as a means of increasing the accessibility of this credit to smaller-sized businesses.

Conclusion

Tax measures are powerful and pervasive instruments for directly or indirectly promoting certain activities and creating disincentives for others. Although tax measures do not by their nature have direct effects on the environment or eco-efficiency, they influence the allocation of capital across different types of assets, industries, and patterns of resource use.

While there has been considerable discussion over the last decade on the application of new environmental charges and green consumption taxes, there has been much less evaluation of the environmental signals sent by the existing tax system. The authors are of the view that a correction of existing tax signals should precede or accompany any application of new economic instruments for environmental purposes.

This study identifies a number of options for fine-tuning the tax system to remove disincentives to investment capital being attracted towards more eco-efficient energy production and use. Several of the recommendations would eliminate or reduce tax incentives which represented a departure from a pure "benchmark" tax system, and which currently provide special incentives for eco-inefficient energy production.

At the present time, the principle of revenue neutrality drives the Department of Finance's decisions on tax changes. This study proposes that where revenue neutrality is a condition for tax reform, it should be considered across a package of energy sector measures. The tax expenditure reductions realized through eliminating preferential treatment for certain activities can be used towards expanded tax measures for activities which are not currently receiving appropriate treatment.

APPENDIX A: RATIONALE FOR ELIMINATING MEASURES OUTSIDE THE BOUNDARY OF THE STUDY

The following measures were not considered for in-depth analysis because they were not considered to be income tax measures:

* Fuel excise taxes, and exemptions from these for alternative fuels such as natural gas, propane, and ethanol;

* Royalties, which are charged as a portion of the economic rent on private extraction and sale of public natural resources. While in the mining sector these are termed "mining taxes" and are based on profits, they are not an actual income tax measure;

* The tax-exempt status of Crown Corporations (including many utilities and AECL), provided for in the constitution matter, and is not an income tax measure per se;

* Import duties and exemptions from these such as for off-road mining equipment;

* Goods and Services Tax (GST) and exemptions from this, such as for expenditures associated with the construction of remote work sites.

The following measure was not considered for in-depth analysis because it was not federal:

* Provincial sales and excise taxes and exemptions from these, such as for fuel used in off-road mining and logging operations.

The following measures were not considered for in-depth analysis because they were scheduled for phase-out or they were under review:

* The resource allowance used as a proxy for royalty expense in calculating income taxes is under review by the Department of Finance, as announced in the 1995 Budget;

* The exploration tax credit, which was available for expenditures related to a well in excess of a certain amount, was phased out in 1990;

* Earned depletion was an additional deduction from taxable income of certain exploration and development expenditures and other resource investments. No additions to the pool have been permitted since 1990, although deductions may be made from a pool that already existed in 1989;

* The accelerated CCA on water and air pollution control property applies only to new property used in operations that were started before 1974, and is scheduled for phase out by 1999; and

* The Public Utilities Income Tax Transfer Act (PUITTA), an income tax rebate provided to publicly owned utilities, is being phased out in the spring of 1996.

APPENDIX B: RATIONALE FOR ELIMINATING MEASURES FROM FURTHER INVESTIGATION

The following measures were not considered for in-depth analysis because they were not specific to energy production or use:

* The Capital Cost Allowance (Class 28) provided for power-operated moveable equipment, used in road building and construction, has a bearing on eco-efficiency. However, the order of magnitude of the measure and related tax expenditure were not deemed to be significant enough for inclusion in our study.

* Travel expenses are considered a normal and legitimate cost of doing business, and are fully deductible against business income. Alternative means of conducting distance business (such as video conferencing and teleconferencing) are increasingly available and much more eco-efficient. While transportation demands have a significant environmental impact, this measure was screened out because it did does not directly relate to energy production or use.

* Qualifying research and development expenditures, whether capital or operating, may be deducted as current expenses in the year incurred. If this tax measure did not exist, the capital portion would have to be deducted over a number of years according to a prescribed annual rate. This measure is designed to assist R&D across all sectors, including those related to energy technology. Although there may be implications for eco-efficiency, this measure was screened out as it is not specific to energy production or use;

* The features of the Income Tax Act related to limited partnerships, and the ability to apply losses against personal income, were noted as being of possible value to small-scale alternative energy operators. However, this measure was screened out as it is not being specific to energy production or use;

* The manufacturing and processing profits tax reduction may have a general bearing in terms of reducing costs and therefore reducing the incentive to reduce energy input costs. It also may result in increased manufacturing and processing activities, regardless of their energy intensity. However, this measure was screened out as it is not being specific to energy production or use;

* The ability of mining companies to deduct contributions to a mine reclamation trust fund in the year of contribution, rather than waiting until the year of expenditure, assists them in setting aside the required amount by easing their tax burden in earlier years. This tax expenditure has a bearing on the finances of mining companies, including energy-related mining such as coal, uranium, and tar sands. Although there may be positive implications for eco-efficiency associated with the environmental reclamation of mine sites, this measure was screened out as it is not being specific to energy production or use;

* The CCA for certain mining assets, itemized in classes 10 and 12 in the Income Tax Act, may have a bearing on eco-efficiency due to the nature of the equipment and related activities, and the incentive to replace the equipment. However, the breath of their application led to the screening out of this measure as it is not specific to energy production or use.

The following measures were not considered for in-depth analysis because they do not have a significant bearing on investment decisions:

* The Canadian Oil and Gas Property Expense tax measure enables companies engaged in oil and gas activities to deduct a portion of property expenses each year. However, this amount is small enough that it was screened out on the basis that it does not have a significant bearing on investment decisions.

measure was screened out on the basis that the rate of write-off allowed is comparable to that provided to other sectors, such as the Class 43 rate for energy conservation equipment and for manufacturing and processing *equipment*.

APPENDIX C:
INTERVIEW LIST

Dennis Gidley	Amoco Canada
Jake Brooks	Independent Power Producers Society of Ontario, Toronto
Laverne Dalgliesh	National Energy Conservation Association, Winnipeg
Frad Gallagher	Canadian Enhanced Energy Development, Ltd., Calgary
Greg Mocaro	Consultant to TransAlta Utilities Corporations, Calgary
Neil McIlveen, Phyllis Odenbach-Sutton & Alan Webster	Energy & Fiscal Analysis Division, Natural Resources Canada, Ottawa.
Bob Mitchell	Alberta Energy, Sustainable Energy Development Division, Edmonton
Jay Shepherd	Shepherd, Grenville-Wood, Barristers & Solicitors, Toronto.
Bill Toms, Gordon Lenjosek, & James Zeni	Resource Taxation, Finance Canada, Ottawa.

Representatives of the conventional energy sector were interviewed as energy consumers only, not as energy producers. Therefore, tax measures affecting energy efficiency decisions were discussed, but not renewable energy sypply measures such as the CEE and the CDE.

The following individuals were also contacted during the interview and information gathering phase:

Paul Boucher	Hathaway Corporation, Toronto
Alan Levy	Canadian Association of Energy Service Companies, Toronto
Tom Tamblyn	TESCOR, Toronto

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APPENDIX D:
INTERVIEW GUIDE

Purpose

To gain guidance, ideas, and feedback on our identification and preliminary analysis of barriers to energy eco-efficiency within the federal capital tax system.

Lines of Inquiry

Base questions to all interviewees to yield input on the following lines of inquiry:

* look over initial list of measures and identify any measures/barriers that have been overlooked;
* learn more about the tax measures, their evolution, and the incentives/disincentives they provide;
* discuss other aspects of the measures -- the original rationale, socio-economic goals/objectives/results;
* discuss what the barriers are, who is affected, and how;
* obtain any fine tuning suggestions;
* discuss the implications of fine-tuning some of the measures (revising, removing, providing similar measures for other taxpayers), and how this might affect various stakeholders/taxpayers; and
* highlight what current tax measures and previous changes taxpayers favour, or disfavour, and what changes they are proposing.
* identify measures for which parties would be opposed to any fine-tuning and why.

Note:
Not all measures and fine tuning options were discussed with each interviewee. While many individuals provided advice and opinions in the development of this paper, the final product represents the views of the authors only.

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