A PRESENTATION TO THE NATIONAL FORUM ON CLIMATE CHANGE NATIONAL ROUNDTABLE ON THE ENVIRONMENT AND THE ECONOMY BY THOMAS d'AQUINO PRESIDENT AND CHIEF EXECUTIVE BUSINESS COUNCIL ON NATIONAL ISSUES FEBRUARY 17, 1998

- This presentation deals with a key national priority, the issue of global climate change.
- ◆ The Business Council on National Issues (BCNI) has been actively engaged in the climate change issue since 1994, prior to the first Conference of the Parties in Berlin, and today the BCNI is playing the lead role on behalf of Canadian business in developing a responsible industry response to the challenge both in Canada and globally.
- BCNI member CEOs are intensely involved, primarily through the Council's Task Force on the Environment.
- As well, the BCNI is carrying out a co-ordinating role on behalf of Canadian industry through regular meetings with 18 major business associations.
- BCNI was part of the Canadian delegation in Kyoto and will play a leading role on behalf of the private sector post-Kyoto.

CLIMATE CHANGE THE SCIENCE

- Naturally occurring "greenhouse effect"
- Population growth and industrialization have increased atmospheric concentrations of gases
- Emissions result largely from burning of fossil fuels (oil, gas and coal)
- Over long-term, concentration levels will continue to increase

What we do know about climate change:

- The Earth's lower atmosphere is made up of a mixture of gases which trap part of the sun's radiation. This is sometimes referred to as the "greenhouse effect", a natural phenomenon which keeps the Earth's surface inhabitable.
- The tremendous increase in world population and the process of industrialization over the past 150 years have resulted in increasing concentrations of some of these gases in the atmosphere, particularly carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O).
- Increases in carbon dioxide result from the burning of fossil fuel energy (oil, gas and coal). These fuels power industrial plants, heat our homes and buildings and are used in all modes of transportation.
- A tremendous array of sources contribute to the accumulation of greenhouse gases -- consumers, businesses and public sector facilities.
 For instance, agriculture is one of the principal sources of methane.
- Over the long-term, concentration levels of these gases in the atmosphere will increase significantly, particularly as developing countries expand and become more industrialized.

CLIMATE CHANGE THE SCIENCE

- Important uncertainties remain
- Predictions of climate change based on models
- Considerable uncertainty about nature and severity of change
- Human contribution vs. natural variability

However, there are still a number of uncertainties and disagreements among scientists:

- The predictions about future climate change are based largely on climate simulations linked to complex "general circulation" models.
- However, there is considerable debate about whether the changes predicted by models actually will take place, and if so, how severe they will be, over what time period they might occur, and to what extent they can be absorbed.
- As well, there are questions about the extent to which climate change can be attributed to human activity as opposed to variations in nature.
- In its latest report, the Intergovernmental Panel on Climate Change (IPCC) noted that the average rise in global temperature is unlikely to be entirely natural in origin and that "the balance of evidence suggests a discernible human influence" on the climate system.
- However, the IPCC also said that it cannot quantify the human influence on the climate because the "expected signal is still emerging from the noise of natural variability".

CLIMATE CHANGE THE SCIENCE

- Is there a scientific consensus?
- Surface temperature measurement vs. satellite
- More severe weather events?
- Public health concerns
- It is an overstatement to suggest that there is a consensus on global warming among 2500 scientists, since only a fraction of that number are atmospheric scientists qualified to give an opinion.
- A recent article in the journal **Science** noted that IPCC scientists now say that neither the public nor many scientists appreciate how many qualifiers were contained in its Second Assessment Report.
- Surface temperature measurements tend to show an increase in global average temperatures of about 0.5 degrees C.
- However, satellite temperature measurements begun in 1979 actually show a slight cooling. Scientists continue to argue about which is the more appropriate measurement to use.
- While the media tends to make an issue of recent severe weather events, the IPCC itself suggests that current knowledge is insufficient to link climate change with any perceived pattern of more severe storms.
- Similarly, while some have linked climate change to an increase in infectious diseases, many experts argue that public health measures will be far more important to curbing the spread of infectious diseases.

TAKING A PRUDENT RISK MANAGEMENT APPROACH

- Climate change a risk that should be appropriately managed
- Not a "do nothing" approach
- Most effective measures first
- Broaden scientific and economic knowledge
- Develop appropriate technologies

- However, to suggest that there are still many uncertainties does not mean that we should do nothing.
- Climate change is a risk and like all risks should be managed prudently.
- It is also a long-term phenomenon, and we need to ensure that the actions we take are both environmentally and economically sound over the longer term.
- Drastic short-term action, with significant costs and uncertain benefits is not the most prudent course.
- Rather, we should focus on the most cost-effective measures first, those that have environmental and economic benefits.
- By allowing time, we can broaden scientific knowledge, develop appropriate technologies and improve our information on social and economic impacts.

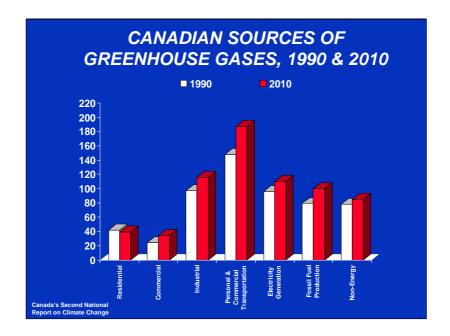
CLIMATE CHANGE WHY IT'S IMPORTANT TO CANADA

- Challenge of limiting emissions while economy and population continues to grow
- Ultimately means constraining economic growth and energy use
- Canada is energy intensive and reductions will be more difficult
- Our comparative advantage as producer of energy intensive goods is threatened
- Canada potentially more affected by climate change
- Other countries seeking competitive advantage
- There are a number of important reasons why we believe that dealing with climate change will be a particularly challenging undertaking for Canada.
- Placing arbitrary limits on emissions ultimately means trying to constrain economic growth and energy use.
- While some opportunities exist for improvements in energy efficiency, in the absence of major technological breakthroughs, it will be difficult to reduce national emissions significantly.
- Canada, because of its energy-intensive and trade reliant economy -as well as climate, geography and population growth -- will have a harder time than many countries in trying to reduce emissions.
- Our comparative advantage as a producer and exporter of energy and energy-intensive goods is threatened.
- Some scientists believe that Canada could be more adversely affected by changes in climate, particularly coastal regions and fragile Arctic ecosystems.
- Competitive advantage is also an issue here: some countries are seeking opportunities under the guise of environmental concern.

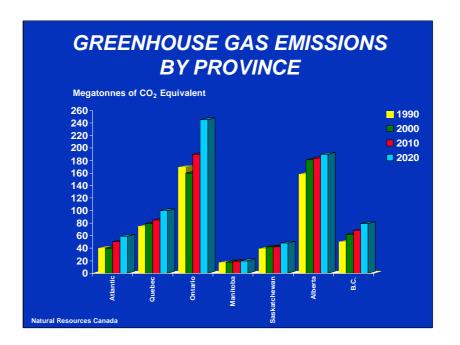
CLOSING THE GAP CANADA'S GREENHOUSE GAS EMISSIONS 1990 - 2010 **GAP VS. 1990** Mts of CO₂ Mt <u>%</u> 1990 564 1995 619 +55 +9.5 2010 (PROJECTION) 669 +105 +18.6 **KYOTO TARGET** -35 529 -6 GAP: 2010 VS. KYOTO TARGET -22.4 -140

- This table illustrates just how significant the challenge is for Canada.
- The Kyoto target represents not just a 6 percent reduction in our emissions, but rather a reduction more in the range of 25 percent.
- The Kyoto target is to reduce our emissions by 6 percent from 1990 levels. Since 1990, a recession year in Canada, we have enjoyed significant economic growth, record levels of exports and a population growing at the rate of almost one percent a year -- all of which result in increasing energy use and higher emissions.
- By 1995, our emissions were already almost 10 percent ahead of 1990 levels, and the forecast from Natural Resources Canada is that by 2010 we are likely to be almost 19 percent beyond 1990 levels.
- And this forecast was made on the basis of an average yearly economic growth of 2.2 percent, and does not take into account the announced shutdown of nuclear capacity in Ontario.
- Thus, the real challenge for Canada will be to reduce our emissions by at least 22% over the next 10 to 12 years.

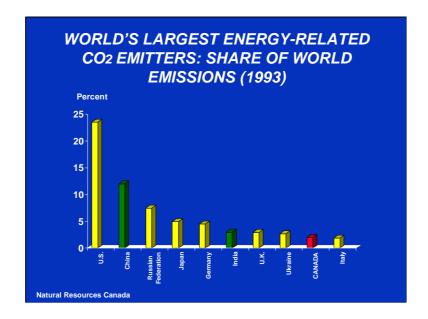




- This chart illustrates the varied sources of greenhouse gas emissions in Canada and shows the expected trend over the period 1990 to 2010.
- The biggest single source, and the largest increase over the period of 1990 to 2010, is in transportation. This includes both personal use of automobiles as well as commercial modes of transport -- air, rail, marine and trucking.
- "Non-energy" represents a diverse array of other sources where greenhouse gases are released not as a result of the combustion of fuels but rather as a by-product of the production process. Sources include certain industrial production processes (such as cement, lime, adipic acid, and primary aluminum), agriculture, forestry and waste management.
- These numbers illustrate that the end-user of energy has a significant role in Canada's greenhouse gas emissions. Thousands of decision-makers in small and large businesses and public institutions and millions of consumers ultimately will determine Canada's performance.
- Clearly, all segments of society will have to share in efforts to constrain energy use and will suffer the economic impact of such



- This chart shows how greenhouse gas emissions in Canada break down regionally. Emissions obviously are higher in regions with a larger population and industrial base.
- The forecast is for increases in all regions over the period from 1990 to 2020, predominantly as a result of expected economic growth.
- In British Columbia, population growth that is higher than the national average contributes to the increase.
- Emissions increase more rapidly in Alberta in the period 1990 2000 because of higher production of oil and gas for export.
- The rather large jump forecast for Ontario is principally due to the retirement of some nuclear plants.



- It is important to understand Canada's relative contribution to global emissions in light of the ambitious target which we have taken on.
- This chart shows the ten largest contributors to global greenhouse gas emissions. The United States makes up fully one quarter of the worldwide total.
- Canada is number nine in terms of emissions, but still contributes only two per- cent on a global basis.
- Of note is that the number two and number six countries -- China and India -- are developing countries and have no commitments under the Kyoto Protocol.
- Two significant players, the Russian Federation and the Ukraine, are included in the Annex I group of countries which have commitments under the Protocol. However, they have seen their emissions decrease significantly since the base year of 1990 because of the enormous economic restructuring which has taken place since the fall of the Soviet Union.
- Germany has benefited from a similar fate because of the closing of inefficient industries in the former East Germany. And the United Kingdom also has seen its emissions fall since 1990, principally because of its conversion from coal to natural gas for electricity generation.

REDUCTION TARGETS FOR KEY COUNTRIES European Union -8% U.S. -7% Canada -6% Japan -6% Australia +8% Norway +1% New Zealand 0% Russia 0%

- This table shows the commitments of various key countries as agreed to under the Kyoto Protocol.
- Although the commitment of the European Union appears to be the biggest in percentage terms, in fact EU countries will have an easier task because they have been permitted to establish a collective EU target.
- Because of the reductions already achieved in Germany and the UK, some EU countries will be able to increase their emissions from 1990 levels, in some cases by as much as 30 to 40 percent.
- In addition, Australia and Norway were able to gain recognition for their special circumstances and will be able to increase their emissions from the 1990 base.
- This leaves a disproportionate share of the burden to reduce emissions on just three countries -- Canada, the United States and Japan.
- Because of this imbalance, the Protocol is already at risk of not being ratified by the world's biggest contributor -- the United States.

EFFICACY OF THE KYOTO PROTOCOL

- Is it a sound basis for long-term solution?
- Unrealistic targets and timetable
- Lack of developing country commitments
- Sufficient flexibility to pursue least-cost options?
- This raises the question whether the Kyoto protocol will even be effective in providing the basis for a long-term plan to deal with global climate change.
- Certainly the inequity of how the commitments are distributed, as described above, is likely to weaken support for the agreement over time.
- Fundamentally, we believe that for Canada it sets an unrealistic target and timetable that cannot be met without significant economic cost.
- As noted above, the reduction is more in the range of 25 percent, and cannot be met without government intervention to sharply curtail the use of energy.
- And because of the long lead times needed to develop and implement new technologies, the timetable -- 10 to 12 years -- is too short for such a sharp reduction.
- Equally important, because of the refusal of developing countries to consider even voluntary commitments the Protocol will be ineffective from an environmental standpoint, since by early in the next century the majority of global emissions will come from developing countries.
- And finally, while much has been made of the fact that emissions trading and joint implementation will be permitted under the Protocol, the rules surrounding these mechanisms are just beginning to be developed, and we simply don't know whether they will provide the flexibility needed to pursue least-cost options.

THE ECONOMICS OF CLIMATE CHANGE

Impact on jobs, trade and competitiveness

- As much as 2.5% 3% of GDP
- Broad impact throughout economy

Canada has more at stake than most other countries

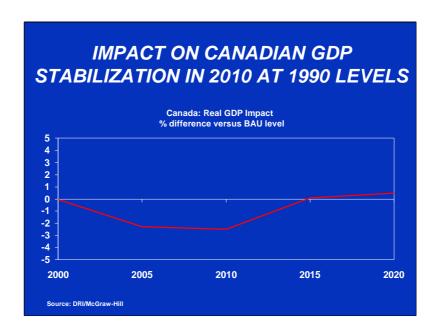
- Disproportionately affected by new commitments
- Canada heavily reliant on trade
- Canada has built a significant proportion of its wealth on the production and export of energy intensive goods. Thus, reducing our emissions in line with the Kyoto target has important implications for our standard of living.
- A number of studies done prior to Kyoto demonstrate that reduction options for Canada in the short term are costly.
- Although model results vary, the cost to the Canadian economy, could be as high as 2.5 to 3 percent of GDP, and probably higher for the Kyoto target.
- As well, a number of reputable economic studies suggest that Canada would be disproportionately affected by new commitments compared to other OECD countries.
- One of the most important reasons for this is that Canada derives a larger percentage of its GDP from trade than the vast majority of countries. And this trade is mostly with other industrialized countries.
- Thus, we would be affected not just by domestic action to constrain greenhouse gas emissions, but also by reduced demand for Canadian products in our major markets.

THE ECONOMICS OF CLIMATE CHANGE

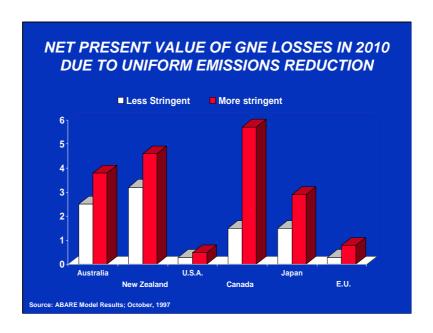
Regional and sectoral impact will be extensive

- Energy production significant in some regions
- Energy intensive sectors negatively affected
- Impact on new investment

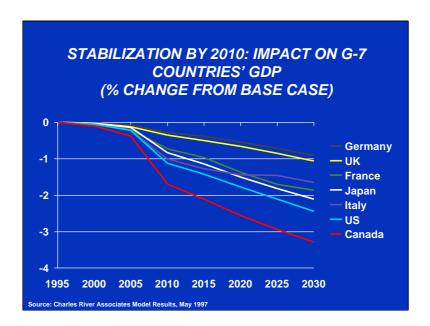
- The effects of limiting greenhouse gas emissions could be especially acute in specific regions and sectors of Canada.
 Production of oil, gas and coal will decline and this is a significant portion of GDP in some provinces, notably Alberta.
- As well, sources of energy vary by province. Those provinces which depend upon coal-fired electricity will be more negatively affected, since coal produces more carbon dioxide per kilowatt hour than other sources.
- Sector impacts also will vary. The impact will be greatest in energy-producing sectors and in energy-intensive goods, but other sectors may also lose ground to competitors located in countries which do not have commitments.
- This latter point is particularly critical with respect to new investment in Canada. As long as the uncertainty with respect to Canada's ability to meet the Kyoto target continues, we will look much less attractive as a place to invest.



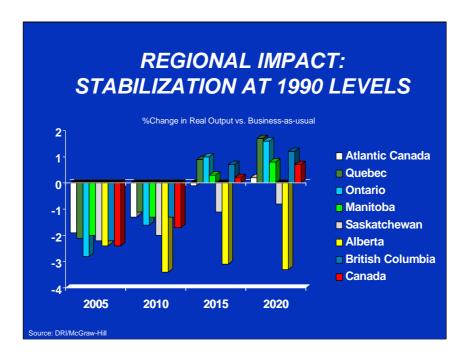
- This chart shows the potential impact on Canadian GDP of a stabilization of emissions at 1990 levels by 2010, which of course is a less ambitious goal than the one agreed to in Kyoto.
- This analysis was done prior to Kyoto for the federal government by DRI/McGraw-Hill.
- And it does show impacts in the range of 2.5 to 3 percent of GDP for a number of years.
- The surprising result is that the DRI model suggests that by the year 2013 Canada will be better off than it would have been under a "business as usual" scenario.
- The explanation which DRI has given for this effect is unconvincing. In addition, long-term forecasts are notoriously unreliable.
- After a number of years of underperformance and decreased levels of investment and consumer spending, this kind of rebound is a case of wishful thinking.



- A number of studies done prior to Kyoto demonstrate the impact on Canada in comparison to other countries.
- A study done last year in Australia shows the impact of two scenarios - one less stringent, the other more stringent -- upon various Annex I
 regions:
 - 1) Stabilization at 1990 levels by 2010;
 - 2) 15 percent reduction by 2010.
- Of note is that Australia and New Zealand were able to secure much more favourable targets in Kyoto then was contemplated by this study.
- Accordingly, we can expect that Canada would suffer a much greater impact than almost any other industrialized country.



- A similar outlook for Canada is found in the work done by Charles River Associates in the United States.
- This study shows Canada to be the worst affected among the G-7 countries, and this trend continues out to the year 2030.
- It is worth noting that the Charles River Associates model tends to pick up more of the trade impacts, and thus reflects the very significantly negative effect in Canada's most important market, the United States.



- This chart shows the impact on various regions of emissions constraints, and is taken from the pre-Kyoto analysis done by DRI/McGraw-Hill for the federal government.
- It demonstrates the effect of stabilization of greenhouse gas emissions at 1990 levels by the year 2010 as compared to business-as-usual projections, and therefore underestimates the potential impact of the Kyoto target.
- All regions suffer considerable declines through 2010. The biggest impacts occur in the fossil fuel-dependent provinces, with Alberta suffering increasingly negative impacts through 2020.
- The improvements in some regions in 2015 and beyond again reflect the arguably overly-optimistic assumptions in the DRI model.



IMPACT ON TO BUSINE	SS-AS-USL			
Natural Gas	0.0	-13	-20	-23
Crude Pet.	1.7	0.0	-0.9	-2.3
Other Energy	-28	-35	-35	-37
Pulp	-0.4	1.0	-2.0	-2.0
Metal Ores	3.4	6.7	5.6	4.8
Other Metal	-6.9	5	-3.2	-2.1
Iron & Steel	-1.4	0.3	1.2	1.4
Chemicals	-3.5	-4.9	-1.9	-0.4
Machinery	-1.8	-2.5	0.0	2.2
Telecom Eqpt.	-6.1	-1.1	7.9	10.3
Aircraft Eqpt.	-4.4	4.4	-0.9	-0.2
Automobiles	-4.4	-2.3	-0.1	0.5
ource: DRI/McGraw-Hill				

- DRI also analyzed the export performance of various sectors under emissions constraints, again comparing stabilization at 1990 levels by 2010 to a business-as-usual scenario.
- Not surprisingly, the biggest decline is in the energy sector, particularly coal.
- Also significant is the impact in energy intensive sectors such as iron and steel, chemicals, mining, and pulp and paper.
- Many of these sectors will lose market share to competitors in developing countries.
- The effect in automobiles, aircraft and machinery is strongly negative.
- The much more positive outlook for telecommunications equipment is based on a predicted shift in investment away from energy-intensive industries, particularly in our largest market, the United States.

MERGING ENVIRONMENT AND ECONOMICS

- Building a sensible national climate change strategy
- Protecting vital Canadian interests
- Prudent short-term action
- Building the foundation for long-term change
- Realizing the economic opportunities
- The presentation to this point will have left you with a sense of the considerable challenge which this issue poses for Canada and the very deep feeling within the business community that the Kyoto target is unrealistic for us as a nation.
- However, I am equally convinced that the business community is committed to addressing this issue in a responsible fashion and in working to develop a national strategy that makes sense for Canada.
- Such a strategy should allow us to make an appropriate contribution to a global solution while at the same time protecting our key national interests.
- It should be sensitive to regional differences and respect the economic strengths that have made this country what it is.
- We should be urgently searching for the most cost-effective opportunities in the short-term that can serve both environmental and economic goals.
- At the same time, we can begin to build the foundation for the longer-term changes that will be required -- changes in technology, in energy sources, in building and vehicle stock and in public expectations.
- And the strategy can seize the economic opportunities that exist from the development and export of Canadian technologies, those that will give us a leg up in the increasingly competitive global marketplace.

TO RESPONSIBLE ACTION ON CLIMATE CHANGE

- Substantial improvements in energy efficiency
- Energy efficiency, productivity and competitiveness
- Business has embraced climate change voluntary challenge
- Looking at mechanisms to increase participation and improve reporting
- One of the first priorities of course is to ensure that businesses throughout the country fully understand and embrace the need to take action.
- Our work on this issue over the past few years has demonstrated that the overwhelming proportion of Canadian business is committed to responsible action on climate change.
- The record shows that industry has made considerable progress in improving energy efficiency on a per unit of output basis.
- Since the 1970s, firms in many different sectors have demonstrated the linkages between energy efficiency, productivity and competitiveness.
- Over 600 companies have registered for the voluntary challenge (VCR), and these companies account for 70 percent of industrial emissions.
- As well, more than 300 VCR action plans have been filed.
- However, more is needed and a priority of the newly privatized VCR is to broaden and deepen engagement, not only in industry, but also among many other segments of society.
- As well, steps are being taken to improve the quality and comprehensiveness of climate change action plans and provide for more rigorous reporting.

AN INFORMED PUBLIC DEBATE ON CLIMATE CHANGE

- Little progress without active public engagement
- Individuals taking responsibility
- Education on climate change
- Public dialogue on responsible policy options
- Building support for significant action
- I am firmly of the view that the real tragedy of the lead-up to Kyoto was the failure to engage the public on the climate change issue in any meaningful way.
- Despite opinion polls that tend to show Canadians are concerned about climate change, they are woefully uninformed about the profound implications which this issue has for them.
- The public must have a much better understanding of the science and economics of climate change, the impact upon jobs and standard of living, and an appreciation for the difficult personal choices and trade-offs that will be required.
- This will require a carefully designed education program that can provide provided balanced and useful information on a complex subject, and I know this will be a priority in your deliberations.
- Individuals will need to take personal responsibility for their own use of energy, and there is a need for practical information to assist them.
- Governments must engage a broad public dialogue on responsible policy options to deal with climate change.
- Only when Canadians understand the choices, and the impacts upon their personal lives, will we be able to build the support that will be needed for successful action.

ELEMENTS OF A CANADIAN RESPONSE STRATEGY

- Consensus among all key players
- Appropriate role for each level of government
- Strengthening voluntary efforts

A credible and effective national response to this issue has a number of elements:

- Above all, we must work to build a true national consensus on the path forward among all affected parties -- business, labour, consumers, farmers, public institutions, etc.
- Each segment of society must be willing to contribute its fair share to the overall task and also must agree on the most appropriate steps in their sector.
- A true consensus also is needed among all levels of government. Although the federal government has authority to sign international treaties, many of the important delivery mechanisms rest with other levels of government.
- For example, the provinces control energy and natural resources and municipalities are responsible for transportation infrastructure and urban planning.
- Voluntary efforts to reduce emissions must be strengthened, by providing credits to industries prepared to take early action, and by enrolling more segments of society in the voluntary challenge.

ELEMENTS OF A CANADIAN RESPONSE STRATEGY

- Command and control vs. incentives
- Market-based instruments
- Renewable and lower-carbon energy
- While there may be a role for some command and control regulation to deal with specific situations, the simple fact is that with literally millions of different sources of greenhouse gases it will be impossible to regulate a solution to this issue.
- Instead, the overwhelming emphasis should be on providing appropriate incentives to encourage businesses and consumers to voluntarily reduce their emissions.
- Market-based instruments such as emissions trading and joint implementation have the advantage of achieving the same environmental improvement at lower cost.
- An early priority for Canada should be to examine the design of a national emissions trading program. We know that the Americans are keen to purse such market-based approaches and our trade interests demand that Canada be an active participant in international discussions to define the rules governing international emissions trading and joint implementation.
- Given that the major source of our emissions is the burning of fossil fuels, Canada will have to intensify its search for renewable and lower-carbon forms of energy.
- We already are blessed with an abundance of hydro-electricity. As well, nuclear energy does not produce greenhouse gases, although other environmental concerns will have to be addressed.
- However, the role of government should be to create a level playing field -- as is
 the case with the deregulation of electricity -- and let the market determine the
 choice of fuels.

ELEMENTS OF A CANADIAN RESPONSE STRATEGY

- Robust plan for technology development
- Ratification of the Kyoto Protocol

- Development of more energy efficient technology obviously will be key to reducing greenhouse gas emissions. Many of these technologies will bring competitive advantage and new market opportunities for Canadian firms.
- Canada will need to re-orient much of its technology development policy to stimulate the development of Canadian niche technologies and to ensure that more energy efficient technology is applied on a timely and economic basis.
- But it must be remembered that significant reductions in greenhouse gas emissions can happen only over a sufficiently long timeframe that recognizes the rate of capital stock turnover and the lead times required to develop, commercialize and implement new technologies.
- And finally, to avoid putting ourselves at a disadvantage, Canada should not ratify the Kyoto Protocol until our major trading partners -- and particularly the United States -- have done so.
- As well, ratification should await the development of the kind of consensusbased and sensible national strategy that I have outlined.
- It is only when these elements are in place that we will have a clear sense of our national interests in the climate change debate and a realistic plan to get there.