Securing our energy future?

A review of Nova Scotia's energy sector in 2004

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Summary

In 2003 and 2004, the Nova Scotia Department of Energy released annual "progress reports", intended to explain how the province was meeting the goals and objectives outlined in the 2001 Energy Strategy. In 2005, the Department of Energy failed to release a report for 2004, stating that instead, they would be reviewing progress internally.

In the absence of a government "progress report" for 2004, this paper reviews some of the major events in Nova Scotia's energy sector in 2004.

Offshore activities continue to decline. Sable's reserves were downgraded for the third straight year, this time to 1.35 trillion cubic feet, from an original estimate of 3.6 trillion cubic feet (a decline of over 60%). Monthly offshore natural gas production rates peaked in December 2001 at 517.8 million m^3. Monthly offshore production has decreased since then, by May 2005 production had declined by 37% (over 190 million m^3).

In 2004, three significant events occurred with respect to offshore exploration licenses: First, the cost of drilling in Nova Scotia's offshore, coupled with lack of success, became a major impediment to attracting exploration companies. Second, in June and December 2004, the Canada-Nova Scotia Offshore Petroleum Board (CNSOPB) announced that it would not proceed with its call for bids for new exploration licenses. Third, in addition to not receiving exploration bids, a number of companies failed to request an extension to their exploration licenses.

Offshore workers are still not provided the same minimal protection as other workers in the province. The legislation to protect offshore workers, originally introduced in 2003, has yet to be passed. Talk of eliminating regulatory "red tape" could further jeopardize the safety of offshore workers.

Demand for natural gas in the US is increasing, but American communities are reluctant to take on the safety risk of having a liquid natural gas (LNG) port in their backyard. The current decline in gas production in Nova Scotia has left the pipeline that exports natural gas operating below capacity. In 2004 several companies expressed an interest in constructing LNG terminals in the Maritimes that would produce, using imported LNG, natural gas for export to the US using, and perhaps upgrading, the existing export pipeline. Beyond the safety risks, the long term benefits, in terms of, for example, employment and government revenue, of developing LNG production capacity are minimal at best. .

In 2004 the government of Nova Scotia announced its new Electricity Act as part of its overall energy strategy. The Act only referred to four of the 89 recommendations put forward by the Electricity Marketplace Governance Committee. The act addressed little in the way of conservation but focuses on market access. The Act is designed to make the Nova Scotia legislative changes, required by regulators in New Brunswick and the US

to allow Nova Scotia Power Inc. to continue to sell electricity to New Brunswick and the New England States. The Electricity Act, while of little or no benefit to Nova Scotians, is extremely helpful to NSPI.

Provincial government support for low income households coping with increasing heating oil costs was initiated through the "Keep the Heat" program that focused on $200 "fuel assistance" payments. This initiative will do little for heating efficiency or conservation and demand for these supplements will only increase as heating costs increase. Support for low income households needs to be combined with a program that supports greater heating efficiency, through, for example, covering the costs of the heating efficiency audits and the costs of upgrades to homes for low income households.

Nova Scotia has yet to really address the twin problems of climate change and energy security. The provincial government has been aware of the need for action on climate change since the early 1990s and has yet to take substantial steps. The province's existing Energy Strategy discuses energy security, primarily in terms of how the province's offshore natural gas supplies could be used to enhance the energy security of Nova Scotia, Canada and the US. The reality is that the vast majority of the province's energy is imported leaving the Nova Scotia vulnerable to the volatility of the world energy markets.

By focusing on developing energy from renewable provincial sources, such as biomass, solar, and wind, as well as on energy efficiency and conservation, Nova Scotia could address both issues of energy security and its climate change.

Ongoing developments in the energy sector continue to undermine the viability of the provincial government's energy strategy. How we address the challenges of reliable energy supply, increasing energy consumption, and energy-related environmental degradation will have huge implications for all Nova Scotians. It is therefore crucial that the provincial government engage in a broad public debate as part of developing a provincial energy strategy for the twenty-first century.

Introduction

After a summer of public consultations, the Nova Scotia government issued its Energy Strategy, *Seizing the Opportunity*, in December 2001. The document outlined the Nova Scotia government's energy policy, the primary focus being offshore natural gas. It also called for the creation of an energy portfolio which was to assume responsibilities previously shared by the Department of Natural Resources and the Nova Scotia Petroleum Directorate.

Early in 2003 the newly formed Department of Energy released a report describing the ostensible progress that had been made in achieving the policy objectives described in *Seizing the Opportunity*.[1] A second such report was published in 2004, covering events in the year previous.[2] The expected third Progress Report, describing developments in the provincial energy sector throughout 2004, has not been issued, nor will it be. According to the Department of Energy, the reason for this decision was as follows (Barnable, 2005b):

> *In 2006, we'll mark the fifth year since the Energy Strategy was introduced. We will be reviewing the strategy internally over the next year to determine if we need to redirect any of our programs and policies. Our annual business plan and accountability reports will reflect such changes. Therefore, we won't be producing a separate progress report on the Energy strategy this spring.*

The failure of the provincial government to issue a third Progress Report aside, Nova Scotia's energy sector was extremely active in 2004. Without a third Progress Report to review, this paper will examine some of the major developments in Nova Scotia's energy sector in 2004, including developments in the natural gas industry, offshore worker health and safety, electricity regulation, home heating programs, climate change, and energy security in Nova Scotia

1. Natural Gas

Natural gas has been seen as central to the provincial Energy Strategy: *Seizing the Opportunity* and the two published Progress Reports all focus on it. However, between 2001 and 2004 there was a marked change in the mood of private companies and government officials with respect to the offshore. Much of this can be attributed to two factors: a dramatic drop in Sable production and a decline in exploration activities. Of course, the oft repeated refrain of "government red tape" was again cited as the reason for

lack of offshore activities this year, leading to a surprising, safety-related solution proposed by ExxonMobil.

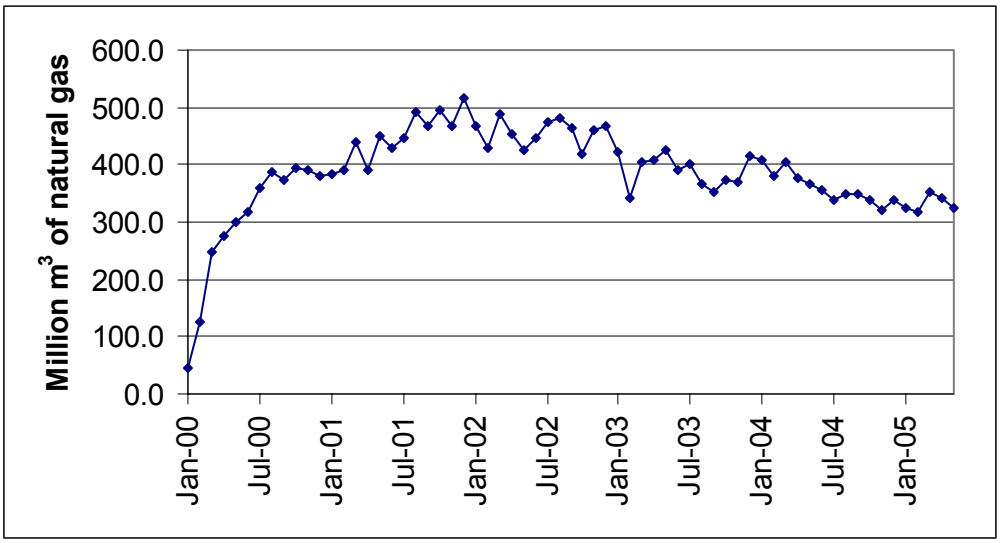
As always the provincial government can point to what it considers to be another silver lining: the prospect of liquefied natural gas being transferred to the United States via the Maritimes and Northeast Pipeline.

1.1. Production

In February 2004, Sable's reserves were downgraded for the third straight year, this time to 1.35 trillion cubic feet. The original estimate was 3.6 trillion cubic feet (Myrden, 2004a).

Monthly offshore natural gas production rates peaked in December 2001, at 517.8 million m^3 (18.2 billion cubic feet). There has been a marked decrease in monthly offshore production since then; by May 2005, production had declined by over 190 million m^3 (6.7 billion cubic feet), to 325 million m^3 (11.5 billions cubic feet), as shown in Figure 1.

Figure 1: Monthly offshore natural gas production to May 2005 (CNSOPB, 2005a)



1.2. Exploration

In 2004, three significant events occurred with respect to offshore exploration licenses.

First, the cost of drilling in Nova Scotia's offshore, coupled with lack of success, became a major impediment to attracting exploration companies (CBC, 2005). For example, the Weymouth A-45 well, one of the deepest ever to be sunk in Atlantic Canada, cost almost $100 million and proved to be a dry hole (Stevenson, 2004).

Second, in June and December 2004, the Canada-Nova Scotia Offshore Petroleum Board (CNSOPB) announced that it would not proceed with its call for bids for new exploration

licences (CNSOPB 2004a, 2004b). This means that, for 2004, either no bids were received or the bids that were received did not meet the minimum requirements. The last two successful bids were announced by the CNSOPB in December 2003, both from Canadian Frontier Energy (CNSOPB, 2003).[3]

Third, in addition to not receiving exploration bids, a number of companies failed to request an extension to their exploration licences in 2004 (one year for an unexplored parcel or four years if an exploration well has been drilled). A total of 21 licences were surrendered by six different companies, with a total proposed work expenditure of over $316.8 million (see Table).

Table 1: Exploration licences surrendered in 2004 (CNSOPB, 2005b)

Licence	Proposed work expenditure	Representative	Expiry date
2370	$10,013,375.00	ExxonMobil Canada Properties	30 June 04
2371	$47,030,057.00	ExxonMobil Canada Properties	30 June 04
2372	$55,015,185.00	ExxonMobil Canada Properties	30 June 04
2373	$7,837,266.00	ExxonMobil Canada Properties	30 June 04
2374	$2,005,322.00	ExxonMobil Canada Properties	30 June 04
2375	$1,210,951.31	Richland Minerals,Inc	30 June 04
2379	$28,865,184.49	Imperial Oil Resources Ventures Ltd.	30 June 04
2381	$23,303,666.00	Shell Canada Limited	30 June 04
2382	$68,555,664.00	Shell Canada Limited	30 June 04
2383	$5,100,000.00	Kerr-McGee Offshore Canada Ltd.	30 June 04
2385	$2,119,679.00	Shell Canada Limited	30 June 04
2386	$24,888,888.00	Kerr-McGee Offshore Canada Ltd.	30 June 04
2388	$2,225,600.00	Richland Minerals Inc	31 Dec 04
2390	$8,347,986.00	EnCana Corporation	31 Dec 04
2391	$1,620,600.00	Richland Minerals Inc	31 Dec 04
2392	$1,620,600.00	Richland Minerals Inc	31 Dec 04
2393	$1,500,000.00	Kerr-McGee Offshore Canada Ltd.	31 Dec 04
2394	$1,331,919.00	EnCana Corporation	31 Dec 04
2395	$13,279,856.00	EnCana Corporation	31 Dec 04
2396	$6,100,000.00	Kerr-McGee Offshore Canada Ltd.	31 Dec 04
2397	$4,911,865.00	EnCana Corporation	31 Dec 04

When a company gives up its offshore exploration licence it is expected to forfeit part of its proposed work expenditure.[4] As an indication of how desperate the Nova Scotia government is for offshore revenues, and to put a positive spin on the state of the offshore, the provincial Finance Minister, Peter Christie, stated that the approximately $40 million from the forfeited exploration licences would be included as income from the offshore to offset a possible provincial deficit (Stewart, 2004). This is a false economy that will work only as long as there are licences to forfeit.

According to the Conference Board of Canada's long-term projections for the Nova Scotia economy (to 2025), offshore fuel production will "drop by an average of 3.2 per

cent annually as exploration activities lose momentum, with miners shifting their attention from the Scotian shelf to the west coast and the territories" (CBC, 2005).

One of the expected benefits of the offshore, touted by the Energy Strategy, was the development of a strong offshore services sector. With the reduction in exploration activities (and the concomitant decline in exploration licences) the Conference Board projections show a downturn in the average growth of the mining services sector to 1.4 percent, compared to 4.4 percent between 1994 and 2003 (CBC, 2005).

1.3. Offshore "Red Tape"[5]

Complaints continued about "red tape" and how it affects Nova Scotia's offshore industry. For example, Jim Massey, ExxonMobil's vice-president for Canada and South America, stated in early October 2004, "It's time to make some changes—Atlantic Canada has got to get competitive" (Myrden, 2004b).

The Nova Scotia government appears to be listening to industry. The Department of Energy's 2004 Energy Strategy Progress Report proclaimed that, "A working group of industry and government is now implementing improvements to our regulatory process and examining ways to reduce drilling costs". Nova Scotia's Energy Minister, Cecil Clarke, went further. Speaking at the Canadian Offshore Resources Exhibition in Halifax, where Jim Massey made his remarks on competitiveness, Clarke said that the provincial government is "very close" to introducing a new regulatory process that will reduce approval times and costs for new offshore development projects.

The changes being called for by Mr. Massey (as quoted by the *Chronicle-Herald*) were quite specific: "We do some things here that we don't do other places. It has to do with standby boats, requirements for the rigs (which) in our … judgment are probably not necessary."

A standby boat is defined by the Nova Scotia Offshore Petroleum Drilling Regulations as a "vessel that has sufficient capacity and equipment to evacuate all personnel from the drill site … provided for a drilling operation as a means of evacuating personnel from the drill site". In other words, the purpose of a standby vessel is to rescue people in peril (including personnel involved in helicopter crashes, and workers who have fallen off drilling platforms or who require evacuation from a catastrophic accident, such as a fire or explosion). Most, if not all, offshore developments around the world—from the North Sea to China—require standby vessels for the safety of their workers.

In the North Sea, during the 1980s, although the ratio of standby vessels to offshore platforms was one to one, many of the standby vessels were simply ill-equipped, converted trawlers stationed near a manned offshore platform. After the 1988 *Piper Alpha* disaster, in which 167 men died (of the 61 who survived, 37 were picked up by the platform's standby vessel), new standards were set for working conditions and standby vessels. Today, a North Sea standby vessel is permitted to support up to three offshore platforms; some vessels are in a "mother/daughter" configuration consisting of a main

standby vessel and two vessels that can work independently of the main vessel (Nicoll, 2004).

Although standby vessels are an integral part of offshore safety, they cost money to operate and this is an expense that all major offshore companies would like to reduce. Earlier this year, British Petroleum (BP) announced that it plans to get rid of its North Sea standby vessel fleet and replace it with an integrated air and sea cover system that involves the deployment of platform-based and shore-based search-and-rescue helicopters and the use of three regional support vessels. Some oil companies and the two unions that represent offshore oil workers have expressed concerns over the safety of BP's plans (Nicoll, 2004).

Nova Scotia's offshore is too small to spread the costs over a number of platforms, as is done in larger plays such as the North Sea. If ExxonMobil wants to make changes to standby vessel regulations, Nova Scotians could reasonably ask themselves, what about the safety of our offshore workers?

This is an interesting question, perhaps best answered by the following paragraph from the 2004 Energy Strategy Progress Report:

> In October 2003, legislation was introduced to provide offshore workers with the same kind of occupational health and safety legislation as those working on land. We are now reviewing the legislation while we consult broadly with Nova Scotians.

The legislation in question, Bill 37 (amendments to the Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation), was introduced in the Nova Scotia Legislature on October 29, 2003, by the minister of environment and labour. The legislation received second reading on April 16, 2004, and was referred to the Law Amendments Committee for public input. To date, Bill 37 has not been called for consideration before the Law Amendments Committee and therefore has proceeded no further towards becoming law. In short, Nova Scotians working on the offshore still are not protected by the same kind of occupational health and safety legislation as those who work on land. Talk of eliminating regulatory "red tape" could further jeopardize the safety of offshore workers.

1.4. Liquefied Natural Gas

The natural gas pipeline from Nova Scotia to New England was originally projected to carry some 500 million cubic feet of natural gas per day. In 2002 Maritimes and Northeast Pipeline applied to the National Energy Board for permission to add four compressors to the pipeline to handle an additional 440 million cubic feet per day from EnCana's Deep Panuke project (NEB, 2002). This would have increased the pipeline's capacity to about one billion cubic feet daily. Permission was subsequently granted, despite the NEB's concern that the pipeline expansion was project-specific (i.e., for Deep Panuke alone). However, Maritimes and Northeast Pipeline have not proceeded with the expansion (Stikeman Elliott, 2004).

Rather than increasing, the volume of natural gas in the pipeline has been falling (see Figure 1). Deep Panuke is still "on hold" and, as noted in Section 1.1, the volume of

natural gas from the Sable project is declining. While this has been taking place, demand for natural gas has been growing in the United States.

Natural gas is transported primarily by pipeline, although it can also be cooled and shipped as a liquid. Liquefied Natural Gas (or LNG) has been moved in this way for over 60 years. The United States government expects to rely more heavily on natural gas from overseas LNG shipments over the next 20 years (Kendell, 2003). Although LNG will help meet some of the energy demands of the United States, not everyone in the US is willing to have an LNG tanker port in their "backyard," as there are significant safety concerns about the handling of LNG. Recently the residents of Perry, Maine, voted against the construction of an LNG terminal (Herald, 2005a).

Given the reluctance of communities in the US to accept LNG terminals, and the availability of a natural gas pipeline running from rural Nova Scotia to New England, it should not come as a surprise that a number of companies—most notably Irving Oil (in Saint John, New Brunswick) and Anadarko (in Bear Head, Nova Scotia)—have expressed an interest in constructing LNG terminals to take advantage of the situation (Taylor, 2005).

The proposed Irving and Anadarko plants are each intended to process about one billion cubic feet of natural gas a day (the Sable Offshore Energy Project produces less than half that amount daily). This means that it will be necessary either to expand pipeline capacity to handle the additional natural gas or to build power stations to generate electricity from the natural gas (Myrden, 2005).

How beneficial this new supply of natural gas will be to Nova Scotians is anyone's guess. Over the short term there will be an estimated 600 construction jobs required, shrinking to 70 once the project is completed (Herald, 2005b). When natural gas starts to flow, one could expect that the few Nova Scotians who have access to it will gain from it; on the other hand, with natural gas prices continuing to climb globally, imported natural gas could prove costly to anyone relying on it.

Given the decline in natural gas production from Nova Scotia's offshore, LNG appears to be one of the ways the province can continue to be a "player" in the natural gas field. Some other important points to note about the construction of the LNG terminal:

- The provincial government will not receive royalties for natural gas that has been obtained from LNG.
- Given that Saint John is offering preferential tax breaks to Irving for their LNG terminal, one can probably expect Anadarko to demand the same in Bear Head.
- Newfoundland will soon be producing natural gas from its offshore fields. For technical reasons the natural gas will be compressed on the production platform, rather than liquefied, then shipped by tanker. The Nova Scotia government should encourage the development of a compressed natural gas (CNG) terminal to allow it to take Newfoundland natural gas and ship it to market.

- It has been suggested that there will be additional benefits from the extraction of natural gas liquids when the LNG is returned to a gaseous state.[6] However, these gains can only be realized if the country shipping the LNG does not extract the liquids first.

2. The Electricity Act[7]

In late 2004 the provincial government announced its new *Electricity Act*. The legislation was presented as an integral part of the overall Energy Strategy and the logical "next step" following the release of the final report from the Electricity Marketplace Governance Committee (EMGC) in 2003.

The EMGC report made a total of 89 recommendations. While focusing in minute detail on some aspects, for example, net metering (7 recommendations), and the definition of "tags" for a Renewable Portfolio Standard (11 recommendations), only two recommendations dealt with energy efficiency. Despite public concerns over the report, the provincial government accepted all recommendations without question.

In the end the *Electricity Act* referred to only four of the EMGC's recommendations (the minister of energy assured the legislature that the remaining 85 recommendations would be introduced in the Spring 2005 sitting, but none were). The recommendations in question pertained primarily to market access and the province's six municipal utilities.

The *Electricity Act*'s focus on market access can be attributed to a ruling of the New Brunswick Board of Commissioners of Public Utilities, which gave Nova Scotia Power Inc. (NSPI) until January 2005 to adopt standards of conduct compatible with FERC (Federal Energy Regulatory Commission) Orders 888 and 889.[8,9] Failure to meet this deadline would have barred NSPI from selling electricity to New Brunswick or the New England states. In order for NSPI to meet the board's stipulations, changes were required to Nova Scotian legislation; hence the *Electricity Act*.

Subsections 3(1) through 3(4) of the act ensured that NSPI complied with FERC 888 and 889:

- Subsection 3(1) states that "wholesale customers may purchase electricity from any competitive supplier".
- Subsection 3(2) requires NSPI to "develop and file … an approved open access transmission tariff".
- Subsection 3(3) calls for the tariff to "ensure open and non-discriminatory access".
- Subsection 3(4) requires NSPI to "develop and maintain a system to facilitate the import and export of electricity from the Province".

Becoming FERC-compliant was actually a trivial matter for NSPI. The most difficult part, opening the transmission grid to competition, was achieved through the EMGC's market model, defined in Recommendation 4:

> The EMGC recommends that eligible Nova Scotia buyers should arrange for competitive supply through bilateral contracts with eligible sellers.

The "Nova Scotia buyers" are the "wholesale customers" (all the municipal utilities, excluding NSPI) defined in Section 2 of the Act. The "wholesale customers" make up about 1.6 percent of NSPI's total generation.

By opening up its transmission grid, NSPI is now guaranteed to have unfettered access to both New Brunswick and New England. This is especially beneficial to NSPI since the electricity demand in the Maritime Provinces is greatest in the winter and lowest in the summer, whereas in the New England states, electricity demand is lowest in winter and highest in the summer.

Emera, the parent company of NSPI, was clearly pleased with this ruling, as illustrated by the following from their 2004 Annual Financial Report (Emera, 2004a):

> *The strategy for the electricity industry is to carefully increase competition over a prudent time frame. In addition, consistent with recommendations put forward by Emera, the strategy indicates government will provide policy direction to the UARB to authorize open access transmission on NSPI facilities, and introduce competition in the wholesale market by 2005. The wholesale market comprises six municipal electric utilities, and represents approximately 1.6% of NSPI's revenues. These two recommendations will help Nova Scotia meet United States and other Canadian market reciprocity requirements, and thus facilitate electricity exports.*

For the cost of no more than 1.6 percent of its revenues (there is no guarantee that all of the municipal utilities will switch from NSPI to independent power producers), NSPI now has unbridled access to US markets.

In the author's review of the Department of Energy's first Progress Report, it was suggested that NSPI, by becoming FERC-compliant, could begin selling electricity to Bangor Hydro (another subsidiary of Emera). Without an upgrade in the line between Maine and New Brunswick such a plan would be impossible. It should not come as a surprise then that Bangor Hydro has initiated the construction of a 345 kilovolt transmission line (the Northeast Reliability Interconnect), facilitating the sale of NSPI's electricity to Bangor Hydro (Emera, 2004b).

In short, the Electricity Act was of little or no benefits to Nova Scotians, but extremely helpful to NSPI.

3. "Keep the Heat"

During the 2004-05 winter heating season, the provincial government attempted to address the problem of energy costs to Nova Scotians. Households with incomes less than $22,200 (or individuals with incomes less than $13,400) were issued "fuel assistance" cheques for $200 to supplement the cost of heating oil or propane (although not electric heating).[10] In addition to the $200 cheque, qualifying Nova Scotians could also receive a furnace tune-up coupon worth $80.50 (SNS, 2004a). Anyone receiving a cheque would also qualify for a draw for one of 6,000 energy saving kits. The total number of participants was estimated to be 25,000 (Dobbelsteyn, 2005) while the cost of the program was about $5 million: rebates, approximately $3.9 million; furnace tune-up coupons, approximately $800,000; energy saving kits, $300,000 (Barnable, 2005a).[11]

Despite its name, the "Keep the Heat" program had little to do with improving the energy efficiency of homes by reducing heat loss, instead it was a subsidy to cover heating bills during the 2004-2005 winter heating season. The furnace tune-up was estimated to "yield a first year savings of 5% on an average of 3000 litres of oil use. Savings will become progressively less over time as the burner gets dirtier. For very poorly maintained units the savings could be higher, for well maintained units lower" (Hayes, 2005).

The one in four participants who won an energy saving kit could cut their energy usage as the kit included an LED nightlight and three compact fluorescent light bulbs (NSDOE, 2005a). Heat loss could be reduced since the kit also included weather-stripping (for windows and doors), foam insulators for electric sockets and light switches, and a storm window kit (NSDOE, 2005a).

As the cost of home heating increases, so will the demand that the provincial government assist in defraying this expense. The one way to avoid having to pay this "energy geld" will be to ensure that residential buildings achieve standards that reduce their energy demand.

In last year's review of the Department of Energy's second Progress Report, it was suggested that the provincial government cover the cost of the Federal EnerGuide for Houses energy audit program (Hughes, 2004b). For $150, the program offers an energy audit that checks for air leaks in a person's home. Once the audit has taken place the homeowner can take steps to decrease the air infiltration through insulation and weather stripping; any upgrades must be paid for by the owner. The maximum grant that the program will pay is $3,400 (the average is in the range of $500–$750 for older homes), the exact amount depending on the improvements detected after a second audit (Wentzell, 2004).

The EnerGuide for Houses program is geared towards homeowners with sufficient funds to meet both the energy audit fee and the upgrade costs.[12] Although the program is open to all Nova Scotian homeowners, those with limited means may not be able to afford the audit, let alone purchase the materials required to refurbish their home. In contrast, the US Department of Energy's Weatherization Assistance Program is designed to improve the energy efficiency of homes occupied by low-income earners (WAP, 2005).

To provide low-income homeowners with access to the EnerGuide for Houses program, and to reduce the need for fuel assistance payments, the provincial government should

consider paying for the audit and covering the cost of the upgrade. The audit charge is more than covered by the present $200 fuel assistance payment and the upgrading costs would be partially or wholly reimbursed by the EnerGuide program. Any shortfall in the EnerGuide rebate would be covered by the provincial government; ideally, the province's expenditures on improving the energy efficiency of homes would reduce or even eliminate the need for future "Keep the Heat" programs.

4. Future issues

Energy is central to most, if not all, of our daily activities. Over the past year, two issues, one old, the other seemingly new, have come to the fore: climate change and energy security. These two concerns will come to dominate the energy sector in the years to come. Although Nova Scotia may appear to be a "bit player" in the global issues of climate change and energy security, by taking steps now, the province may be able to help its citizens weather the impending storm.

4.1. Climate Change

The Department of Energy's website has been recast and its climate change page now states, "It's happening and it's real. Climate change is here, but it's not too late to slow the process and reverse the damage" (NSDOE, 2005b).

The person who wrote this clearly has no idea of the immensity of the problem and what it is going to take to "slow the process and reverse the damage" of climate change. The implication is that it is possible to mitigate the effects of climate change, something that is extremely unlikely given the state of the polar ice caps, glacial retreat, ocean acidification, sea-level rise, and atmospheric carbon dioxide levels.

The Department of Energy's climate change plans are outlined in their 2005-06 Business Plan. Table 2 offers a summary of these plans.

The proposed outcomes include reductions in "harmful air emissions" and "greenhouse gases". The program to reduce "harmful air emissions" is the responsibility of the Department of Environment and Labour and refers to air emissions of sulphur dioxide, particulate matter, mercury, and various gases (none of which are greenhouse gases) only; there are no references to greenhouse gas emissions in the Regulations (Royal Gazette, 2005). Given NSPI's commitment to reducing some of its air emissions (there is a federal/provincial emissions cap for sulphur dioxide), it would appear that achieving an overall "reduction in harmful air emissions *and* greenhouse gases" is not a particularly onerous task—the difficult part will be achieving reductions in greenhouse gas emissions.

Table 2: Nova Scotia Department of Energy—Core Business Area: Climate Change

OUTCOME	MEASURE	DATA	TARGET 2005-2006	Strategic Actions to achieve target
Reduction in harmful air emissions and greenhouse gases.	Successful development and implementation of a Climate Change Action Plan.	2005/06 is baseline year.	Development and implementation of a Climate Change Action Plan.	- Coordinate the delivery of climate change commitments under the Energy Strategy and New England Governors/Eastern Canadian Premiers Climate Change Action Plan. - Identify and facilitate greenhouse gas (GHG) emissions reduction initiatives

The target for 2005-06 is the "development and implementation of a Climate Change Action Plan", based upon two Strategic Actions. The first of these is "[coordinating] the delivery of climate change commitments under the Energy Strategy and New England Governors/Eastern Canadian Premiers Climate Change Action Plan."

Perhaps not surprisingly, there are no explicit commitments on climate change in the Energy Strategy document; however, there is a vision (NSDOE, 2001):

> Nova Scotia will take responsible action in response to climate change. Actions to protect and improve our health, environment and quality of life will be guided by sustainable development principles.

In addition, the Energy Strategy lists a number of objectives (NSDOE, 2001):

- To work with the federal and other provincial/territorial governments to implement the National Implementation Strategy on climate change.
- To ensure that all Canadian jurisdictions equally share the burden of implementing any national response to climate change.
- To implement a long term strategy to reduce greenhouse gas (GHG) emissions in Nova Scotia.

In keeping with its Energy Strategy objectives, Nova Scotia has worked on the National Implementation Strategy on climate change. The provincial government (siding with Alberta) has been one of the strongest advocates for equality in burden sharing, attempting to make all Canadians equally responsible for emissions, regardless of where they live, because of Nova Scotia's overwhelming reliance on coal and oil in the generation of electricity as well as the belief that Nova Scotia is about to become a petrochemical powerhouse. Finally, despite the growing evidence of climate change and its possible impacts on the planet, it is debatable whether Nova Scotia has taken "responsible action" on climate change.

The original New England Governors/Eastern Canadian Premiers Climate Action Plan was proposed in August 2001 (NEGECP, 2001), and included three *regional* goals:

- Short-term Goal: Reduce regional GHG emissions to 1990 emissions by 2010.
- Mid-term Goal: Reduce regional GHG emissions by at least 10 percent below 1990 emissions by 2020, and establish an iterative five-year process, commencing in 2005, to adjust the goals if necessary and set future emissions reduction goals.
- Long-term Goal: Reduce regional GHG emissions sufficiently to eliminate any dangerous threat to the climate; current science suggests this will require reductions of 75–85 percent below current levels.

The province is associated with two climate change programs: the Action Plan from the New England Governors/Eastern Canadian Premiers, and the government of Canada's Kyoto plan.[13] Although the Action Plan's short-term goal (stabilization of emissions at 1990 levels by 2010) is not as ambitious as Canada's Kyoto target (six percent reduction in 1990 emission levels by 2012), it could require some form of reduction on the part of the province.

The government of Nova Scotia has been aware of the need for action on climate change since at least 2001: the Action Plan's 2010 target was published in 2001 and the government of Canada's Kyoto commitment was well known and included in the provincial Energy Strategy.[14] It has been said that Kyoto will fail because it is a case of being "too much, too soon"; Nova Scotia's lack of action on climate change demonstrates that, in truth, it will be a case of "too little, too late."

The goals proposed in the Action Plan are intended to mitigate the effects of climate change by reducing greenhouse gas emissions. Although mitigation is still required, it is now necessary to develop a provincial adaptation strategy that will allow Nova Scotians to prepare for and adapt to the expected impacts of climate change.

4.2. Energy Security

People living in developed countries expect their governments to have policies in place that ensure reliable and uninterrupted supplies of energy at reasonable prices; this expectation is commonly referred to as *energy security*. These policies, often unknown or simply implied, can make or break a government: consider President Carter imploring Americans to use less energy in the late 1970s; the Trudeau government's National Energy Program in the early 1980s; and Governor Davis's energy rationing policies during the California blackouts in 2000-01.

Energy security is becoming an issue in many countries:

- In the United Kingdom, the decline in North Sea natural gas production means that the UK is about to become a net importer of natural gas, something that has politicians and major generating companies nervous.

- The United States, the world's largest consumer of energy, is a net importer of energy because of its voracious demand for petroleum products, making it an extreme example of energy security: it patrols Persian Gulf sea lanes to protect oil exports and, in some people's eyes, invaded Iraq to secure supplies. Even with Prudhoe Bay and the Arctic National Wildlife Reserve (ANWR), the United States cannot meet its own energy needs.
- China was a net exporter of petroleum until 1993, at which point it became a net importer; it is now the world's second largest consumer of petroleum (BP, 2004). In order to meet growing domestic demand it is entering into deals with any and all possible oil-producing regions in order to meet demand: Alberta, Sudan, and various developing countries.

Energy security is also an issue in Nova Scotia:

- The rising price of oil is making transportation and home heating more expensive for many Nova Scotians.
- The repeated failure of NSPI's transmission and distribution grid, coupled with lengthy repair times, threatens the safety and wellbeing of many Nova Scotians.
- NSPI's use of foreign coal to generate electricity means that Nova Scotia is at risk from international terrorism or labour disputes (often the result of poor working conditions) in foreign countries.

The existing Energy Strategy discusses energy security primarily in terms of how the province's offshore natural gas supplies could be used to enhance the energy security of Nova Scotia, Canada, and the United States (NSDOE, 2001). This arose from an over-inflated view of Nova Scotia's importance as an energy player, long before the problems of the offshore became public knowledge.

The Energy Strategy also claims that: "Energy efficiency and conservation provide substantial benefits, including reduced energy demand, thereby improving Nova Scotia's energy security" (NSDOE, 2001).

Although there is a degree of truth to this assertion, it overlooks two facts: first, that the vast majority of the province's energy is imported, and second, that the province has yet to embark on an energy efficiency or conservation program.[15] Relying on imported energy, even if the energy is used efficiently, may reduce demand, but still leaves the province vulnerable to the vagaries of world energy markets: to achieve energy security, it will take more than the adoption of energy efficiency and conservation measures.

Energy security is best achieved by relying on indigenous energy sources, to which the local jurisdiction has access, and (ideally) control. In Nova Scotia's case, this would mean the development of:

- a renewable energy strategy that would reduce the province's reliance on imported coal and oil (for example, using biomass, solar, and wind);

- a provincial public transportation network of buses and electrified trains to reduce the province's reliance on imported oil;
- a provincial electrical system that reduces the reliance on a few (relatively) large thermal generating stations that are hundreds of kilometres away from centres of demand;
- methods and techniques to use its high-sulphur coal in ways that will reduce harmful air emissions and greenhouse gases per megawatt-hour of electricity generated (for example, co-firing with biomass, bagasse, or animal waste).

5. Concluding Remarks

Nova Scotia's energy sector and the 2001 Energy Strategy is in disarray. The supposed promise of offshore riches in 2001, when the provincial Energy Strategy was first presented to the public, has been oversold, leading to public indifference and skepticism. In place of offshore natural gas, the province is touting the benefits of the development of an LNG terminal, something that will bring short-term construction benefits but little long-term employment. Even the much vaunted promise of electricity "deregulation" has, upon closer inspection, been of benefit to the utility rather than to the renewable energy industry that it was intended to encourage and develop.

Added to this are the twin problems of climate change and energy security, which loom large: they are no longer "on the horizon", they are real and they are here today. Fortunately, by addressing either of these problems it is possible to solve both of them, as their solutions involve the use of indigenous energy sources.

As discussed in the Introduction, the Nova Scotia government is planning to review its current, outdated, Energy Strategy in 2006. If this new Energy Strategy is to succeed, it must develop local energy sources that will create and keep wealth within the province.

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Endnotes

[1] Nova Scotia Department of Energy, Nova Scotia Energy Strategy Progress Report, February 2003.

[2] Nova Scotia Department of Energy, Nova Scotia's Energy Strategy - Progress Report II, 2004.

[3] Canadian Frontier Energy is a subsidiary of Canadian Superior Energy.

[4] An offshore licence is granted to a bidding company for a total of five years for a given parcel; the decision is based upon the size of the proposed work expenditure. If a licence is forfeited, the company is expected to pay the province a percentage of the proposed work expenditure, minus any expenses that the company may have encountered while working on the parcel.

[5] This section is adapted from "Safety: one reason for offshore "'red tape'", by Larry Hughes, published in the *Chronicle-Herald*, October 26, 2004.

[6] Natural gas liquids (NGL) are liquid hydrocarbons, such as pentane and butane, that are often present in unprocessed natural gas. They are sometimes referred to as "pentanes-plus" and are considered more valuable than the natural gas itself.

[7] This section is based upon "*Submission to the Law Amendments Committee: Bill 87 – An Act Respecting Electricity*" by Larry Hughes (Hughes, 2004a).

[8] FERC 888, the first of two major rulings regarding electricity, requires utilities to open their transmission systems to other utilities (the Open Access Transmission Tariff or OATT). To be FERC-compliant, all electricity generators using the OATT in the United States must offer competing companies access to their transmission system (reserving capacity on the transmission system is done through an Open Access Same-Time Information System or OASIS).

[9] In order to ensure that a utility charges the same transmission tariff to itself and other utilities, FERC 889 mandates "Standards of Conduct" that effectively split every utility into two parts: generation and transmission-distribution. Canadian utilities that sell electricity to the United States (this includes NB Power), are required to be "FERC-compliant" (i.e., have adopted FERC 888 and 889).

[10] $22,200 was the ceiling. "Families with income levels up to $22,000 will get the full payment of $200. There are different payments for applicants with incomes between $22,000 and $22,200, with the amount being reduced by $25 for every $25 of additional income" (SNS, 2004a).

[11] This was an increase from the previous year's 17,000 participants (SNS, 2004). This increase may reflect the value of the fuel assistance cheque, which increased from $50 in 2003-04 to $200 in 2004-05.

[12] The EnerGuide for Houses is intended for homeowners only; people living in rental accommodation are ineligible for the grant. Ideally, the program would be open to landlords as well as homeowners. This would be especially valuable to low-income Nova Scotians who rent property and qualify for the "Keep the Heat" grant.

[13] The government of Canada's Kyoto plan has undergone a seemingly endless series of revisions, from the Action Plan in 2000, to the plan in 2002, to Project Green in 2005. The province will be bound to whatever Kyoto plan the federal government finally adopts.

[14] In fact, Nova Scotia has been an "active" player in climate change issues since at least 1992, when a series of public meetings were held to discuss global warming, as climate change was then called (NSDNR, 1993). Furthermore, the Nova Scotia government has been aware of Canada's intention to ratify the Kyoto protocol since 1997, when Canada signed the accord.

[15] This is not to imply that the provincial government has *not* made unfulfilled promises on conservation and energy efficiency. For example, the November 15, 2004, press release that announced the "Keep the Heat" program quoted Energy Minister Clarke as saying, "Given the activity in world oil markets, we expect fuel prices to remain high for some time. The long-term solution is energy efficiency—we all need

to look at ways to reduce our energy use and costs. The [6,000 energy saving] kits will be tied to a broader energy efficiency campaign to be rolled out in the new year." As of mid-May 2005, no such campaign had been announced, although a toll-free number allowed Nova Scotians to call Clean Nova Scotia with their energy efficiency questions.

The Department of Energy's 2005-06 Business Plan also mentions energy efficiency as one of their core business areas, with a proposed outcome of "improved energy efficiency and conservation within government operations". The target for 2005-06 is the "development and implementation of a long-term strategy; track kWh equivalents, GHGs and dollars saved".