



## Easy Come, Easy Go..

Posted by Libelle on August 1, 2007 - 9:30am in [The Oil Drum: Canada](#)

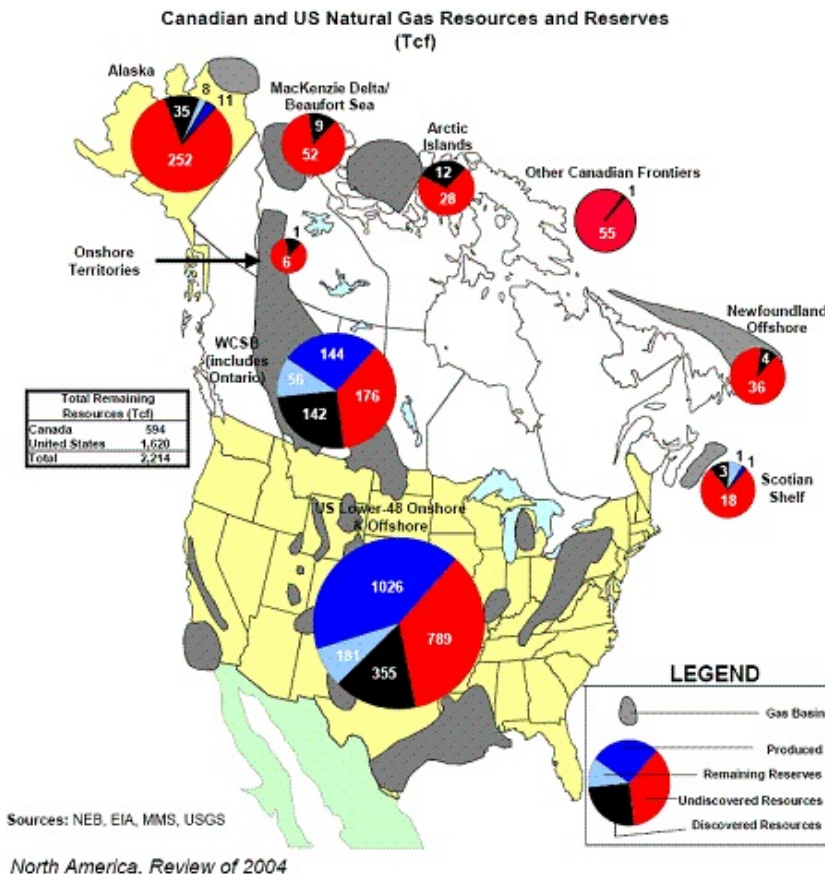
Topic: [Supply/Production](#)

Tags: [canada](#), [coal bed methane](#), [lng](#), [natural gas](#), [reserves](#), [resources](#), [united states](#) [list all tags]

## Easy Come, Easy Go, or: The Incredible Disappearing 140 Tcf of Canadian Gas.

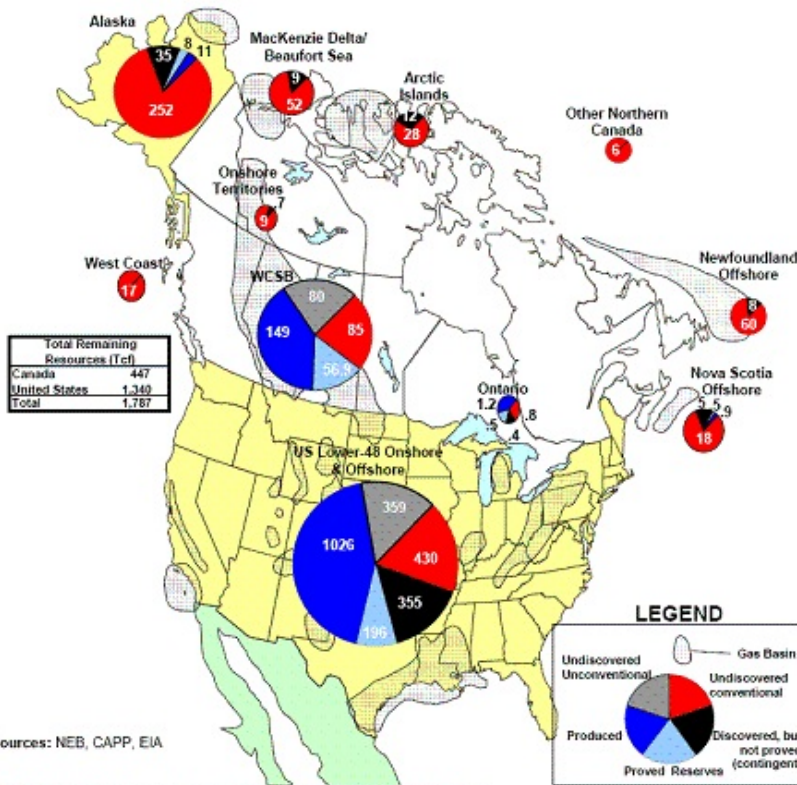
I posted an article "[The Future of \(Natural\) Gas from the Western Canada Sedimentary Basin?](#)" a few months ago, suggesting that the numbers suggested for Western Canadian gas in the NRCan report "[Canadian Natural Gas Review of 2004 & Outlook to 2020](#)" were exceedingly optimistic, basing that conclusion on both National Energy Board Scenarios and actual events. I did not expect that the next NRCan report in the series would reflect this view, but [it has since come out](#), and its contents prompted me to look further back in the series and then to look at how other official and unofficial assessments were changing.

## Reserves and Resources



Reserves and resources from the "Review of 2004" report. [Click for full-sized image.](#)

Canadian Natural Gas Resources and Reserves (Tcf)



Reserves and resources from the "Review of 2005" report. Click for full-sized image.

Comparison of the WCSB(Western Canada Sedimentary Basin) pie charts in these two diagrams shows that 142 Tcf of "Contingent Reserves" have suddenly vanished. This brings the amounts allegedly still there much more in line with other estimates (National Energy Board's and mine) in [my earlier article](#). I was curious to see what had been suggested [in earlier reports](#).

Prior to the 2002 review, only the established reserves were reported, but since then figures have been given for other categories of resource (all in Tcf, 10<sup>12</sup> cubic feet).

Year	Produced to Date	Proved Reserves	Contingent Reserves	Undiscovered Conventional	Undiscovered Unconventional
2001		57			
2002	127	52			180
2003	138	57	122		170
2004	144	56	142		176
2005	149	57		80	85

The main points of interest are the explicit splitting of Undiscovered into Conventional and Unconventional parts in the 2005 report, and the abrupt appearance and disappearance of the "Contingent Reserves". They were only "there" for two years.

Government agencies are generally the last to acknowledge a problem. The most [recent NRCan report](#) is quite remarkable in that it includes many of the warning signals one usually reads about elsewhere:

Despite record drilling in 2005, North American production was down 2% for the year and Canada's reserves-to-production ratio remains relatively flat at 9.3 years of production.

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Throughout the 1990's, WCSB natural gas production enjoyed a period of positive growth with limited additional wells. For example, from 1992 to 1998, production increased 4.4 Bcf/d with relatively flat drilling levels. However, since 2000, an increasing number of wells are required to increase production marginally. For example, in 2005, over 18,000 wells were drilled and production increased 0.1 Bcf/d.

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Sable Island natural gas production appears to have peaked in 2001 at 190 Bcf.

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In 2005, Sable production declined 5% from 2004 levels to 139 Bcf. It is expected that the addition of compression to producing wells in 2007 will temporarily increase production.

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More than half of the estimated conventional resource base has already been produced from both the WCSB and the US Lower 48.

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The disappearance of the 142 Tcf of Contingent Reserves passes without comment except for this:

Contingent resources are known to exist, but are not marketable on account of their remoteness or lack of means to bring the gas to market. Therefore, the WCSB does not have any contingent resources.

The lack of comment is perhaps appropriate, since the appearance of the 122 Tcf two years earlier also went without remark. Given, though, that this much gas would be worth something like \$1,000,000,000,000 at current prices, either event would surely be expected to have some economic consequences.

The Canadian Gas Association recently produced [a report on the Canadian gas supply](#). One cannot accuse the CGA of being as even-handed as NRCan. The report is determinedly upbeat:

Canada's total remaining natural gas resources are estimated at 375 to 530 trillion cubic feet (tcf). This is equivalent to about 55 to 80 times current production and 110 to 155 times domestic consumption.

The lower end of this range is reasonably consistent with the NRCan total for all areas. Maybe they found the disappearing 140 Tcf somewhere for the upper figure.

This pales into utter insignificance when compared with estimates of what might be there:

According to PTAC there is more than 4000 tcf of combined unconventional gas in place in Canada, with the upside ranging closer to 30000 tcf.

PTAC is [Petroleum Technology Alliance Canada](#). Their report on unconventional gas may be obtained [here](#) (big PDF).

The CGA does admit to a slight problem:

While natural gas resources are abundant, North America is experiencing a tight supply/demand balance. With North American production moving towards more remote and unconventional sources, all else being equal, overseas gas supplies will become more competitive.

## Predictions of Future Production

[Other sources, including Alberta's Energy Utilities Board](#) do not give as rosy an impression of the Canadian gas situation:

High levels of drilling for gas in recent years have prevented a sharp decline in Alberta's production and reserves but lower prices since the spring of 2006, followed by a drop in drilling, have prompted the EUB to forecast a 2.2% decline in production this year.

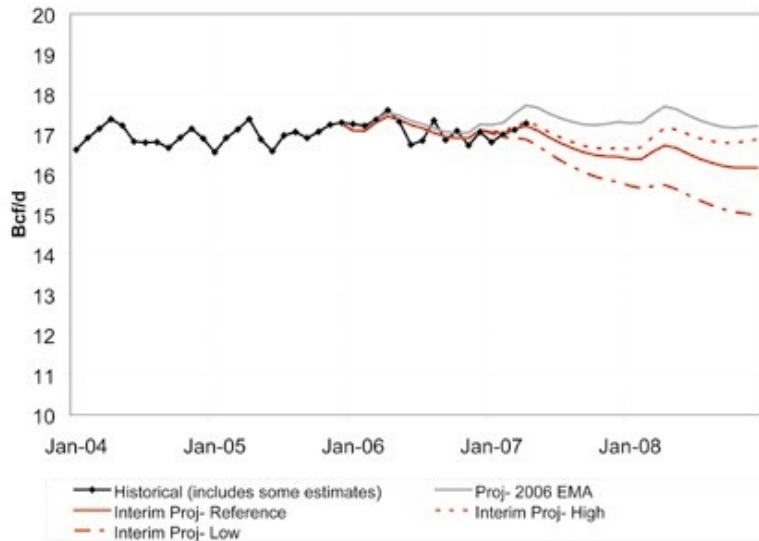
In its supply outlook to 2016, the EUB expects Alberta's gas production will decline by an average of 2.5% a year even though CBM production is expected to rise to some 593 bcf a year by 2016. New pools being found are smaller, show lower initial production rates and steeper decline curves.

A recent Ziff Energy Group study predicts that total Canadian gas production will fall by just over 20% in the forecast period to 2015 to 13.1 bcf per day from about 16.6 bcf a day in 2006.

There's no quick-fix solution to the many challenges facing western Canada's natural gas producers and the current negative economic conditions plaguing the sector are likely to worsen before financial metrics improve, Ziff Energy Group Vice-President of gas services Bill Gwozd said recently. "Operating costs have spiraled up. It's tough to get people to do the actual projects. The big challenge the producers are facing is the new drilling, new product coming onstream. They're looking at \$9 (per mcf) in rolled-in costs," Gwozd said while addressing a forum at the Calgary Petroleum Club.

This hardly squares with the abundance described by the Canadian Gas Association. Coal Bed Methane production is included in the EUB's projections, and is not expected to provide anywhere near enough gas to stem the decline.

The [National Energy Board](#) produces many [reports on Canadian natural gas](#). The last [short-term gas deliverability report](#) came out in October 2006, but an [update was issued in May 2007](#), to reflect reduced drilling activity in 2006 and 2007. Here is the diagram that shows the predicted outlook for Canadian gas deliverability with three different drilling scenarios:



This shows a major event - the Canadian natural gas supply peaked in 2006. The production predicted in last year's report (grey line) was not attained because there was reduced drilling. The solid orange line is now considered the "most likely scenario" or "reference case" for the future:

In the reference case of this update, average annual Canadian gas deliverability is expected to be 476 million m<sup>3</sup>/d (16.81 Bcf/d) in 2007 and 464 million m<sup>3</sup>/d (16.38 Bcf/d) in 2008.

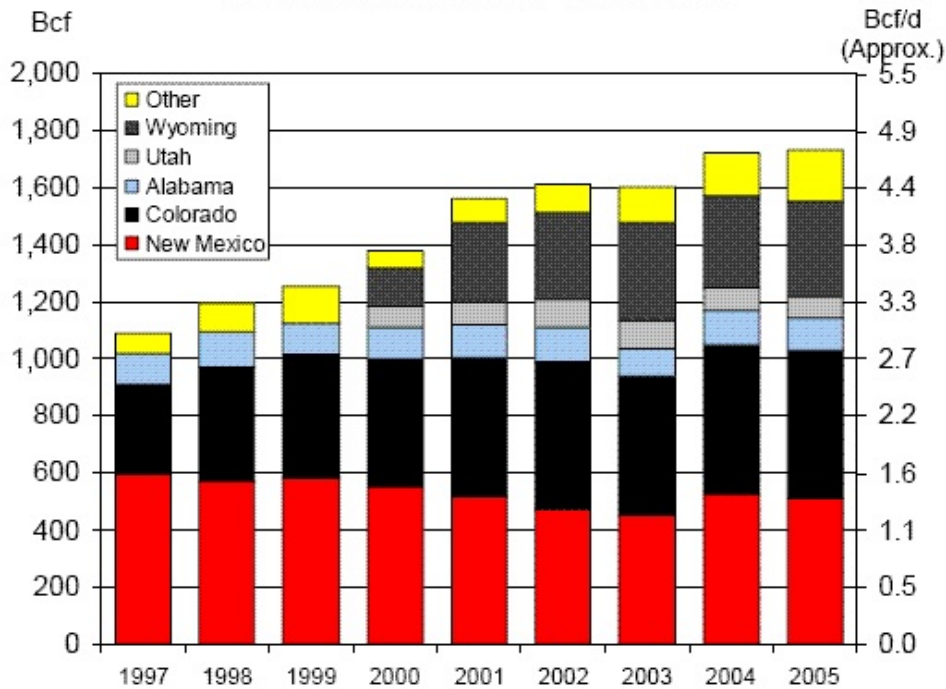
Going down...

## Coal Bed Methane

Much of the hope for future supply rests on Coal Bed Methane. Canadian production is just getting started, and is included in the forecasts above. Let's look at the history of US CBM production:



## US Coalbed Methane Production



Source: EIA Note: Other includes Oklahoma, Pennsylvania, Utah, Virginia, West Virginia, and Wyoming. However, beginning in 2000, other excludes Utah and Wyoming.

(Diagram from most recent [NRCan gas report](#))

Production may not have peaked yet, but that from the most prolific states already has. How much longer will it be before decline of overall US CBM production sets in?

## Arctic Gas

So, how about [the future of gas from the Arctic?](#):

A new much higher cost of \$16.2-billion for the Mackenzie Gas Project to bring Canadian Arctic gas to southern markets has put the project in doubt since it now needs a favourable government fiscal regime to make it economic.

Even then, it wouldn't be in operation for a while:

Assuming all approvals are in place in 2009, the earliest the proponents expect to be able to start construction would be the summer of 2010, when contractors would start shipping materials by barge to location along the Mackenzie river. This means the earliest date the pipeline could be onstream is 2014.

It doesn't look too good for [Alaskan gas](#) either (report from May, with analysis by [Andy Weissman](#)):

ExxonMobil Chairman and CEO Rex Tillerson told reporters after the company's annual meeting Wednesday that the \$16.2 billion price tag for the delayed Mackenzie Valley pipeline is too expensive without more government subsidies.

"We are now in a situation where it's not economic at current costs," Tillerson said in an article published by The Globe and Mail. "It may just be that the project is going to have

to wait for a different cost environment."

Weissman said Mackenzie - planned to begin production in 2014 -- is the smaller of two major pipeline projects on the drawing board - the other is a natural gas pipeline to be built next to the existing Alaskan oil pipeline.

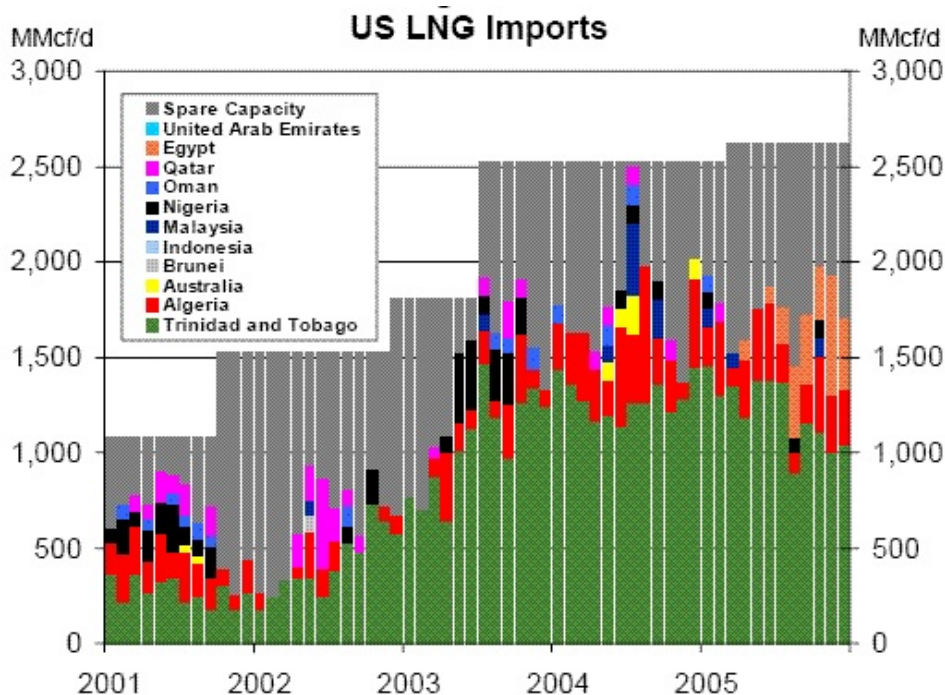
Given ExxonMobil's comment on Mackenzie, it's unlikely either pipeline will be built, he said.

## LNG Imports

Well, what about LNG? If LNG is to come to the "rescue", it must come from somewhere. Things don't look very bright on that front either. Here is Chris Skrebowski, [writing on new LNG production capacity](#):

The reluctance of companies to commit to building new capacity appears to stem from two prime influences. The first is the rapid inflation in construction costs, which is reported to have reversed all unit costs reductions in the last 20 years. This means new liquefaction trains will have markedly higher unit costs than recently built ones. The second uncertainty is the market reaction to high prices. There has been a tendency to believe gas demand is unresponsive to price. This belief in the low price elasticity of gas demand has been undermined by the gas demand falls seen in 2006 in the US, Chile, Austria, France, Hungary, the Netherlands, Portugal, Romania, Slovakia, Russia, Switzerland, the Ukraine, the UK and the Philipinnes. Although special circumstances may account for some of these declines, the general view is that gas prices may have reached the point where demand is impacted. As a result of these two concerns, virtually all LNG projects not underway are currently being reassessed.

The existing LNG capacity in the USA hasn't been close to being saturated, at least up to the end of 2005:



Sources: EIA, Company websites

(Diagram from most recent [NRCan gas report](#))

One wonders if the enthusiasm for building more ports to receive gas will last, either in Canada or the US, if existing ones aren't near capacity and the supply is in doubt.

## Conclusion

The summary of all this can be short. It is unlikely that the total natural gas supply available in North America (including imports) will ever again be as high as it now is. Get used to using less.



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