

# Another Day Another Plant Closing

The Ontario Standing Committee on Finance and Economic Affairs  
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The Ontario Standing Committee on Finance and Economic Affairs

Pre Budget Consultations

Mr. Chairman, Members of the Committee, Ladies and Gentlemen,

My name is Grant Church. I live in Cayuga, and work in a stamping plant in Dundas.

Electricity impacts every aspect of our life and work in Ontario. Every product and service utilizes electricity, so the impact of higher energy costs has a compound and domino effect. Our price is already higher than many other jurisdictions, and any further rise will bring serious economic damage to the citizens and industry of this province. It now looks like Ontario will be last in economic growth both this year and last. Your electricity plan would condemn us to a perpetual last place finish.

In the fall throne speech, the Lieutenant Governor said, “Your government will replace coal, double renewables, double conservation and modernize our nuclear capacity.”

In the September 1, 2007 episode of Focus Ontario, Dwight Duncan, the then minister of energy, said that the Liberal government would double renewables and double conservation.

In an August 29, 2007 letter, Premier McGuinty states, “Our plan to replace coal-fired generation will help Ontario reduce greenhouse gas emissions by up to 30 megatonnes.”

At no time was it mentioned that the government was planning to more than double gas-fired generating capacity by adding a further 7,000MW or to almost triple production from gas to 30TWH, which can be found in OPA documentation

The government is virtually replacing coal MW for MW and TWH for TWH with gas-fired power plants, and there is not a word about it from these three sources.

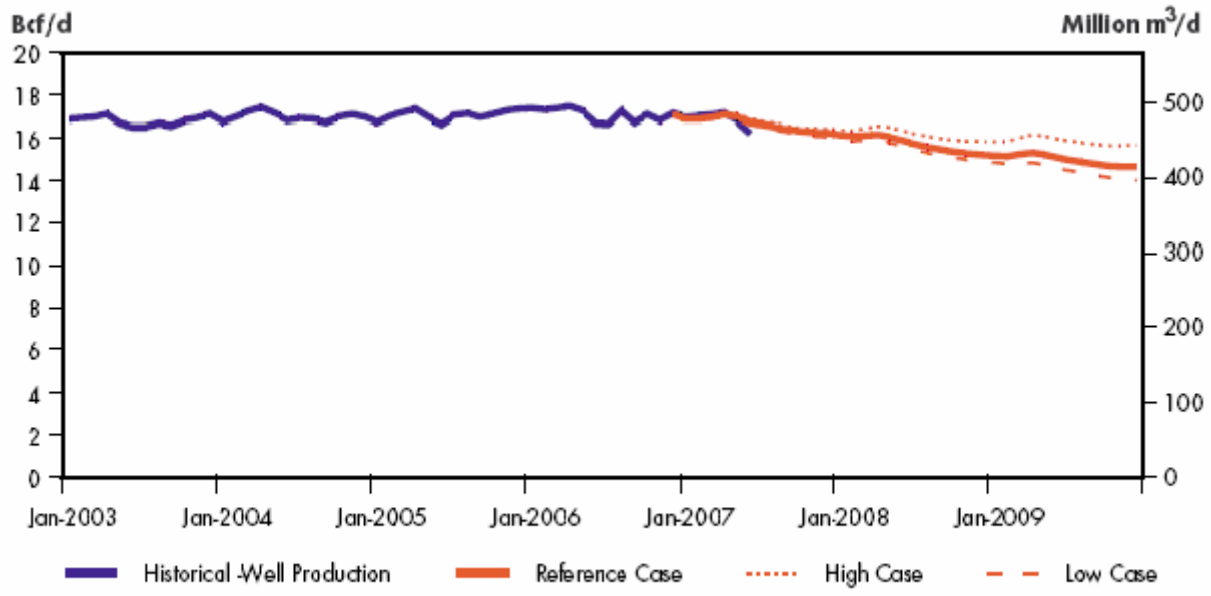
Why are you hiding this? Why are you not being up-front and open? Is it because of the expense of gas produced electricity or the reality that greenhouse gas emissions will not be cut by 30 megatonnes?

**Natural gas is an unviable option to produce electricity because of price and supply.**

Natural gas production is falling in Canada and across North America. The National Energy Board reports that production will be down by 2.1 billion cf/day or 12% by 2009.

In the moderate Reference Case scenario, Canadian gas deliverability in 2009 is projected to decrease by almost 59 million m<sup>3</sup>/d (2.1 Bcf/d) to 424 million m<sup>3</sup>/d (15.0 Bcf/d). (National Energy Board: Short-term Canadian Natural Gas Deliverability 2007-2009)

**Outlook for Canadian Gas Deliverability – Reference, High and Low Cases**



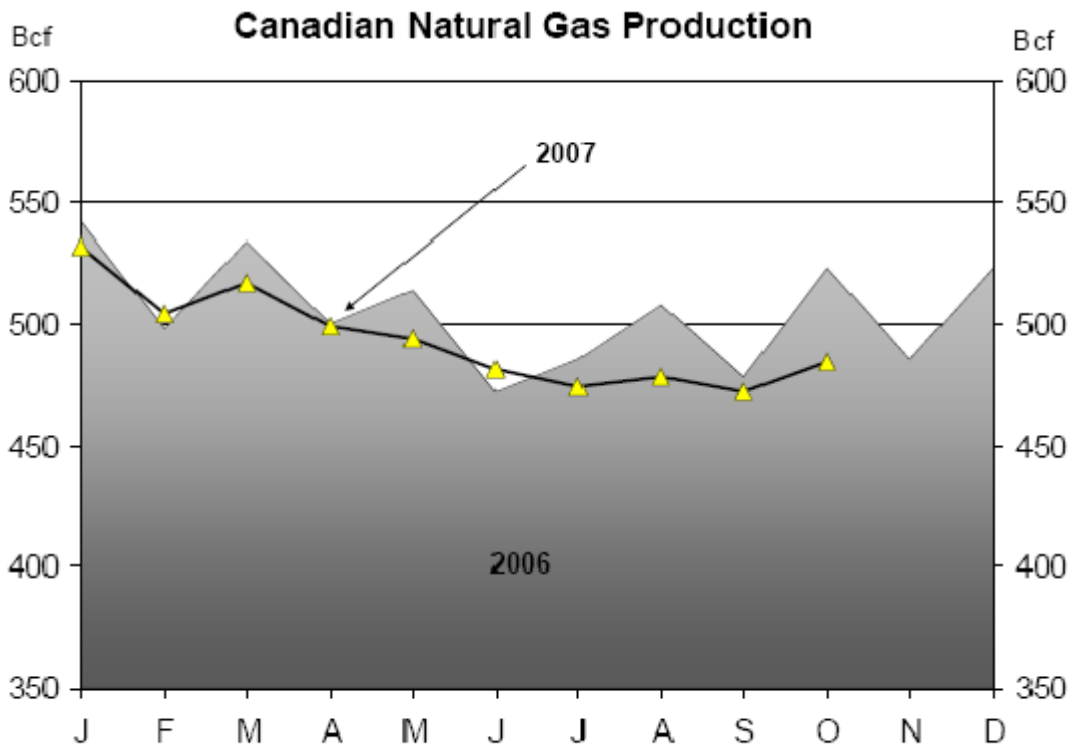
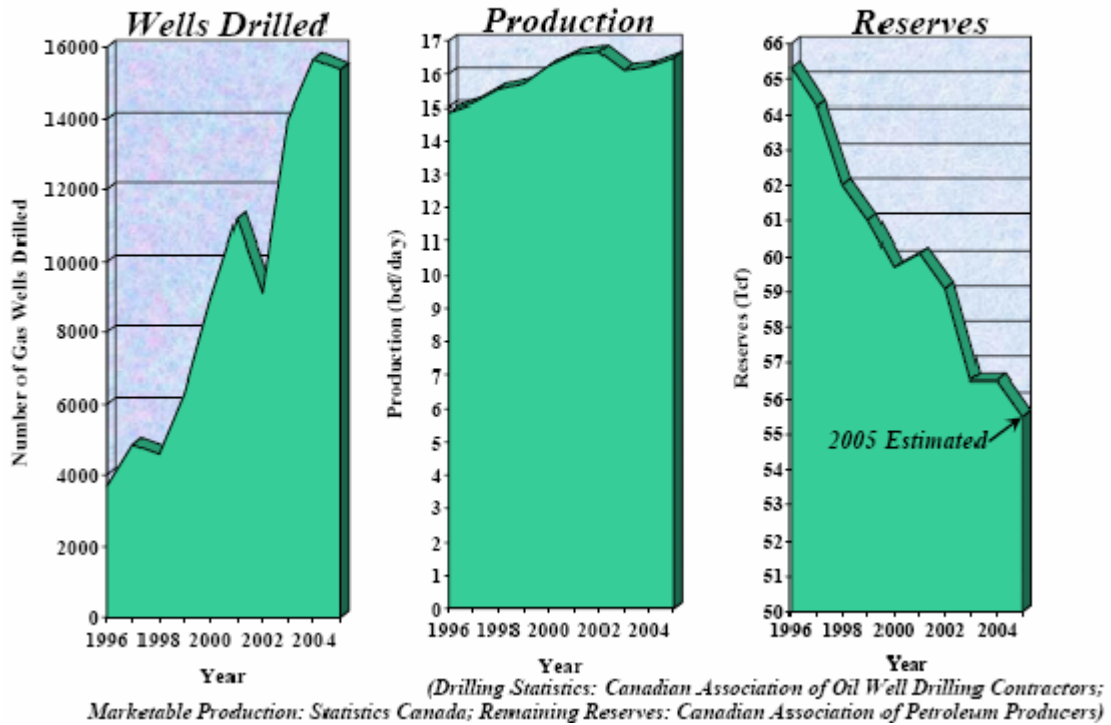
1 CAPP Statistical Handbook, Table 04-25B.

“... the quantity of natural gas required to replace all the OPG coal-fired plants with gas-fired plants would be about ... 347 Bcf/yr. The total primary demand for natural gas in Ontario in recent years have averaged about 986 Bcf/yr.” (Dr. J. T. Rogers, Professor, Department of Mechanical and Aerospace Engineering, Carleton University – “Options for Coal-Fired Plants in Ontario, September, 2004”)

(Enbridge) Chief executive Patrick Daniel told reporters that there is a "real scramble" in the West to keep up with demand, and shorter supplies are looming....

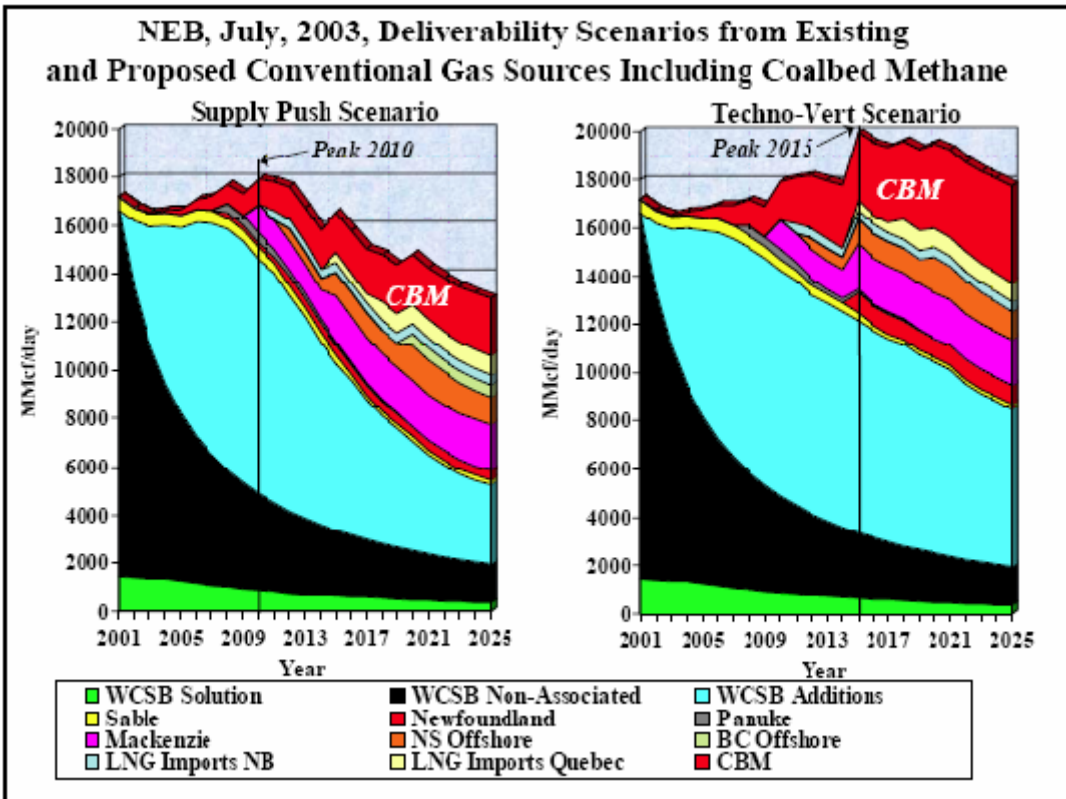
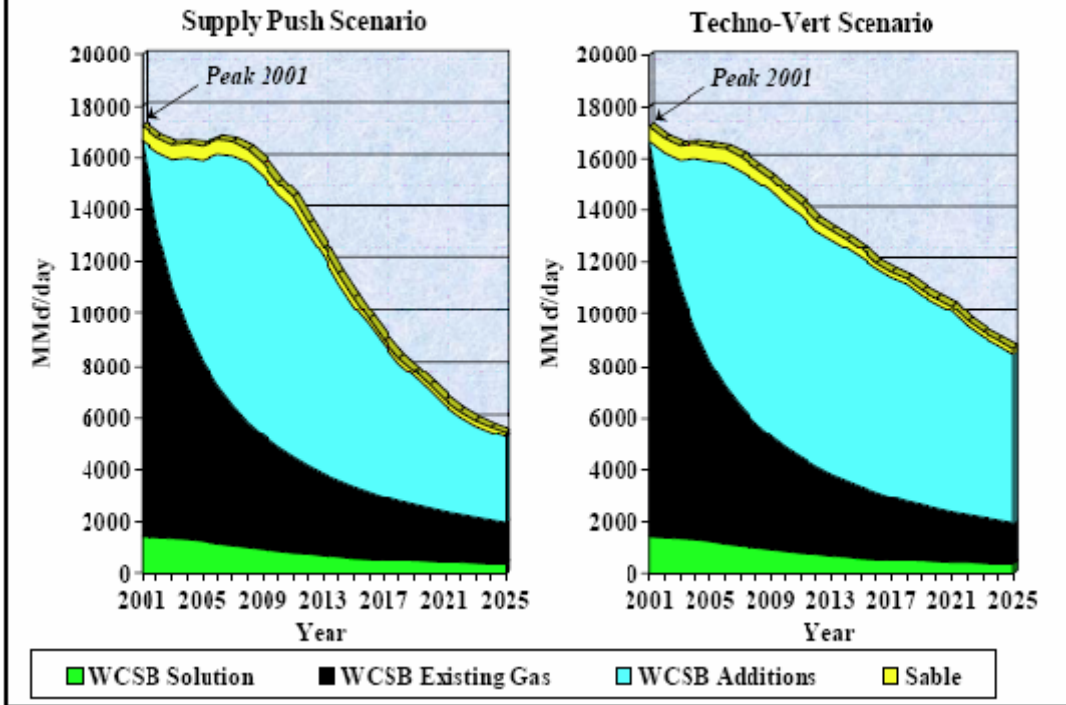
"When we say that we're expecting a shortage of natural gas, that of course is at a certain price to the consumer," he said before the annual meeting. (Toronto Star, May 6, 2004)

## Canada's Exploration Treadmill – more and more drilling to find less and less gas



Source: Statistics Canada Note: Most recent month is a preliminary figure.

NEB, July, 2003, Deliverability Scenarios from Existing Gas Sources



It would take about one Bcf/day, a 35% increase over what we now use, to run as much gas capacity as you are planning. And if nuclear units are down, how much would it be? Lennox Generating Station can't run on gas now in the winter because of supply constraints but must run on oil, which is more expensive and nearly as bad as coal.

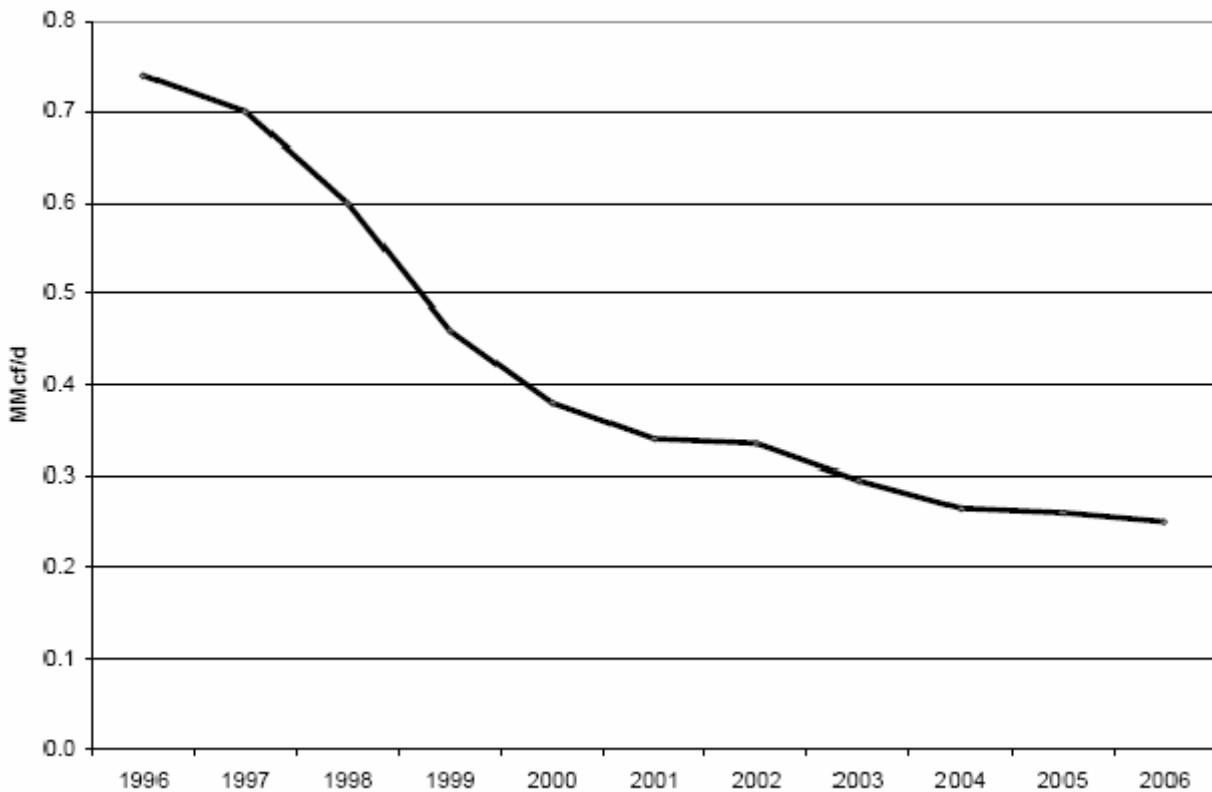
Gas production has been maintained over the past several years by drilling four times as many wells as they use to. That is no longer viable. It is not worth drilling more wells, and there has been a sharp drop off in drilling over the past 18 months.

New supplies like the MacKenzie Valley pipeline and LNG are not coming fast enough to stem the fall. The only LNG terminal under construction in Saint John, New Brunswick will be exporting the gas to the U.S.

Under NAFTA we must maintain our exports to the US.

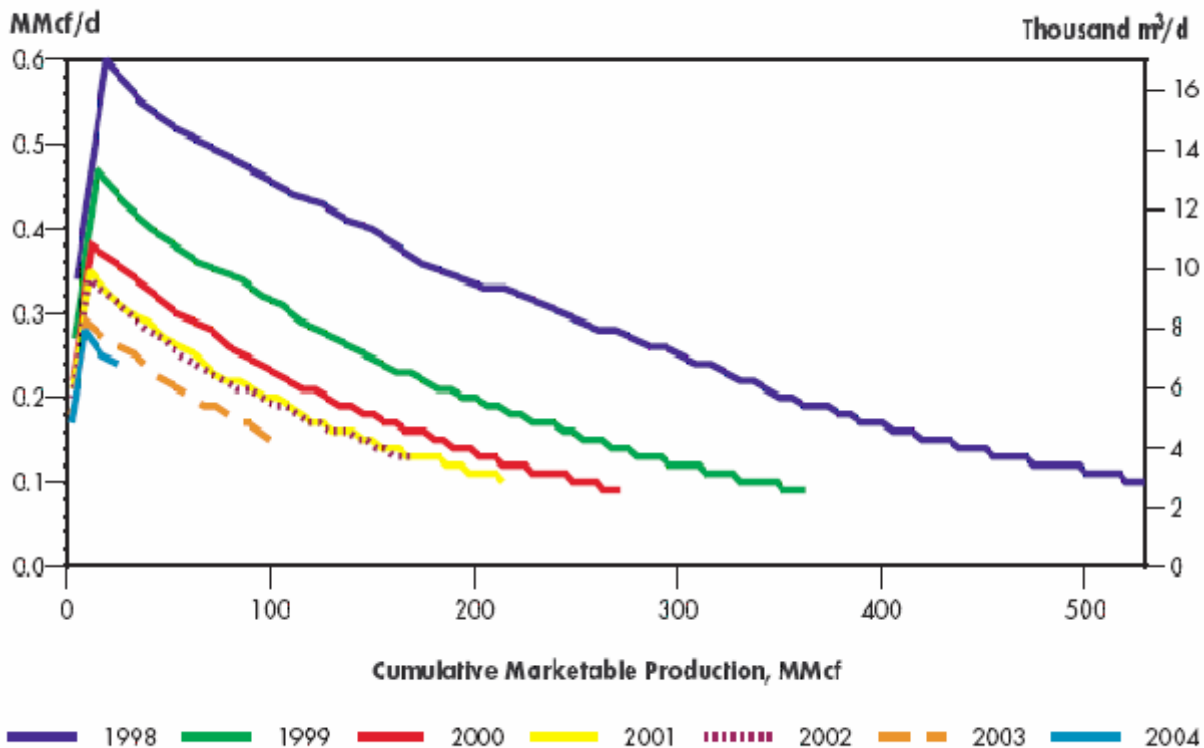
And it's not as if Canada can just shut off the pipeline-under NAFTA, we're obliged to treat the U.S. on equal terms. If there's not enough gas to go around, the treaty says we still have to keep pumping southward. (Report On Business Magazine May 2005)

**WCSB Initial Productivity of Average Conventional Gas Connections by Connection Year**



Source: NEB Analysis of GeoScout Well Production Data

### WCSB Average Gas Connection Performance



Source: Board Analysis of GeoScout Well Production Data

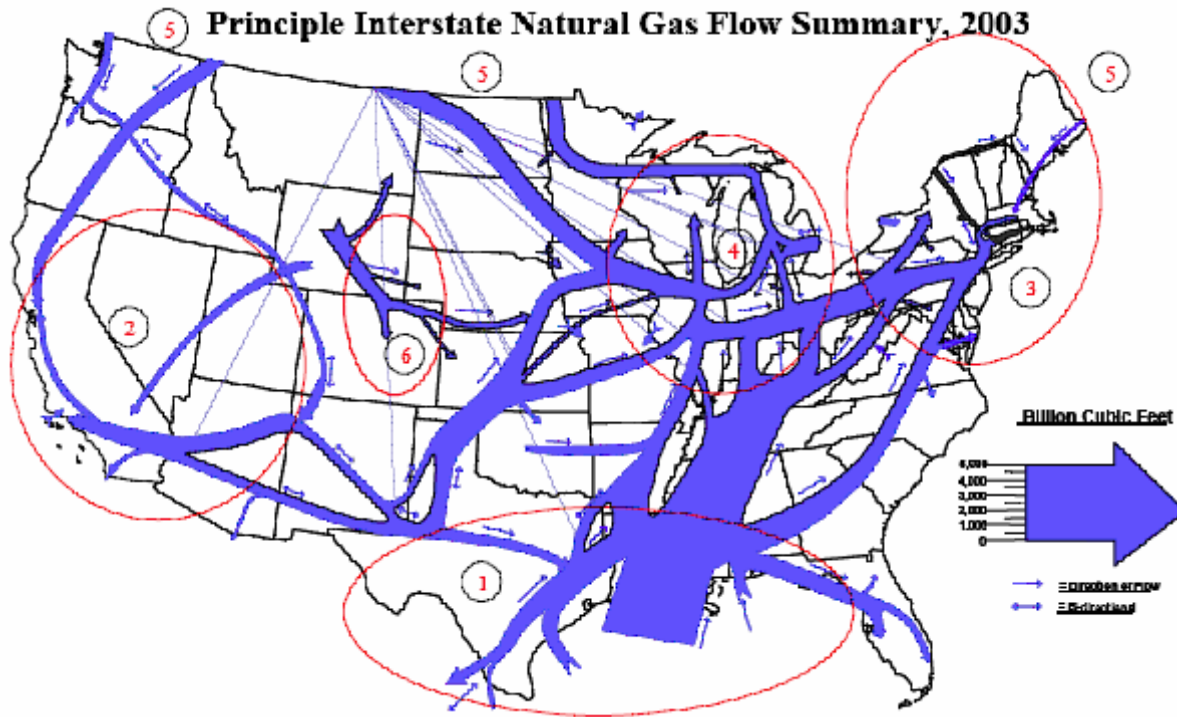
### What will this do to the price of gas, which is already so high?

CIBC World Markets estimates that the gas price will be \$12-\$14/MMBtu by 2015, double what it is now.

### Why is gas so expensive?

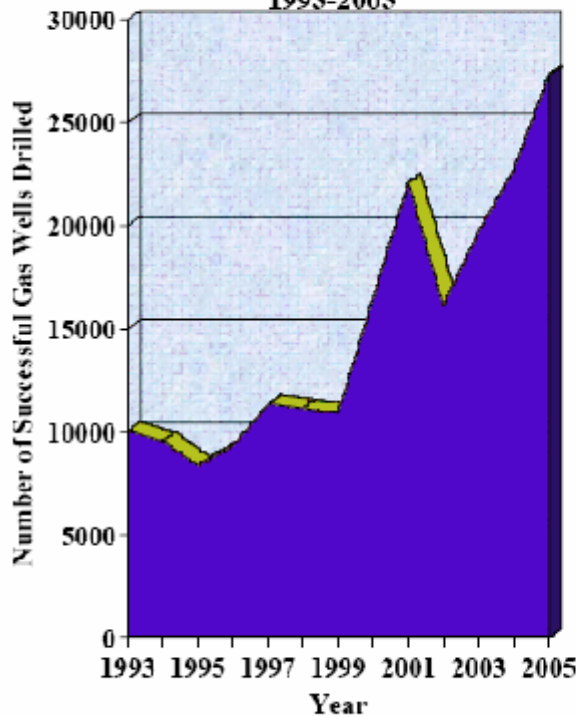
The Americans built 200,000MW of gas-fired capacity from 2000-2004, the equivalent of 50 Nanticokes. This was based on the National Petroleum Council's prediction that gas would be around \$3/MMBtu through 2015.

These plants ended the surplus of gas and put the market into a tight supply situation, which tripled the price.

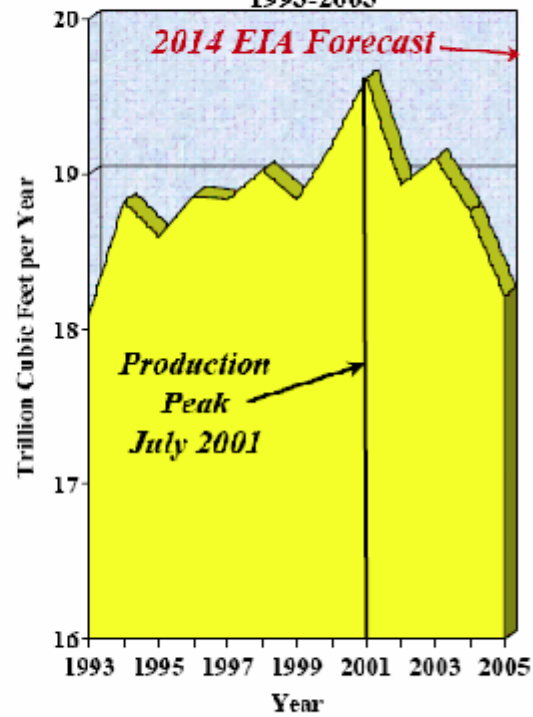


## The U.S. Gas Exploration Treadmill

U.S. Gas Wells Drilled  
1993-2005



U.S. Dry Gas Production  
1993-2005



(data from U.S. Energy Information Administration, April, 2006)

U.S. gas supply has been short in the past, and the problem was solved by banning gas-fired power plants and the use of gas in industrial boilers.

The NG shortages of the 1970's prompted the passage of the 1978 Fuel Use Act (FUA) effectively banning NG fired electric power plants as well as the use of NG in large industrial boilers. These restrictions on NG consumption led to a substantial decline in demand and the eventual formation of a supply "bubble" – which in turn resulted in chronically low NG prices (See EIA, 2005). In 1987 much of the FUA was repealed setting off a surge in the construction of NG power plants. Indeed, NG consumption for electric generation rose from 2,636 bcf in 1988 to 5,352 bcf in 2004 (a 103% increase). In fact, since the 1990s virtually all new power plants have been NG units in an historic departure from the traditional fuel diversification strategy of electric utilities. (EnergyPulse, The Problem With Natural Gas, July 14, 2005)

### **What will happen to the price of electricity?**

The government's electricity plan will cause a sharp price rise, but the Ontario Power Authority is severely under estimating the impact.

Under the plan the real cost-to-customer increases are expected to be in the order of 15% to 20%, although Ontarians who aggressively conserve will likely see a decrease in their real costs. (OPA)

CIBC World Markets estimated the commodity portion of the bill would rise 70% to 8cents/kwh.

In November 2005, after the hurricanes knocked out oil and gas production in the Gulf of Mexico, the Ontario gas generators were asking 14cents/kwh; by December, Lennox was asking 19cents/kwh.

Coal sets the price about 56% of the time. With its removal, gas would be setting it about 85% (according to Union Gas) of the time insuring that the price of power would be sky high. Factor in the \$60 billion OPA plan and it's obvious that it will be much more expensive than what they say.

This is my hydro bill. It's similar in different jurisdictions.

Electricity:	$\$15.64 + 70\% = \$26.59$
Delivery:	\$23.85
Regulatory Charges:	\$2.19
Debt Retirement Charge:	\$2.07
Smart Meter Fee (est.):	\$4.00
Total before increases:	\$43.75
Total after increases:	\$58.70
Increase:	34%

## How will the government electricity plan affect the economy?

As I drove through North Western Ontario in June 2006, the newscaster started with, "Another day, another plant closing." This could have been repeated dozens of times since then as dozens of plants have closed and tens of thousands of people have lost their jobs.

Ramesh Ramachandran, president of Dow Chemical Canada Inc., delivered a stinging warning to a natural gas conference in Calgary yesterday, saying high prices are wreaking permanent damage on the petrochemical industry.

And in an allusion to the title of the conference -- Walking the Tightrope, Supply and Demand in Delicate Balance -- the petrochemical executive said his company will not engage in any acrobatics to remain in North America, but will simply shift operations to less costly areas. "Tightrope walking is an act that belongs in circuses." (Globe and Mail March 9, 2005)

Dow Chemical Co. is shutting down all its production at its operations in Sarnia, Ont., and closing two plants in Fort Saskatchewan, Alta. (CBC News August 31, 2006)

### **Weyerhaeuser**

The second piece of the equation is power. I'm going to say, a little bit later, that this is one of the areas we would like you to consider to assist the industry. What we've seen, from a power perspective, **since deregulation is a 36% increase in power costs**. That's what our electrical bill is. That 36% is outstanding enough when you hear that number, but I tell you that our electrical bill is \$20 million per year, so it's a very significant input into our business. . . .

The next major area of input is energy costs. I can make pretty well the same statement around energy. We operate right across North America. When we chart our energy costs in our mills, with the five states and four provinces we conduct business in with pulp and paper operations, the end of the cost curve that we come out on is the absolute wrong end. **We are the highest-cost jurisdiction from an energy perspective. . . .**

The third recommendation is to deal with the energy piece. We would ask for two things there. We would ask the government to impose a revenue cap until there truly is a competitive market in Ontario from an energy perspective. We're talking about a revenue cap. The second piece around energy is that **we would ask that the move to close down the lower-cost facilities be looked at again and put on hold until there are viable low-cost energy-producing alternatives. . . .**

(Standing Committee on Finance and Economic Affairs, 25 January 2006)

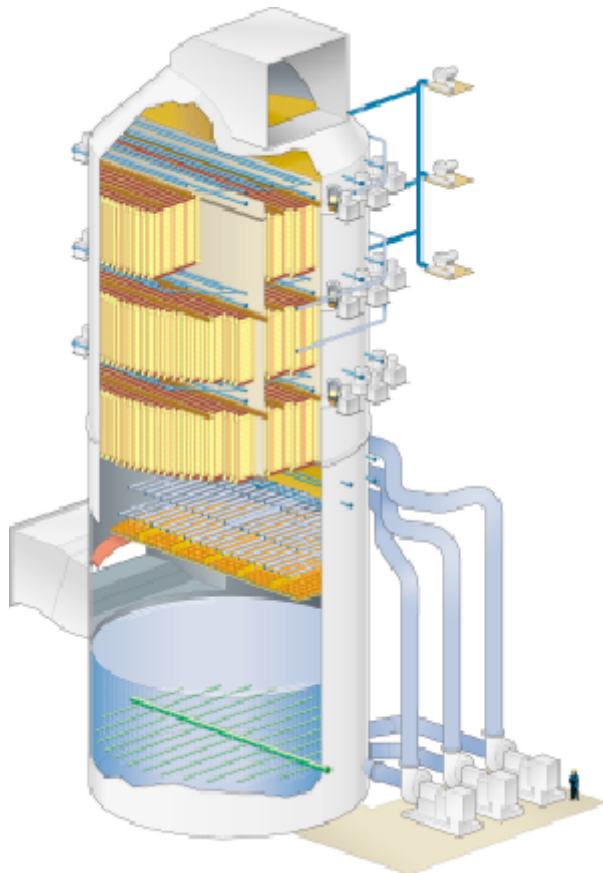
In the fall session of the legislature it was mentioned by Howard Hampton that Inco was moving its copper smelting operations from Sudbury to Montreal because the electricity is much cheaper there.

It is clear that we are being priced out of the market, and that by closing the coal plants and replacing them with very expensive alternatives, the economy will be devastated.

Further, how is it that Premier McGuinty can come to Hamilton and offer Dofasco money to replace natural gas with coal to make them more competitive, while on the other hand, he is replacing coal with natural gas, which will make all Ontario industry less competitive?

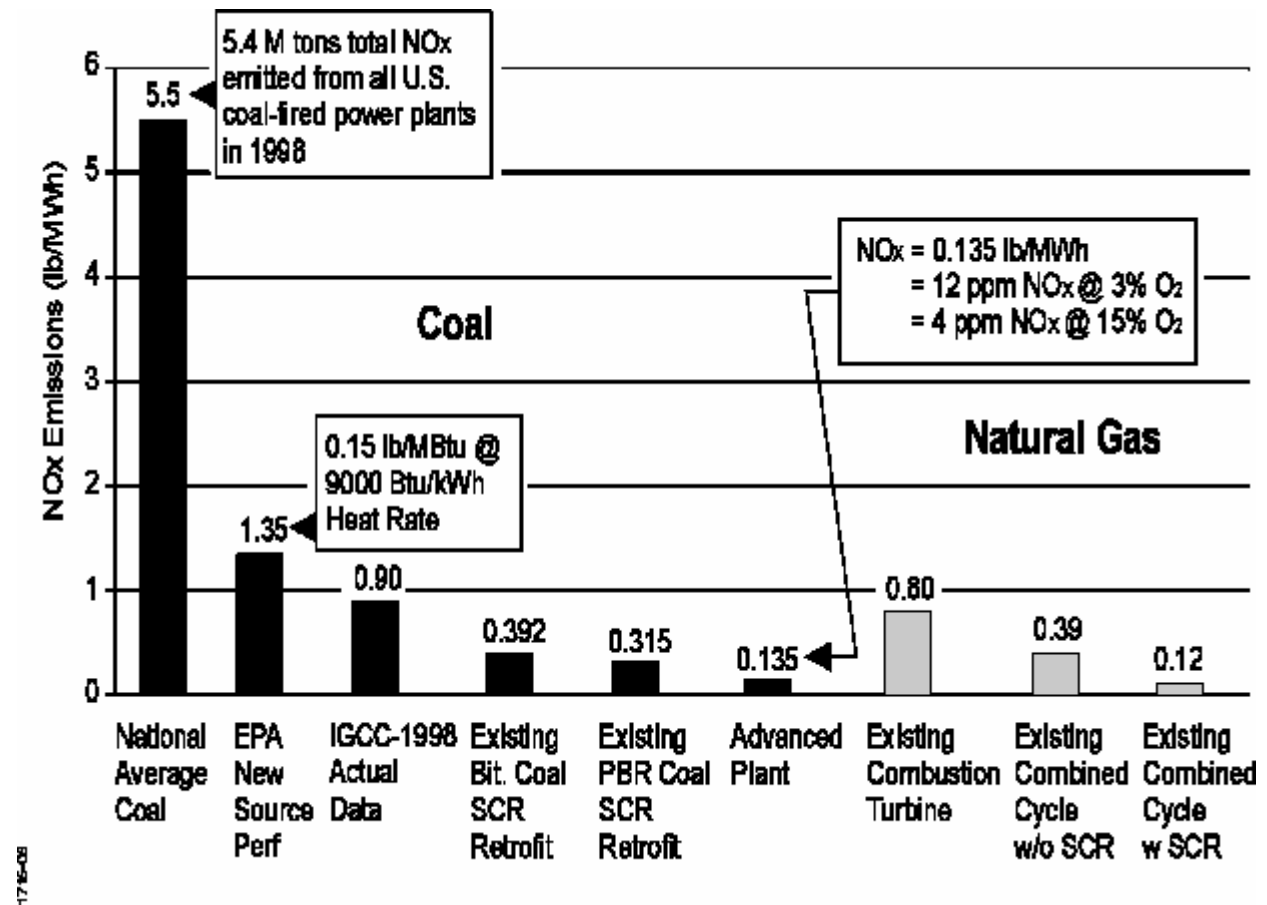
### **Why not clean up the coal plants?**

Recently, Nova Scotia Power installed low NOx burners on a generator at the Lingan coal plant, and NOx emissions were reduced by more than 50%. New Brunswick Power completely retrofitted their Coleson Cove plant with a burner system that reduces NOx by 70%. This is indicative of the huge strides being made in emission controls. SCRs on both these plants would bring the NOx levels down to those of natural gas. NB Power also equipped the entire plant of three generators with sulphur scrubber-wet electrostatic precipitator towers (FGD-WESP), not only giving them sulphur control, but superior particulate control.



This is a diagram of an integrated FGD-WESP like NB Power has in use on their Coleson Cove plant. The wet ESP has three fields for maximum particulate removal, wet and dry. It holds particulate emissions to .01 lbs./MMBtu, which is in the natural gas range. It achieves this by charging the plates with 80,000-100,000 volts DC and periodically flushing them with water.

This bar graph shows that NO<sub>x</sub> emissions can be as low as a gas plant.



How Low Can We Go?  
 Controlling Emissions In New Coal-fired Power Plants  
 Babcock and Wilcox, August 20, 2001

Particulate can be reduced to the level of gas, to the point of zero opacity, and it has been possible since before 2001.

**Wet ESPs are capable of removing sub-micron droplets, acid mists, metals and mercury particles as small as 0.01 micron in size with up to 99.9% removal efficiency.** Near zero opacity can be achieved. When integrated with upstream control equipment, such as a scrubber, multiple pollutants can be removed. At a major hazardous waste facility with over 2,000 waste streams, an APC system featuring a quench, a scrubber followed by a two stage tubular, wet ESP achieved 99.9% removal of all pollutants—acid gases, dioxins/ furans, PM<sub>2.5</sub>, metals and near 80% for mercury.

Parameter	Units	Average	Removal %	MACT Limit
Particulate	mg/dscm, 7% O <sub>2</sub>	5.5 - 6.9	99.95%	34 (0.015)
	(gr/dscf, 7% O <sub>2</sub> )	(0.0024 - 0.0030)		
HCl / Cl <sub>2</sub>	ppmdv, 7% O <sub>2</sub>	3.0 - 4.8	99.95%	77
Chromium	µg/dscm, 7% O <sub>2</sub>	40 - 43	99.97%	97
Lead	µg/dscm, 7% O <sub>2</sub>	3.6 - 3.9	99.95%	240
Mercury	µg/dscm, 7% O <sub>2</sub>	1.9 - 5.0*	78%	130
Dioxins/Furans	ng TEQ/dscm, 7% O <sub>2</sub>	<0.013 - <0.089 <sup>5</sup>	99.9%	0.4

At a mining operation where SO<sub>3</sub> mist (H<sub>2</sub>SO<sub>4</sub>) and PM<sub>2.5</sub> contributed to high opacity levels, a combined scrubber/wet ESP system achieved 99%+ on SO<sub>2</sub> removal and zero opacity from the stack. **A plume once seen from forty miles away and a visible eyesore to the local environment was eliminated.**

(Wet Electrostatic Precipitation Demonstrating Promise for Fine Particulate Control, Power Engineering Magazine, January 2001)

In 2005 I toured a plant with one of these FGD-WESP towers, and the results were beyond my wildest imaginations. It really did have zero opacity as I looked through the windows of the wet ESP. The by-product is ammonia sulphate fertilizer, a very saleable product.

The company, Powerspan, who developed this system called ECO, has been contracted by the US Department of Energy to develop the department's patented CO<sub>2</sub> separation system. It has proven successful and is going to commercial deployment in Texas, where the CO<sub>2</sub> will be sequestered in an oil field. And this after a mere two years of development.

The system is integrated into the ECO system and is called ECO<sub>2</sub>. The system uses ammonia for both the scrubber and the carbon capture.

The following page is a picture of the plant I toured.



Stéphane Dion, the federal Liberal leader and former environment minister, has promoted solving greenhouse gas problems with technology, even developing the technology and exporting it to the world.

Al Gore in his documentary, *An Inconvenient Truth*, never mentioned closing down coal plants, but he did point to carbon capture and said, “Watch this one.”

Sandra Pupatello, Ontario Minister of Economic Development and Trade, visited Canada’s first supercritical boiler coal plant, Genesee 3, and was impressed. This plant has 24% lower CO<sub>2</sub> emissions than the plant it replaced.

Germany is not closing its coal plants. They are building more efficient ones while maximizing renewable energy. They produce 6% of their power with wind. The newest coal unit at the Niederaussem plant has a thermal efficiency of 43%, as opposed to older units with 31%-36% resulting in sharply lower CO<sub>2</sub> emissions.

In North Dakota, a U.S. Department of Energy-funded coal drying system, which utilizes the surplus heat from the coal plant to dry it before burning it, was so successful the company is deploying it on the entire plant. Lignite coal used at this plant can have up to 40% moisture. Once the water is removed, it takes less coal to produce the same amount of power resulting in lower emissions. Atikokan could readily benefit from this technology, as it uses Lignite.

A company called CO<sub>2</sub> Solution has perfected a concept developed at the University of Laval that uses a biological catalyst to isolate the CO<sub>2</sub> and immobilize it in an inert solid. It has been successfully field tested at a garbage incinerator.

One of the most exciting technologies being developed employs algae to absorb CO<sub>2</sub>. It is then used to make biofuels. (See *Green Dreams* in the October 2007 issue of *National Geographic* and [www.greenfuelonline.com/press.html](http://www.greenfuelonline.com/press.html) )

I hope you consider this report carefully.

Will you take the course of action suggested by people like Stéphane Dion and keep our coal plants open, or will it be another day, another plant closing?