Advisory Services
Climate Change

the forecast*

Evolving Canadian Business Regulations and Incentives Regarding Climate Change

Issue 2

*connectedthinking

PRICEWATERHOUSECOOPERS

Evolving Canadian Business Regulations and Incentives Regarding Climate Change

On April 24, 2007 the Canadian Federal Government released its long awaited Regulatory Framework for Air Emissions which sets out how the Federal Government intends to manage greenhouse gas (GHG) and other air pollutant emissions between now and the year 2020. The Framework serves as the foundation for more detailed air emission regulations starting in early 2008.

One key component of this new Framework is a set of intensity-based reduction targets for GHG, which is a departure from the absolute reduction targets required under the Kyoto Protocol. While political opponents and environmental groups have criticized the Framework as not "going far enough", response by industry has been generally favorable.

Industries affected by the new regulations include:

- Thermal Electricity;
- Oil and Gas;
- Forestry Products;
- Smelting and Refining;
- Iron and Steel;
- Cement, Lime and Chemicals Production; and
- Mining Sectors

Framework Highlights:

- Emission intensity targets are set for individual facilities, not company-wide aggregated emissions.
- Facilities with GHG emissions over 100,000 tonnes of Carbon dioxide equivalent ("CO_2e") will be required to submit their GHG emissions and production data to the Government for the year 2006. These figures will then be used to calculate the amount of GHG per unit production for each facility.
- Existing industrial facilities (in operation prior to 2004) will be required to achieve an 18 per cent reduction from 2006 base year GHG emission intensity by 2010 and a 2 per cent annual reduction thereafter.
- New industrial facilities (first year of operation is 2004 or later) will have a three year grace period but in their fourth year of operation they must begin achieving 2 per cent reduction in emission intensity per year.
- Companies are expected to pursue GHG emission reductions through energy efficiency measures, improved energy management systems, deployment of carbon capture and storage initiatives or other emission reduction technologies. However, companies may also:
  - participate in inter-firm emission trading;
  - purchase verified offsets from other Canadian parties;
  - purchase certain types of Clean Development Mechanism credits;
  - claim "credit for early action" for verified emission reductions that occurred since 1992; and
  - contribute to a climate change technology fund at a rate of $15 per tonne between 2010 and 2012 and $20 per tonne starting in 2013.
- The federal government is exploring how best to expand the emissions trading system internationally, in particular with the US and Mexico.

The Framework outlines its future regulations for other air pollutants, the transportation industry, including fuel consumption requirements of motor vehicles, consumer and commercial products, including phasing out incandescent light bulbs, and indoor air quality. These areas are not addressed in this issue of *The Forecast*.

Implications for Industry

The big question for companies required to meet the proposed regulations is "what is this going to cost?" The answer is not simple as it depends on many key factors, not the least of which is the technology options available to the facility to achieve reduction targets through in-house actions, such as energy efficiency improvements.

However, it is possible to derive a general estimate of what it would likely cost an existing facility to meet the regulatory reductions in emissions intensity by:

- establishing the 2006 base year emissions in tonnes CO_2e;
- estimating the projected average increase in production at the facility per year;
- assuming an average annual inflation rate of 2.2 per cent;
- assuming the cost of credits will be 15 per cent above technology fund purchases; and
- assuming the cost of internal emission reduction measures is $15/tonne CO_2e.

Using the above information, we can estimate the total cost for a generic facility to comply with the regulatory emission reductions for the period 2010 to 2020 through internal emission reduction measures ("Internal reducts.") and through a combination of Technology Fund contributions and offsets purchases ("Offsets"). The cost estimates (000's dollars) are shown in the Table 1 on the next page for facilities with 2006 base year emissions ranging from 100,000 to 2.5 million tonnes CO_2e, and for average annual production increases ranging from 0 per cent to 10 per cent.

Table 1: Estimated total cost of compliance for the period 2010 to 2020

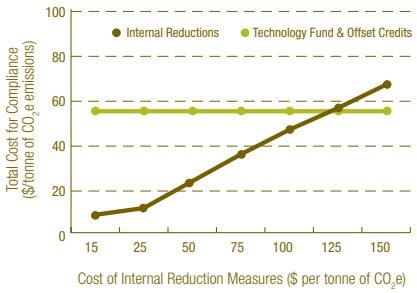
	Average annual increase in production											
	0%		2%		4%		6%		8%		10%	
2006 baseline emmissions (tonnes CO_2e)	Internal reducts.	Offsets	Internal reducts.	Offsets	Internal reducts.	Offsets	Internal reducts.	Offsets	Internal reducts.	Offsets	Internal reducts.	Offsets
100,000	$ 504	$ 4,522	$ 665	$ 5,485	$ 873	$ 6,652	$ 1,140	$ 8,063	$ 1,481	$ 9,768	$ 1,914	$ 11,828
250,000	1,260	11,306	1,663	13,713	2,182	16,629	2,849	20,157	3,702	24.421	4,786	29,569
500,000	2,521	22,611	3,326	27,426	4,365	33,258	5,699	40,314	7,404	48,842	9,572	59,138
750,000	3,781	33,917	4,989	41,140	6,547	49,887	8,548	60,471	11,105	73,264	14,358	88,707
1,000,000	5,041	45,222	6,652	54,853	8,730	66,516	11,398	80,628	14,807	97,685	19,144	118,276
1,250,000	6,302	56,528	8,315	68,566	10,912	83,145	14,247	100,785	18,509	122,106	23,930	147,845
1,500,000	7,562	67,834	9,978	82,279	13,095	99,774	17,097	120,942	22,211	146,527	28,716	177,414
1,750,000	8,822	79,139	11,641	95,992	15,277	116,403	19,946	141,100	25,913	170,948	33,502	206,982
2,000,000	10,083	90,445	13,304	109,705	17,460	133,032	22,796	161,257	29,614	195,370	38,289	236,551
2,250,000	11,343	101,750	14,967	123,419	19,642	149,661	25,645	181,414	33,316	219.791	43,075	266,120
2,500,000	12,603	113,056	16,630	137,132	21,825	166,291	28,495	201,571	37,018	244,212	47,861	295,689

Table 1 indicates that the total cost to comply with the regulation is less if the facility takes internal emission reduction measures rather than utilizing only fund contributions and offsets. This is due to emission reduction benefits that accrue over the entire 10 year period, whereas the credits must be purchased in full annually. These results suggest that there is a significant benefit in utilizing internal emission reduction measures in the initial year(s) as long as it can be done for a reasonable cost.

Another important question is at what point is it more cost effective to use a combination of Technology Fund contributions and offsets purchases than to implement internal reduction measures? If one uses the same assumptions as before, and assumes a production growth the same as inflation, the following breakpoint analysis curve can be prepared.

Using this scenario, it is more financially viable to invest in internal measures rather than in the technology fund and purchasing credits.

Breakpoint Analysis



The above analysis assumes that the internal reduction measures meet the compliance targets and that the facility has no credits it can sell. It also assumes that the facility will continue operating until 2020 and that the benefits of the internal reduction measures stop at 2020.

Conclusion

Our initial analysis suggests that, in general, it will be more cost effective for facilities to meet the emission intensity reduction targets through internal emission reduction measures rather than utilizing a combination of technology fund contributions and offset purchases. However, there may be times when the latter is the more economic option, such as if the cost of the internal reductions starts to reach $100 per tonne CO_2e. This breakpoint will change if the cost of offsets increases substantially above $15/tonne.

If you would like to discuss the potential cost implications of climate change regulation for your facilities, or any other climate change matters, please don't hesitate to contact us. We would be happy to be of assistance.

Contacts

PricewaterhouseCoopers' Climate Change practice provides services in strategic assessment of climate change risks and opportunities; due diligence for greenhouse gas credits; green technology feasibility assessments; climate change project documentation development for credit application; corporate inventories and greenhouse gas data management systems; and validation and verification of corporate inventories and project emission reductions or removal enhancements. PwC had a key role in developing the ISO 14064 standard on greenhouse gases and the GHGProtocol. Our practice extends to a variety of industries including the electricity, oil and gas, mining, forestry, chemical processing and telecommunications fields at a local, national and international level.

We anticipate more Canadian and international developments related to climate change in the months ahead. Our goal is to provide you with timely synopses and analyses of these developments as they occur.

To subscribe to future issues of *The Forecast,* or to obtain information on PricewaterhouseCoopers' Climate Change Services, please contact:

Calgary

Dr. Christine Schuh
Climate Change Service Leader
403 509 7517
christine.schuh@ca.pwc.com

Dr. Mel Wilson
403 509 7338
mel.j.wilson@ca.pwc.com

Alistair Bryden
403 509 7354
alistair.e.bryden@ca.pwc.com

Edmonton

Ray Luchkow
780 441 6846
ray.s.luchkow@ca.pwc.com

Dave Thompson
780 441 6939
dave.a.thompson@ca.pwc.com

Montreal

Caroline Emond
514 205 5103
caroline.emond@ca.pwc.com

Janice Noronha
514 205 5693
janice.noronha@ca.pwc.com

Toronto

Mike Harris
416 941 8256
mike.harris@ca.pwc.com

Peter Johnson
416 815 5066
peter.j.johnson@ca.pwc.com

Vancouver

Bruce McIntyre
604 806 7595
bruce.mcintyre@ca.pwc.com

John Webster
604 806 7726
john.webster@ca.pwc.com

Alastair Nimmons
604 806 7620
alastair.nimmons@ca.pwc.com

www.pwc.com/ca