

## Solving Capture Cost Dilemma Key To Large-Scale CCS

Daily Oil Bulletin, Friday, June 13, 2008

Although carbon capture and storage (CCS) gets top billing in Alberta's climate change strategy and has ample space on the marquee of the federal plan, the major obstacle to large-scale deployment of the technology remains unchanged - the economics are prohibitive.

And despite the urgency to enact CCS in order to meet new and pending federal and provincial greenhouse gas (GHG) reduction requirements, the need to develop technology to reduce the costs - especially for the money pit that is the storage component of the process - remains a high priority.

"There is currently a lot of focus on next generation capture technologies ... to do the capture more efficiently," Executive-Director of the Alberta Energy Research Institute (AERI) Eddy Isaacs told a Global Petroleum Show conference Wednesday.

"I think that needs to happen because the current cost of capture is far too high for practical application (of CCS). In terms of CCS, I think the focus has to be increased efficiency of capture systems."

In essence, CCS is still at the project development stage in Alberta and has yet to burst out on a scale that is needed to reduce industrial GHG emissions to any significant degree. And like Isaacs, Gerry Protti, vice-president of corporate relations for EnCana Corporation, said that the economic nut of capture still has to be cracked for that to occur.

"While it's technically feasible to capture the CO<sub>2</sub>, the numbers associated with (it) ... make it a hugely uneconomic proposition," he said.

"The work on the technology side is around finding more economic ways to capture the CO<sub>2</sub>. Once you have, the transportation is relatively straight forward."

Stephen Kaufman, a Suncor Energy Inc. executive who is also chairman of the Integrated Carbon Dioxide Network, or ICO<sub>2</sub>N for short, said the substantial initial costs of CCS as compared to those associated with other legislated compliance options make it a tough sell.

"There are some significant challenges for the deployment of CCS, the first of those being the investment risk," he said.

"Unlike some other strategies, for example buying offsets or paying money into a technology fund ... CCS would require large upfront capital investment."

To highlight his point, Kaufman offered a scenario that could well be playing out in the board rooms of many companies.

"It's one thing to go to your senior leaders of your company and say 'I've got an idea that can reduce our emissions and it's going to cost \$40 per tonne for CO<sub>2</sub>, so can you please write a cheque for a year or two?' They might actually say yes," he said.

"However, with CCS what we have to do is go to them and say 'can you write a cheque for \$600 million or \$700 million right now for a plant that's going to take two or three years to build and then when it's running we're still going to have another \$25 to \$30 a tonne in costs to operate it.'"

And as things stand now, that request is likely to get a thumbs down reaction from the top brass.

"That becomes a much more risky investment than things that are done on an ongoing basis like the purchase of offsets," Kaufman said.

"Economics, of course, is the clear driver of all these things and there is an economic gap in terms of CCS costs ... and that poses a large challenge for companies in terms of moving forward."

ICO<sub>2</sub>N has established cost estimates for CCS that are "in the range of \$80 per tonne," Kaufman noted, with capture costs accounting for between 80% to 85% of the tab.

ConocoPhillips Canada President Kevin Meyers agreed that cost is a challenge in proceeding with CCS, but included it as only one of the hurdles that still must be overcome for the technology to truly take hold.

"There are many challenges associated with CCS, the foremost being its cost, energy intensity and the lack of regulatory and legal frameworks," he said.

"As an industry, with the support of government, we need to work to make CCS economically viable and to develop the regulations necessary for its application."

Given the pull that government has anointed CCS in its efforts to turn over a green leaf it's no wonder that time is of the essence. Soheil Asgarpour, president of the Petroleum Technology Alliance Canada (PTAC), says it's imperative to ratchet up efforts, despite the challenges that may exist.

"We need to move ahead with some of these projects to prove the technology and get it to a commercial stage," he said.

"For that to happen I think ... it's very important that we get help from industry and government to move projects as fast as we can toward commercialization."

The Alberta plan, aimed at reducing total GHGs by about 200 megatonnes by 2050, equal to about a 14% reduction below 2005 levels, focuses on intensity-based reductions and a belief technologies like CCS can produce most of the necessary reductions.

In its climate change plan, the province has pegged CCS as having the potential to reduce projected emissions in the province by 70% – or 139 million

tonnes -- by 2050.

Ottawa has pledged in its plan, called Turning the Corner, to cut emissions by 20% below 2006 levels by 2020 and by 60% by 2050. The federal plan insists that all oilsands upgraders and in situ plants that come into operation in 2012 or after will be required to meet targets based on the use of CCS by 2018.

Alberta Premier Ed Stelmach likened the current status of CCS to the early days of oilsands development.

"Some of the challenges ... are similar to those the early oilsands' pioneers faced," he said. "Capturing CO<sub>2</sub> emissions from industrial sources and compressing them for storage is expensive and it's never been done before on the scale that we're contemplating."

But through the same ingenuity that allowed the oilsands to become a global force in hydrocarbon production, Stelmach believes Alberta will take a lead role in CCS implementation.

"We're taking the next step forward into CCS technology. This must become a national priority because it's the best technology to significantly reduce GHG emissions in Canada," he said. "Like the oilsands, we know the potential is there."

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