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Canada drips with oil, but it's tough to get at

By James Cox, USA TODAY

FORT McMURRAY, Alberta Any serious effort to ease America's addiction to Middle East oil starts near this Alberta boomtown cut out of Canada's great boreal forest.

By conservative estimates, the underground deposits around Fort McMurray hold 1.6 trillion — with a "t" — barrels of oil, making them the largest lode of hydrocarbons on Earth. Up to 330 billion barrels of the crude here in Canada's oil sands region are recoverable, geologists say. Saudi Arabia, by contrast, possesses 262 billion barrels of proven reserves.

With oil prices bounding to nearly $50 a barrel this summer, both the Bush and Kerry campaigns have been talking up the Canadian option. Both extol a U.S. energy policy that draws more supply from friendly, familiar Canada and less from the volatile Middle East.

Despite the region's promise, not even the most giddy Canadian oil executive is ready to declare that the sands will break the USA's reliance on Middle East supplies anytime soon. Since 1967, the industry has spent $21 billion opening mines, drilling wells and constructing processing plants in the oil sands. Over the next decade, nearly two dozen companies plan to spend $24 billion more to expand existing operations or open new ones. Fresh investment could rise to as much as $40 billion by 2025, an amount equivalent to the combined spending of American companies in China over the past 25 years.

Yet even with all the money flowing in, oil from the sands "helps you on the margins. That's about it," says Allan Markin, chairman of Canadian Natural Resources, which is spending $6.4 billion on a project at the northern edge of the sands region.

Current production in the sands is about 1 million barrels a day, about half of which goes to the USA by pipeline. Production is forecast to rise to 2 million barrels a day by 2010 and 3 million a day by 2015. But the USA now guzzles more than 20 million barrels a day, about 60% of which is imported. Daily U.S. demand is projected to climb to 23 million barrels by 2010, even as domestic production falls.

Obstacles to development

So why not squeeze more from the oil sands? Tantalizing as the region is, it poses

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any number of obstacles. Technological, financial and environmental hurdles stand in the way of more aggressive exploitation.

Geologists joke that drawing a barrel of oil from the Saudi desert is as easy as poking a straw in the ground. The Saudis pump oil at a cost to them of $2 to $3 a barrel and comfortably make money even if global futures prices crash to $10 a barrel.

Not so in the molasses-like sands of Alberta. Here, costs range from $8.50 to $12 a barrel, and getting that barrel requires substantial manpower, technology and energy. After adding capital costs, shipping and depreciation, sands producers need per-barrel global prices above the $18-to-$23 level.

About 20% of the oil sands deposits can be surface mined. At its Steepbank and Millennium mines 20 miles north of Fort McMurray, Suncor uses bulldozers to scrape off the top layer of soil, silt, clay and rock. Three-story-high shovels gouge out buckets of oil sand and load them on gigantic trucks that can handle up to 400 tons apiece. The trucks, as big as generous suburban homes, shuttle 24 hours a day from the shovels to crushers, where they dump their loads. The rule of thumb is that two tons of sand yield one barrel of oil.

Eighty percent of the crude locked in the sands is too deep to surface mine.

So most new investment is aimed at extracting it by drilling wells to inject steam at high pressure, which separates and thins the tar-like bitumen so it can be pulled to the surface. It's a method that requires large quantities of water and natural gas.

In both cases, getting the bitumen is only the start. While it looks like thick oil, bitumen has a more complex molecular structure. It contains too much carbon and too little hydrogen, and must go through a costly upgrading process. The end product is so-called synthetic oil that can be moved through pipelines and refined into gasoline and other products.

The sands process is difficult and costly enough that industry reserve estimates vary wildly on Canada. Several authoritative guides refuse to include any oil from the sands in the country's reserve total. Others pare the recoverable figure from 300 billion barrels or more to 180 billion barrels or less.

A freak of geology

The region is a freak geologic formation created by the remnants of marine life left behind by an ancient inland sea that once covered much of Alberta. Venezuela has a similar oil sands region.

In 1719, a Cree Indian presented a sample of bitumen to a white explorer with the Hudson Bay Company. But for the longest time, the tar-like goo that pooled along the banks of the Athabasca River didn't seem good for much. The Cree and Chipewyan used it to fill smudge pots and ward off mosquitoes, or warmed it into a gum to waterproof their birch bark canoes. But the engineers and fortune seekers who played with it — boiling, spinning and treating it with chemicals — succeeded mostly in blowing themselves up or going bankrupt, or both.

That changed in 1967 when Suncor began extracting the first commercially viable oil from the sands. Still, it wasn't until the early 1990s that early pioneers Suncor and Syncrude developed the technology that enabled them to make steady returns capturing, processing and shipping sands oil. Even then, they saw their costs spiral out of control: Syncrude's $3.5 billion three-stage project ultimately cost $7 billion.

Today, projects "are being built as fast as they can," says Randy Ollenberger, energy analyst at BMO Nesbitt Burns in Calgary.

Costs remain a huge concern. Fort McMurray is crisp and beautiful this time of year, but remote, harsh and unforgiving much of the rest of the calendar. Temperatures plunge to 40 degrees below zero. And many oil leases in the northern sands areas are beyond the reach of paved roads, some accessible by "winter" roads over tundra, some only by helicopter.

At the northern edge of the Athabasca region, Canadian Natural Resources has scrapped the idea of trying to hire scarce pipe fitters, welders and carpenters locally or even import them from other parts of Canada. Instead, it wants to build an airport at its plant site, flying workers into job camps on 200-seat 737s. Much of the labor could come from Venezuela, Turkey, India, China, the Philippines, Hungary and South Africa, the company says.

Environmental concerns

Sands developers are under pressure to find ways to use less water and natural gas. They also are encouraged by the federal government in Ottawa to hire more workers from local tribes — referred to by Canadians as First Nations — and to buy more supplies from tribal businesses.

In addition, the oil companies work under strict environmental guidelines requiring that they run relatively eco-friendly operations and reclaim land as they finish mining. At its mine sites, Suncor has planted 3 million trees and built greenways to accommodate the bears, wolves, moose, caribous, deer and beavers. The company periodically fires off explosive charges at collection ponds to keep birds from drinking or nesting there.

One concern is that the Kyoto Protocol agreement, intended to lower global greenhouse-gas emissions, could hamper new development in the sands. "The question they have about Kyoto is, where does it end? Kyoto in and of itself isn't a big deal. It might mean another 25 cents a barrel in operating costs. But these investments are made on 40-year assumptions, vs. the standard industry investment horizon of three to five years. What does the offspring of Kyoto look like?" Ollenberger says.

Labor shortages and high costs are evident in Fort McMurray, a distant 18th-century trading post that has become a bustling town of 58,000. Thirty years ago, rough saloons like the Oil Can and the Peter Pond Pub drew far-from-home Newfoundlanders, who came to work in the sands and never left. Today, housing is in short supply, and median prices for single-family homes are close to $240,000, among the country's highest. Fast-food outlets such as Canada's ubiquitous coffee-and-doughnuts chain Tim Hortons have had trouble attracting and keeping workers.

Despite high costs and other problems, oil from the sands comes with little political risk. No Arab oil sheiks, no guerrilla insurgencies, no Russian autocrats, no African strongmen, no bribe-seeking bureaucrats.

"It's one of the few sources that's not in a ridiculously problematic zone," says Seth Kleinman, an energy markets specialist at PFC Energy, a Washington consulting firm.

The sands also have a different lifespan and payout than traditional oil wells. Sands companies expect a 15% to 18% annual return on projects that have a life of 35 to 40 years. A typical oil well delivers two or three times the returns, but production and returns peak in three years and drop sharply.

Suncor CEO Rick George says there's enough promising technology on the way to solve some of the environmental problems and lower costs. Natural gas use, for instance, will drop if companies can fuel their operations with the petroleum coke that is a byproduct of the bitumen-upgrading process. He's optimistic that total sands production can get to 5 million barrels a day in 15 years.

Oil prices haven't been above $40 a barrel long enough for Canadian sands companies to consider accelerating their expansion plans.

"They tend to be reasonably conservative players investing in long-term strategic projects" involving new technology, says Scott Mitchell, lead analyst for North America at Wood Mackenzie, an energy consultancy in Edinburgh, Scotland. "A lot of these companies are still feeling their way."

Whether they speed up or not, it's folly to view the sands as some kind of magic bullet that will eliminate America's dependence on OPEC and the Middle East, says Mike Rodgers, senior director at PFC Energy.

"You hear a lot of talk about gaining independence from Middle East oil," Rodgers says. "That can't happen as long as demand keeps growing. The only way to truly gain independence from Middle East oil is for us to do something about demand growth and develop other energy sources."

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