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## Alberta's Earth-shaking ambitions



Northern Alberta's vast oil sands are primed for an immense boom, **PATRICK BRETHOUR** reports. The repercussions of each 100-tonne scoop of bitumen sand dropped into two-storey-high dump trucks will be felt across Canada for decades

FORT McMURRAY, ALTA.

Two storeys up, in the seat of one of the world's biggest dump trucks, Chris O'Toole can see the full sweep of Suncor Energy Inc.'s enormous oil sands mine stretching out on all sides.

The open-pit mine looks like a wound left behind by some gigantic meteor, a gash in the Earth that drops dozens of metres below the surface of the surrounding muskeg. But the 32-year-old Newfoundland native sees something else as he looks over the acres of exposed, oil-soaked land: Decades of high-paying work for him and, eventually, for his toddler son. "There's lots here for our kids' kids' kids," he says.

The truck that Mr. O'Toole drives, the Caterpillar 797, is as tall as a two-storey house, with a blind spot in front of him so large it can swallow a full-size pickup. It can haul 360 tonnes at a time, enough to fill nearly 4,000 children's sandboxes. Even this enormous vehicle, however, seems tiny when placed against the expanse of Suncor's Millennium mine. "Everything out here is big," Mr. O'Toole says.

The trucks are big, the mine is bigger, and the ambitions of Suncor and its competitors are bigger still.

Over the past three decades, \$34-billion has been spent to create an industry that produces one million barrels of oil a day from the oil sands, which were once useful only for waterproofing canoes. Impressive as that figure might seem, it is insignificant compared to what is on the way: \$87-billion in investment over the next decade to push output past two million barrels a day — putting this region of northern Alberta on par with major OPEC producers.

The production could last for centuries at current rates — and

much longer if economics and technology combine to allow the exploitation of the 2.5 trillion barrels of oil believed to be trapped in the bitumen sands, an ultimate prize that is eight times bigger than the reserves of Saudi Arabia.

The capital spending spree is unprecedented in modern Canada, and dwarfs any other industrial project in the nation. The tens of billions being spent in the oil sands would pay for the Terminal 1 expansion at Toronto's Pearson International Airport 24 times over. Single projects in Fort McMurray are the equal of the massive hydroelectric project planned to span the Lower Churchill River in Labrador; taken together, all of the oil sands investment could build those two dams, and 16 others.

**'People are starting to recognize how enormous the oil sands really are.'**

All told, Fort McMurray — a former salt-mine town — is home to one of the greatest concentrations of investment on the planet.

For the head of Suncor's oil sands operations, the next wave of expansion is more than just an extension of the current industry. It is a second era in the story of the oil sands, one in which the sector is no longer stalked by the fear of low oil prices, and one in which the massive bitumen resources in the Fort McMurray region play a key role in slaking North America's thirst for energy. "The oil sands have come of age," says executive vice-president Steven Williams, sitting in his office at the heart of Suncor's upgrading operations.

The shape of the new era has become increasingly clear over the

past two months, as Suncor and others have unveiled plans for new megaprojects. Canadian Natural Resources Ltd. began with the formal launch of its Horizon project in early February, followed in rapid order by Petro-Canada's investment in the Fort Hills effort in early March, Suncor's Voyageur project two weeks later and the news in late March that the partners in the Athabasca Oil Sands Project are mulling a \$17-billion expansion.

The heat of that growth will be felt most directly in Fort McMurray, which is already struggling with the side-effects of current projects on its labour force and housing prices. But the economic ripples of this second wave of growth will be felt across Canada for years to come, given the megaprojects' immense hunger for labour and material. Suncor's Millennium project soaked up 21 million construction hours, three million engineering hours, 150,000 cubic metres of concrete and nine million feet of cable. At Syncrude Canada Ltd., the upgrader now nearing completion is 23 storeys tall — rivaling the office towers of major cities in height — and employed 6,000 skilled workers at its peak.

The projects on the way are on an even grander scale, with Canadian Natural's Horizon production twice as large as Millennium's, and three times as costly.

At the height of activity later this decade, nearly 30,000 trades people will be needed in northern Alberta, with thousands more needed for permanent work on the mines, as well as the wells used for bitumen deposits too deep in the earth to dig up. The industry estimates 80,000 people will be put to work directly and indirectly through to 2014 while, nationwide, a total of 240,000 jobs will depend on the boom taking shape in Fort McMurray.



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Newfoundland native Chris O'Toole has a bird's eye view of the bitumen mine at the helm of a two-storey-high dump truck at Suncor's oil sands operations north of Fort McMurray, Alta.

The numbers are astonishingly large, but even so they cannot convey the immensity of an oil sands mine. "You talk about it, you see the pictures, but until you actually get out there alongside and look at what one of those trucks look like, and what it means to move a million tonnes, it's just inconceivable," Mr. Williams says. "There's no way to put a normal measurement around it."

To enter a bitumen mine is to abandon all sense of scale, and step into a world composed entirely of dirt and dust. The roads and ramps that form the sinews of the mine are all constructed from the surrounding oil sands, and the vehicles — and workers — that travel them end up coated in the stuff.

The Caterpillar trucks that Suncor uses are some of the biggest machines on the planet, but seen from across the Millennium mine, they appear no larger than a child's toy. But that is only a trick of distance; sit in the cockpit of one and full-size pickups on the road below shrink to insignificance. Smaller trucks are equipped with orange caution flags mounted on aerials to prevent them from being crushed, unseen, by the massive Caterpillars.

As big as the trucks are, they shudder under the weight of 100 tonnes of sand falling from the giant shovels that claw out the bitumen. As that load drops into the back of the dump truck, the reason for the pneumatic shocks on the driver's seats becomes all too clear. The cockpit shakes under the impact, pitching like an airplane caught in a bad patch of turbulence. Three more loads and the truck moves out, picking up speed slowly under its burden.

The fully loaded vehicles are so heavy that, when the spring thaw comes in April, their weight actually pushes the road out ahead of them, creating a rubbery ripple from the water trapped in the still-oily soil. These outsized vehicles are each part of a delicate choreography, where the time of each trip is monitored through global positioning systems. Each load is part of a careful calculation designed to balance the quality of bitumen ore fed into the upgrading process, where two tonnes of sand will be turned into a single barrel of crude oil.

Then the thought strikes: That two-tonne ratio means that, in every day of normal operation, nearly half a million tonnes of sands are

hauled off to Suncor's upgrader, load by load. That figure, however large, accounts for just one-quarter of the sector's current output. And that production is set to double in the next five years, and triple by the end of the next decade, during a time that oil prices will be on the rise as supplies of conventional crude across the world begin to wither.

That fact is increasingly turning heads internationally, says energy industry expert Bob Dunbar, who recently flew to Asia to brief a company there on the spending boom in, and potential of, Alberta's bitumen resource. "People are starting to recognize how enormous the oil sands really are," he says.

From his office in the heart of Suncor's operations, Mr. Williams can see the sweep of the oil sands' future in front of him, a path that will take his company past half a million barrels a day of production by the early part of the next decade. He, for one, is convinced that the sector's momentum is unstoppable. The billions will be spent, and from the scrub trees and swamp, his industry will build Canada into an oil giant. "It's going to happen, you can feel the region heating up."