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Bracing for the boom

With Range Petroleum Corp. leading the multi-million-dollar charge, natural gas drilling levels are on the upswing in Southwestern Ontario. A combination of geography and geology is spurring investment.

By Joe Paraskevas
Free Press Business Reporter

Southwestern Ontario's econo- my is being energized by a growing number of companies sed to tap potentially rich natural supplies.

ambton County — where oil was it discovered in North America in 8 — is at the heart of the heated ac- n once again.

Many companies with a presence in uthwestern Ontario have high es for their short-term drilling spects.

After years of research, land acqui- ons and seismic testing, they hope egin drawing out the region's sup- s of natural gas.

ohn Cowan, vice-president and ef operating officer of London- ed CanEnerco Ltd., is excited ut the prospects.

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t barely four years old, CanEnerco ne of the youngest companies ex- ing the region. It is dwarfed by gi- s such as Vancouver's Westcoast ergy Inc, the parent company of tham-based Union Gas Ltd., and gary-based Talisman Energy Inc.

ut CanEnerco is competitive be- se it is focused on a specific mar- selling to users such as apartment plexes.

he company that has leased the est amount of land in the region — e than 55,000 hectares, mostly in mbton County, but also in Michi- — is Range Petroleum Corp.

has offices in Vancouver and Cal- y, but has come east in the last few rs, investing about $7.5 million in earch of natural gas.

he bid may begin to pay off for the mpany, which already has drilled successful wells in Enniskillen wnship.

uring the next six months, Range and partners Texas-based Manti Resources Inc. and Direct Energy Marketing Ltd. of Oakville plan to drill into five to 10 sites. It began its operations near Sarnia early this month.

"If it's successful and is the size it appears to be on seismic surveys, it would almost double the size of the company in terms of market capitalization," says Craig Steinke, Range's chairperson and chief executive.

Range has identified 465 prospective natural gas sites in Southwestern Ontario and Steinke says the value of the company's involvement could reach $500 million.

"This is an incredible amount of information that's coming in from the field."

Craig Steinke, Range Petroleum chairperson and chief executive

"Our focus has become Eastern Canada because we feel there's more opportunity," says Steinke.

But despite the abundance of sites, finding them wasn't easy. Steinke and Range's manager of exploration, Londoner Scott Hadley, liken the practice of searching for deposits to trying to find an office tower below ground: A company could be looking all around a gas-bearing pinnacle reef, but not find it because it is a vertical, rather than horizontal, formation.

Range and others have more in mind than extracting what they can. They will also reinject them with gas from Western Canada.

Storing gas will be important for the region — a view that takes into consideration geography as much as geology.

The area sits at the crossroads of pipelines carrying natural gas from Alberta, British Columbia and the western United States to the growing markets along the eastern seaboard.

Several transcontinental gas pipelines intersect in Dawn Township, at a facility called the Dawn Marketing Hub. More pipelines are expected to open this year in anticipation of a boom in future markets.

"Dawn is actually expected to be a real key hub," says Dave Mafitt, president of Phoenix Energy Marketing Consultants Inc. of Calgary. "One of the characteristics of a hub is gas storage. They can temporarily reinject it into the ground and move it to the market when it's required and when prices are higher."

In a belt that follows the Lake Huron shore — from southeast Michigan to Bruce County — oil and natural gas have collected in pinnacle reefs. Companies often use depleted reefs to store gas until demand rises, as it does in winter, supplementing the value of the region's natural capacity.

"It's probably pretty small, compared to Alberta and other areas of the U.S.," London-based geologist Cy Hadley says of the region's natural gas supply. "But we're so close to the populated areas. When you need that gas on a cold night, you've got these reservoirs down there and you just pull it from those."

Lambton is part of the Michigan basin, one of four regions in North America — the others are in Western Canada, the southern U.S. and the Gulf of Mexico — with abundant supplies of natural gas.

Three hundred million years ago, the Michigan basin was a shallow inland sea — about 700 metres deep — and in it grew 100-metre-high reefs of limestone and dolomite. The pinnacle reefs were made up of organic matter, the product of the natural decomposition of marine organisms.

Petroleum and natural gas were the products of a process that took millions of years, cooking by the heat of the Earth itself and the pressure of surrounding rock. Methane gas — what's known as natural gas — was the last product left by the breakdown of the organic matter. The pressure generated by the source rock pushed the petroleum and gas to the pinnacle reefs.

"Basically, they're almost like a sponge," Cam Tsujita, a paleontologist in the Department of Earth Sciences at the University of Western Ontario, says of the reefs. "They have a lot of holes that allow the petroleum to migrate there."

The first reef was discovered almost by accident in the 1920s. Imperial Oil became one of the largest companies to explore the potential of the reefs, but Imperial and its competitors had other goals than Range does today.

"What we were after was oil," says Steinke.

The companies drew the gas from reefs and then used the formations for storage of surplus gas. But many reefs remained untapped because of the difficulty in locating them.

"In the next six to 12 months, it's a pivotal time for our oil and gas patch here. A lot of people have invested heavily, so now it's time to open the package."

John Cowan, vice-president and chief operating officer of CanEnerco Ltd.

Though the reefs can be as much as 30 hectares wide and 90 metres thick and though the Michigan basin is shallow compared to the one in Alberta where companies must search almost 10 times deeper — to about 5,000 metres — to find them, two-dimensional seismic technology was ineffective in locating the formations.

The procedure is difficult because the reefs have such steep slopes.

Old technology has a 10-per-cent to 20-per-cent chance of locating the highest point in a reef.

Steinke says in the last few years, Range has done more than others to locate undiscovered pinnacle reefs by using three-dimensional seismic tests.

"We're bringing leading-edge 3-D seismic technology to this area," Steinke adds.

Cy Hadley — Scott's father — runs London-based Hadley Resources Ltd. He was one reason Range decided to explore the Michigan basin. The elder Hadley knew the geological prospects and convinced Range to put up the money for exploration and drilling.

Seismic testing involves setting dynamite at spots in a grid pattern about six metres below the surface, detonating it and measuring the time the energy from the explosions takes to be transferred through the rock.

Two-dimensional tests require about 50 to 70 dynamite shot holes per survey. The 3-D tests demand as much as 700 shot holes, but the result is a more accurate picture of a reef.

"This is an incredible amount of information that's coming in from the field," Steinke says. "We can take all this data and the geologists can look at this reef that we've imaged, rotate it and figure out where the best spot to drill is."

Given the extent of its search, Range has negotiated leases with landowners. It has negotiated agreements giving it three- to five-year leases and the exclusive right to explore and drill for petroleum and natural gas and to store gas.

If drilling is successful, the landowner receives 12.5 percent royalties. Range has struck deals with most people, Steinke says, but some residents have concerns about the environmental impact.

He tries to assure them of Range's attitude by comparing his childhood on a farm in Alberta to the lives of people in Lambton.

"We're adamant about running a very environmentally friendly situation," Steinke says. "A lot of us are farm boys and it's important to us to run a clean operation."

Steinke and Hadley believe coal-burning factories will be extinct in a couple of years and that natural gas will be the forerunner of widespread change to cleaner forms of energy.

Tsujita says that demand for natural gas could eventually outstrip that for petroleum.

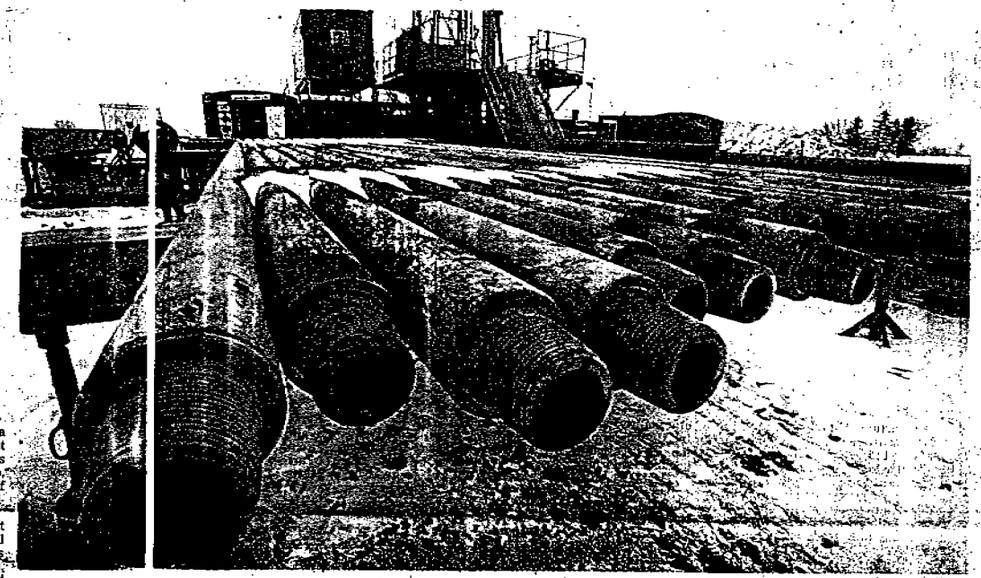
"It's a lot cleaner than burning oil or, even worse, coal, which has a lot of sulphur and nitrogen in it and produces acid rain."

Oil and gas companies such as Range and CanEnerco are positioning themselves for the conditions of the new market.

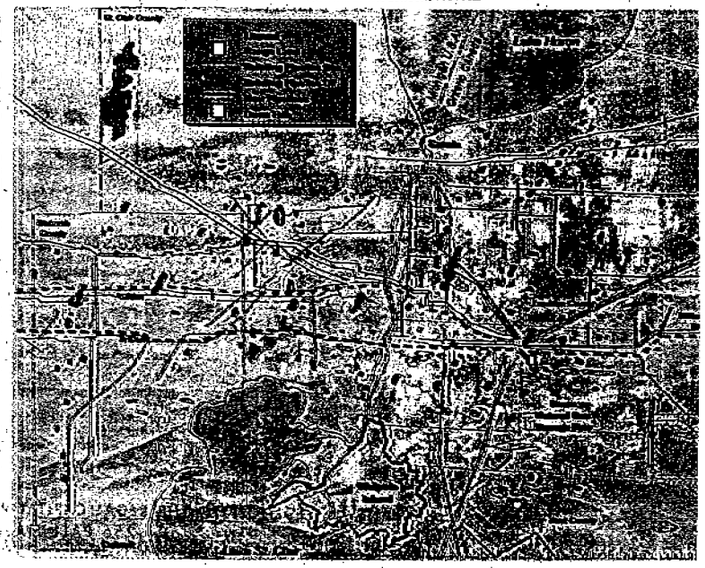
"In the past three years, there's been a move to deregulate the energy business in the province," Cowan says.

That means they will provide transportation of natural gas through their pipelines, while other aspects of service will become the responsibility of consumers and the growing number of niche marketers such as CanEnerco.

With the completion of two new pipelines through the Dawn Hub this year, Southwestern Ontario could be part of the gas boom.



KEN WIGHTMAN The London Free Press

LEFT: Pipes that will reach 600 metres down to the gas-bearing pinnacle reefs sit ready for use at a drilling site near Brigden in Lambton County.

BELOW: A Range Petroleum map shows where the company is concentrating exploration efforts in Southwestern Ontario and Michigan.