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## Weekly Energy Status Report

### 1. Northwest Power Pool Status (WA, OR, ID, MT, WY, UT, No. NV, BC, AB)

- Power Pool peak load (3/28): 45,676 MW
- Reserve margins were within comfortable ranges for Northwest Power Pool utilities.

### 2. Electricity, Petroleum and Natural Gas Prices

- Weekly Range at Mid-C: \$42-48 per MWh, Ave. = \$44.9
- Approximate change from previous week \$ -0.9 per MWh
- "Normal" price range, before 5/00 \$20-\$40 per MWh
- Petroleum, West Texas Intermediate: \$66.07 per barrel (year ago: \$54.54)
- Seattle gasoline price (3/27) \$2.58 per gallon (year ago \$2.21)
- Natural gas, Sumas Hub: \$6.107 per million British Thermal Units (year ago \$6.54)
- Approximate change from last week. Oil: +5.0 \$ per barrel; Nat. gas: -0.11 \$ per MMBtu

### 3. California Electricity Situation

- CA ISO Alert Status
  - September 13, 2005, extensive blackout in Los Angeles caused by utility crew.
  - August 25, 2005, rotating blackouts in So. Calif. due to transmission line failure.
  - July 21 and 22, 2005 stage 2 alerts were declared in So. Calif.

### 4. Energy News Headlines from around the Nation

- Alternative energy attracting more investors (Energy Insider, Mar. 20)
- Bigger SUVs may face tougher fuel standards.(WSJ, Mar.22)
- Trendsetter at port champions biodiesel. (TNT, Mar. 23)
- Climate data hint at irreversible rise in sea levels. (NYT, Mar. 23)
- As prices surge, oil giants turn sludge into gold. (WSJ Mar. 27)
- High gasoline, ethanol prices likely in near term. (Oil & Gas Journal, Mar. 28)
- Links to other energy news and information ....

### 5. River and Snow Pack Information (Updated: Mar 22, 2006)

- Observed February stream flow at The Dalles: N/A % of average,
- Observed March precipitation above The Dalles: 90% of average,
- Forecast Jan.-July 2006 runoff at The Dalles: 107 MAF, 100% of average,
- Federal hydropower generation in Feb: 9,794 aMW, 1995-2002 average: 9,681 aMW.
- March snow pack: 105% of average.

### 6. Energy Conservation Achievement (Updated: Feb. 11, 2004)

- State Agencies: From Oct thru Dec 2003 electrical usage was 9% less and natural gas usage was 21.3% less compared to the same period in 2000.

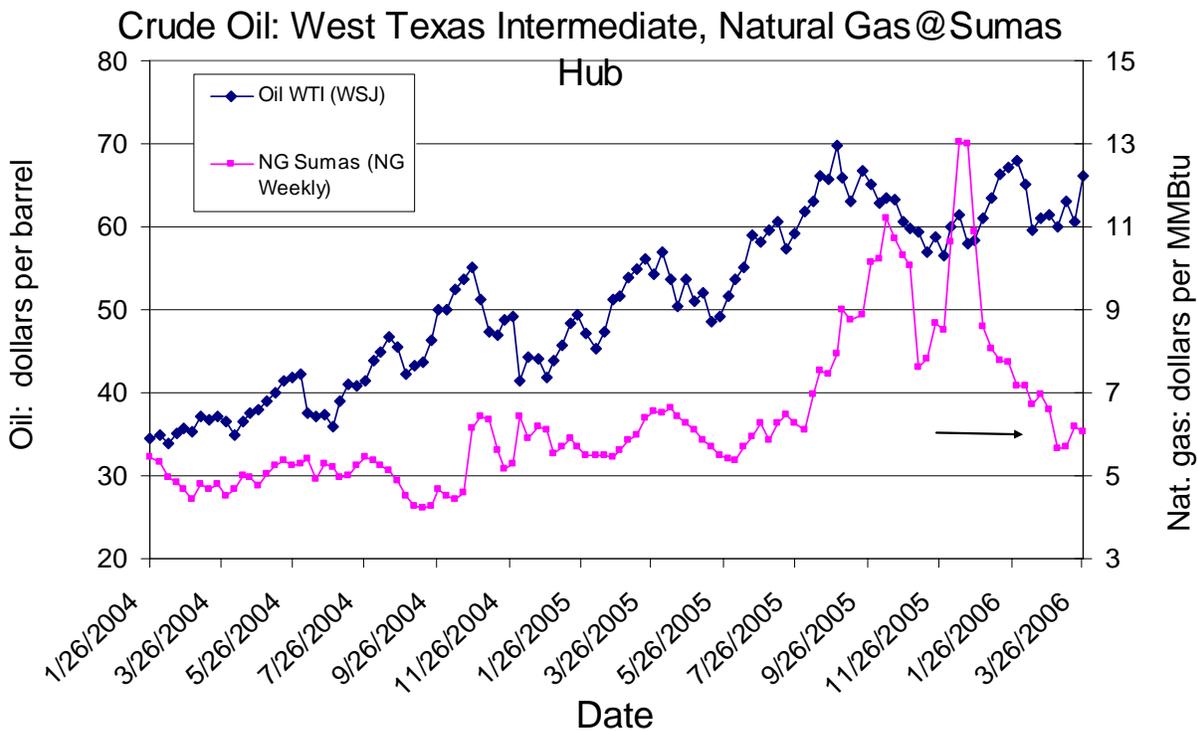
### 7. Power Exchanged: (Updated: Mar. 27, 2006)

- Average flow of power during the last 30 days
  - California (exported to) 994 MW
  - Canada (export to) 1,139 MW
  - Net power export: 2,133 MW

**Weekly Energy Price Summary**

Energy prices were mixed again the last week. Electricity spot market prices (weekly average) at the Mid Columbia trading hub decreased slightly by about 0.8 dollars to settle at \$44.9 per Mwh. Natural gas spot market and futures prices were essentially flat both regionally and nationally even as cold weather moved into the Midwest. Withdrawals of natural gas from storage caverns are expected to be modest again this week, leaving huge inventories in storage, which will likely keep downward pressure on prices this spring and summer. Over the last several months the energy press has noted that several liquefied natural gas (LNG) projects are over budget, delayed, or have been cancelled. This seems to be pointing towards a more constrained global LNG supply market over the next ten years, with delivered LNG prices that are market based and significantly higher than the cost plus prices often cited by LNG boosters a couple of years ago. Weekly crude oil spot prices ended up over the past week, driven up at times by news of supply disruptions and Venezuela's unilateral renegotiations of oil producer contracts and tax obligations. On average, crude oil was up five dollars for the week to about \$66 per barrel (WTI). See chart below for a presentation of crude oil and natural gas prices over the last 2 years.

After increasing sharply last week, national average gasoline and diesel prices were essentially flat. In Washington State the average gasoline price was up 5 cents, while diesel prices decreased, for the second week, by 3 cent per gallon. Inventories for crude oil, diesel/heating oil, jet fuel, and gasoline all remain well above normal levels, though gasoline inventories declined sharply last week, while diesel inventories declined more moderately. Gasoline prices appear to be rising in part as a response to the elimination of MTBE (oxygenate and octane booster) from reformulated gasoline in favor of ethanol. Ethanol supply, infrastructure and blending ability appear to be the primary issues: see article below on gasoline and ethanol. The EIA forecasts early summer gasoline and diesel (national) prices of around \$2.50 and 3.00 per gallon.



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## **Alternative energy attracting more investors**

Mon Mar 20, 2006 By Lisa Haarlander

CHICAGO (Reuters) - A perfect storm of high energy prices, government subsidies and renewed interest from Wall Street is boosting investment in alternative energy projects, fund managers and other experts said on Monday.

"This is the best time to think about energy technology whether you're a large equity fund, trying to get money for a company you're running or to make returns in the stock market," said Philip Deutch, managing partner of NGP Energy Technology Partners, a \$150 million private equity investment fund at a conference on renewable energy.

Well known investors such as Goldman Sachs Group Inc., the Carlyle Group and Berkshire Hathaway Inc. have all made recent investments in wind and solar power, Deutch told about 75 people attending the conference in Chicago sponsored by Platts, an energy industry publication.

And Microsoft Corp. Chairman Bill Gates and venture capitalist Vinod Khosla are investing in ethanol.

Recent public offerings by SunPower Corp., a California-based maker of solar panels, and Q-Cells, a German maker of solar cells, have also caught the attention of investors.

But alternative energy is not without risk, primarily due to rapid changes in technology and volatile commodity prices, Deutch said.

He pointed to the fall in share prices of fuel-cell maker Plug Power Inc. and Capstone Turbine Corp., a producer of low-emission microturbines.

"Both these stocks have traded down almost to the single digits," he said. "Energy technology is not new and it is often over promised. One has to enter this area with some humbleness and think about how quickly change occurs."

Despite the risks, the sector is gaining popularity with venture capitalists, said James Greenberger, partner at Chicago law firm Sachnoff & Weaver, which caters to venture and private equity firms.

Total venture capital between 2002 and 2005 has remained fairly stagnant at between \$18 billion and \$22 billion. However, the percentage invested in energy technology has risen from 2.7 percent in 2002 to 4.2 percent in 2005, he said.

"Clearly, something is going on," Greenberger said.

In the U.S. Midwest, ethanol and wind farms have received the most attention from investors.

Last year, U.S. ethanol production reached a record 3.9 billion gallons, according to the U.S. Energy Information Administration. There are 97 ethanol plants operating and another 33 under construction and nine being expanded, according to the Renewable Fuels Association.

In 2005, U.S. wind generating capacity jumping 35 percent as companies invested \$3 billion to bring an additional 2,400 megawatts online.

This year, capacity is expected to grow by another 3,000 megawatts, said the American Wind Energy Association, a trade group in Washington.

## Big SUVs May Face Tougher Fuel Standards

In Overhaul of Mileage Rules, Regulators Consider Lifting Exemption for Large Vehicles  
By LAURA MECKLER March 22, 2006

The Bush administration is considering subjecting the biggest vans and sport-utility vehicles to fuel-economy standards for the first time. The move would please environmentalists but put new pressure on struggling domestic auto makers, particularly General Motors Corp.

The biggest SUVs, vans and pickup trucks -- those weighing between 8,500 and 10,000 pounds -- have been exempt from fuel-economy rules since they were established in the 1970s, a time when regulators didn't foresee such large vehicles being used as the family car. In 2003, the administration announced plans to overhaul the fuel standards for all so-called light trucks (which include SUVs, minivans and pickups) and said it might also impose mileage targets for the big SUVs and passenger vans. But when the proposed rule was published last August, the heavy vehicles remained exempt. (Light trucks now represent more than half of all vehicles sold.)

Now the administration is considering including them beginning in 2011, according to people in the auto industry and with environmental groups who are closely watching the administration's course. The new proposal would still, however, affect only a small slice of heavy vehicles: The administration plans to continue to exempt pickup trucks, which constitute the vast majority of vehicles over 8,500 pounds.

A new rule would hit GM the hardest. Four SUVs sold last year have versions that weigh more than 8,500 pounds and would be affected by a new rule. One, Ford Motor Co.'s Excursion, is no longer in production. The other three -- Hummer H2, Chevy Suburban and GMC Yukon XL -- are GM products.

The move could force GM to limit sales of its largest vehicles to avoid penalties, meaning fewer would be available to shoppers. The company could also employ new technology to improve the mileage of its biggest guzzlers, which might increase the sticker price but would ultimately help consumers save at the pump.

### Weighing In

SUVs and passenger vans between 8,500 and 10,000 pounds could become subject to fuel economy standards for the first time. Some recent vehicles exceeding that weight:

MAKER	SUBSERIES	TYPE
GM	<b>Chevy Suburban*</b>	SUV
GM	<b>Chevy Express Passenger*</b>	Van
Chrysler	<b>Dodge Sprinter Wagon</b>	Van
Ford	<b>Ford E-Series*</b>	Van
Ford	<b>Ford Excursion (discontinued)</b>	SUV
GM	<b>GMC Savana Passenger*</b>	Van
GM	<b>GMC Yukon XL*</b>	SUV
GM	<b>Hummer H2</b>	SUV

\*Some models weigh less than 8,500 pounds  
Source: Ward's AutoInfoBank

The administration estimated that requiring these vehicles to improve their mileage would save a half billion gallons of fuel in 2011 and would cost manufacturers between \$900 and \$2,800 per vehicle. (To increase mileage on a vehicle, manufacturers have a variety of options, all of which cost money, including using lighter materials and adding advanced-technology systems that allow the car to run on less fuel.) Auto makers have lobbied against the change. GM had no comment, but Charles Territo, spokesman for the Alliance of Auto Manufacturers, a trade group, said: "Auto makers are working to integrate fuel savings into all vehicle classes including larger trucks."

The regulation is currently under review by the White House Office of Management and Budget and is expected to be issued as soon as next week. The National Highway Transportation Safety Administration, which oversees the fuel-economy program, must issue a final rule by April 1, in time to

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affect the 2008 model year. A NHTSA spokesman had no comment.

People familiar with the discussions cautioned that no decisions have yet been made, and the final regulation may continue to exempt large vehicles. Some questioned whether the administration would hit GM at a time when the company is facing significant financial troubles. But environmentalists were encouraged. "We welcome the administration's attention to the largest SUVs and vans, which consume more fuel than almost any passenger vehicles on the road," said Eric Haxthausen of the Environmental Defense Fund.

Even without a new rule on heavy vehicles, the proposed regulation represents the biggest change to the so-called Corporate Average Fuel Economy standards for light trucks since the rules were first written three decades ago. It modestly raises mileage targets for manufacturers of SUVs, vans and pickups, but also helps auto makers by changing the way the government measures compliance. Specifically, it would allow GM and Ford to sell large numbers of their profitable big trucks without having to balance them with sales of slower-selling trucks that get better mileage.

Under the current system, performance is measured by averaging gas mileage of an auto maker's entire fleet of light trucks, a problem for GM and Ford, which sell a disproportionate number of big vehicles with low mileage. Under the new system, mileage targets would be based on the size of the vehicle, with six size categories, each with its own mileage standard. Compliance would be judged based on a weighted average.

Current regulations require manufacturers to meet a fleetwide average of 22.2 miles per gallon by 2007. Under the new system, the smallest trucks would need to average 28.4 mpg by 2011; the largest would need to reach 21.3 mpg. Depending on the vehicle mix, the government projected that the fleetwide average would have to be about 24 mpg in 2011.

In its final version of the regulation, the administration is expected to increase those targets modestly. That's because the government believes that gas prices will rise higher than previously expected. The fuel-economy targets are based partly on the price of gas, and the more gas costs, the more important it is to require that vehicles be fuel efficient.

## **Trendsetter at Port champions Biodiesel**

KELLY KEARSLEY; The News Tribune, March 23rd, 2006

Volkswagen drivers aren't the only ones using biodiesel.

The Husky Terminal, an international shipping terminal at the Port of Tacoma, now uses a biodiesel fuel blend in all of its cargo equipment. Operated by Husky Terminal and Stevedoring Inc., the terminal is the first in Tacoma to use the cleaner-burning fuel, according to the port. The goal is to reduce air emissions and set an example that might entice others to follow, said Steve Bassett, the terminal's manager.

"There's a lot of talk recently about trying to clean up the air quality in the ports," Bassett said. "At first I'd thought we'd take a wait-and-see attitude (with the biodiesel). Then I thought, 'Nope, I want us to go there first.'"

Here's the (soy) nuts and bolts of the terminal's biodiesel switch:

### **What is biodiesel?**

Biodiesel is an alternative diesel fuel made with vegetable fats, most of it from soy. Husky Terminal is using a biodiesel fuel blend in which 20 percent of the fuel mix is biodiesel and 80 percent is low-sulfur petroleum-based diesel, which also reduces the emission of certain pollutants.

### **What equipment is using the fuel?**

All of the cargo-handling equipment in use at the Husky Terminal, which serves “K” Line ships, Bassett said. This includes six rubber-tired gantry cranes, which lift and stack containers; 32 semi-tractors; and eight top picks, which are also used for stacking containers.

The equipment was previously fueled by low-sulfur diesel.

### **What are the benefits?**

Bassett hopes the switch will help decrease diesel emissions. The Puget Sound Clean Air Agency reports that vehicles using biodiesel and biodiesel fuel blends emit less air pollution than regular diesel. Both pure biodiesel and blends reduce emissions of diesel particulate matter by 10 percent to 50 percent, as well as hydrocarbons and carbon dioxide, a pollutant that causes global warming, according to the agency.

“It’s not only reducing soot and toxics, but it’s a really climate-friendly approach to fuel,” said Dennis McLerran, executive director of the clean air agency. “We’re having a lot of growth (in the Puget Sound), and it’s important for our ports to be staying ahead of emissions growth.”

### **Any drawbacks?**

Bassett worried there might be lessened performance and power in some of the equipment, but there haven’t been any problems so far. Biodiesel can reduce wear and tear on machines and keep equipment running longer.

The fuel costs an additional 5 cents to 7 cents more per gallon, Bassett said.

With the terminal using up to 5,600 gallons to a week, that translates into an extra cost of from \$280 to \$392 weekly. But that expense didn’t dissuade him.

“It’s not a big hurt economically,” he said.

### **What are other port and terminal operators doing?**

SSA Marine and the Port of Seattle announced they were switching equipment and vehicles to a biodiesel blend last December. SSA Marine operates terminals 18 and 25 in Seattle.

In Tacoma, the port and most of its tenants use ultra-low-sulfur diesel in their equipment. The port also retrofitted its straddle carriers – machines that move containers onto rail cars – with emissions-reducing exhaust pipes.

Around the country, other ports are experimenting with different types of fuels such as compressed natural gas, while others are switching to cleaner-burning diesels, said Meredith Martino, the American Association of Port Authorities’ government relations and environmental policy manager.

## **Climate Data Hint at Irreversible Rise in Seas**

By ANDREW C. REVKIN, New York Times, Mar. 24

Within the next 100 years, the growing human influence on Earth’s climate could lead to a long and irreversible rise in sea levels by eroding the planet’s vast polar ice sheets, according to new observations and analysis by several teams of scientists.

One team, using computer models of climate and ice, found that by about 2100, average temperatures could be four degrees higher than today and that over the coming centuries, the oceans could rise 13 to 20 feet — conditions last seen 129,000 years ago, between the last two ice ages.

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The findings, being reported today in the journal *Science*, are consistent with other recent studies of melting and erosion at the poles. Many experts say there are still uncertainties about timing, extent and causes.

But Jonathan T. Overpeck of the University of Arizona, a lead author of one of the studies, said the new findings made a strong case for the danger of failing to curb emissions of carbon dioxide and other gases that trap heat in a greenhouse-like effect.

"If we don't like the idea of flooding out New Orleans, major portions of South Florida, and many other valued parts of the coastal U.S.," Dr. Overpeck said, "we will have to commit soon to a major effort to stop most emissions of carbon to the atmosphere."

According to the computer simulations, the global nature of the warming from greenhouse gases, which diffuse around the atmosphere, could amplify the melting around Antarctica beyond that of the last warm period, which was driven mainly by extra sunlight reaching the Northern Hemisphere.

The researchers also said that stains from dark soot drifting from power plants and vehicles could hasten melting in the Arctic by increasing the amount of solar energy absorbed by ice.

The rise in sea levels, driven by loss of ice from Greenland and West Antarctica, would occur over many centuries and be largely irreversible, but could be delayed by curbing emissions of the greenhouse gases, said Dr. Overpeck and his fellow lead author, Bette L. Otto-Bliesner of the National Center for Atmospheric Research in Boulder, Colo.

In a second article in *Science*, researchers say they have detected a rising frequency of earthquakelike rumblings in the bedrock beneath Greenland's two-mile-thick ice cap in late summer since 1993. They say there is no obvious explanation other than abrupt movements of the overlying ice caused by surface melting.

The jostling of that giant ice-cloaked island is five times more frequent in summer than in winter, and has greatly intensified since 2002, the researchers found. The data mesh with recent satellite readings showing that the ice can lurch toward the sea during the melting season.

The analysis was led by Goran Ekstrom of Harvard and Meredith Nettles of the Lamont-Doherty Earth Observatory in Palisades, N.Y., part of Columbia University.

H. Jay Zwally, a NASA scientist studying the polar ice sheets with satellites, said the seismic signals from ice movement were consistent with his discovery in 2002 that summer melting on the surface of Greenland's ice sheets could almost immediately spur them to shift measurably. The meltwater apparently trickles through fissures and lubricates the interface between ice and underlying rock.

"Models are important, but measurements tell the real story," Dr. Zwally said. "During the last 10 years, we have seen only about 10 percent of the greenhouse warming expected during the next 100 years, but already the polar ice sheets are responding in ways we didn't even know about only a few years ago."

In both Antarctica and Greenland, it appears that warming waters are also at work, melting the protruding tongues of ice where glaciers flow into the sea or intruding beneath ice sheets, like those in western Antarctica, that lie mostly below sea level. Both processes can cause the ice to flow more readily, scientists say.

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Many experts on climate and the poles, citing evidence from past natural warm periods, agreed with the general notion that a world much warmer than today's, regardless of the cause of warming, will have higher sea levels.

But significant disagreements remain over whether recent changes in sea level and ice conditions cited in the new studies could be attributed to rising concentrations of the greenhouse gases and temperatures linked by most experts to human activities.

Sea levels have been rising for thousands of years as an aftereffect of the warming and polar melting that followed the last ice age, which ended about 10,000 years ago. Discriminating between that residual effect and any new influence from human actions remains impossible for the moment, many experts say.

Satellites and tide gauges show that seas rose about eight inches over the last century and the pace has picked up markedly since the 1990's.

Dr. Overpeck, the co-author of the paper on rising sea levels, acknowledged the uncertainties about the causes. But he said that in a world in which humans, rich and poor, increasingly clustered on coasts, the risks were great enough to justify prompt action.

"People driving big old S.U.V.'s to their favorite beach or coastal golf course," he said, should "start to think twice about what they might be doing."

## **As Prices Surge, Oil Giants Turn Sludge Into Gold**

Total Leads Push in Canada To Process Tar-Like Sand; Toxic Lakes and More CO2 Digging It Up, Steaming It Out  
By RUSSELL GOLD Wall Street Journal, *March 27, 2006*

FORT MCMURRAY, Alberta -- In February, engineers from French oil giant Total SA fired up colossal drum boilers to generate steam that will be pumped to a depth of 300 feet under the frozen ground here. If all goes well, by May, the steam will marinate a tar-like mix of oil and sand until the crude begins to flow.

Nearby, Total will go after the oil-soaked sands closer to the surface, scraping away an ancient forest of spruce and poplars and shoveling the black soil into two-story dump trucks. Fully loaded, the trucks weigh as much as a Boeing 747. Total will then use industrial versions of giant washing machines to remove the oil, generating enough liquid waste to create vast toxic lakes.

Heavy-duty oil-extraction projects like these are turning Fort McMurray into the first great oil boom town of the 21st century. A Florida-size section of sandy soil beneath the boreal forest in this sparsely populated area of Northern Canada is loaded with bottom-of-the-barrel petroleum.

These deposits were once dismissed as "unconventional" oil that couldn't be recovered economically. But now, thanks to rising global oil prices and improved technology, most oil-industry experts count oil sands as recoverable reserves. That recalculation has vaulted Venezuela and Canada to first and third in global reserves rankings, although Venezuela's holdings in extra-heavy crude are a rough guess. Saudi Arabia is No. 2. Not including the oil sands, Canada would fall to No. 22. Led by Total, nearly every major Western oil company as well as their Chinese and Indian brethren are gearing up to go after the deposits here. In all, they plan to spend more than \$70 billion in the next decade unlocking the oil from the sand.

The surging interest in Canadian oil sands is stark evidence that the world isn't about to run out of oil. Instead, it is running low on readily accessible light, sweet crude -- oil that flows like water, has few impurities and can be easily turned into gasoline. As the good stuff gets scarce, Big Oil is

turning its attention and pouring money into extra-heavy crude, such as the giant deposits near Fort McMurray and another similar one in Venezuela.

But heavy oil has big economic and environmental drawbacks. It costs more to produce and takes more energy to turn into gasoline than traditional light oil. Recovering and processing Fort McMurray's heavy crude releases up to three times as much greenhouse gas as producing conventional crude. And upgrading it into refined products, such as gasoline or diesel, will require a gigantic investment to retool global refineries.

"The light crude undiscovered today is getting scarcer and scarcer," says Jean-Luc Guiziou, president of Total's Canadian operations. "We have to accept the reality of geoscience, which is that the next generation of oil resources will be heavier."

Total is making the biggest bet on heavy crude of any of the half-dozen international Western oil giants. Nearly one-fifth of its commercial reserves are in heavy-oil belts, according to oil consultant Wood Mackenzie, a larger portion than any of its Western rivals. Its stockpile of heavy-oil reserves is second only to that of Exxon Mobil Corp., a company that is more than twice as large. Total has spent years developing the complex technology needed to extract oil from tar sands in the frigid environment of Northern Canada. So much heat is required to separate the oil from the tar that Total briefly floated the idea of building a nuclear-power plant there.

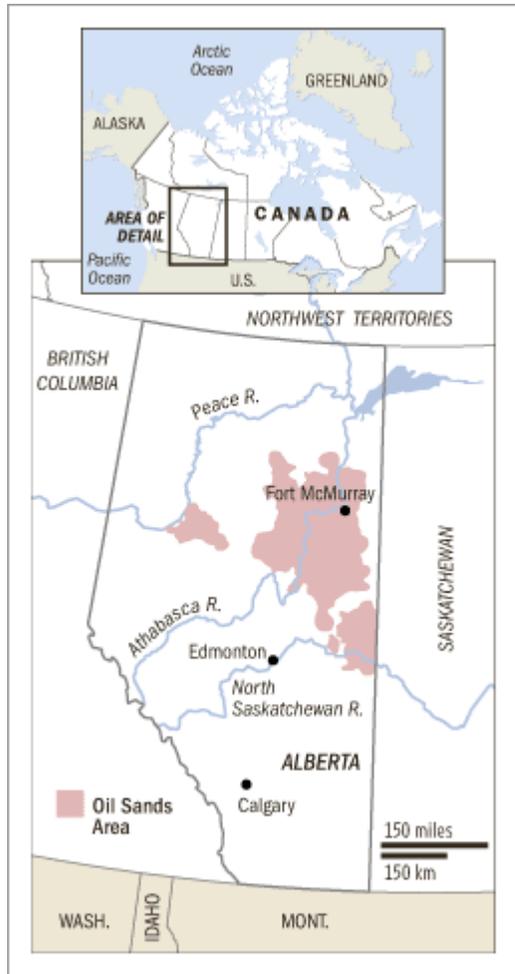
The rush into the oil sands also has turned a longstanding belief about fossil fuels and the

environment on its head. For years, environmentalists have argued that higher gasoline prices would be good for the Earth because paying more at the pump would promote conservation. Instead, higher energy prices have unleashed a bevy of heavy-oil projects that will increase emissions of carbon dioxide, suspected of causing global warming.

"As oil prices have gone up, you get this increased desire to get out onto the new frontiers of oil," says Marlo Raynolds, executive director of the Calgary-based Pembina Institute, an energy and environment think tank. "We're now getting into the dirtiest sources of oil anywhere." To be sure, rising energy prices have spawned more interest in renewable fuel sources, but those investments pale in comparison to what's going on here.

Canada, which exports more oil to the U.S. than any other country, already is having trouble meeting its pledge to cut CO2 emissions largely because of its mushrooming heavy-oil production. By 2015, Canada's Fort McMurray region, population 61,000, is expected to emit more greenhouse gases than Denmark, a country of 5.4 million people.

Canada's northern forest contains at least 174 billion barrels of recoverable heavy oil, equivalent to five years' supply for the planet, according to the Alberta Energy and Utilities Board. Venezuela has perhaps even more in the Orinoco River delta. By comparison, Saudi Arabia has



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about 260 billion barrels of more traditional crude, or 8½ years' global supply, according to the Energy Information Administration, the statistical arm of the federal Department of Energy. Heavy oil also is being produced in the Middle East, the Caspian Sea, Brazil and even in California's San Joaquin Valley.

In northern Alberta, the oil-sands boom is remaking the landscape. The mining operations have clear-cut thousands of acres of trees and dug 200-foot-deep pits. The region is dotted with large man-made lakes filled with leftover waste from the mining operations. To chase off migratory birds, propane cannons go off at random intervals and scarecrows stand guard on floating barrels.

Alberta's energy minister, Greg Melchin, says oil-sands development creates a minimal environmental disturbance that is outweighed by the opportunities and jobs created. "It's worth it. There is a cost to it, but the benefits are substantially greater," he said.

Environmental groups are increasingly critical of the government's reluctance to regulate the oil sands. "The pace of development is outstripping our ability to manage the environmental issue," says Mr. Raynolds of the Pembina Institute. "Our unwritten energy policy is dig it up and sell it as fast as possible."

The remarkable properties of Fort McMurray's oil sands have been known for centuries. Native tribes mixed the tar-like substance with tree sap to waterproof their canoes. In the 1960s, companies now known as Suncor Energy Inc. and Syncrude Canada Ltd., a consortium of oil companies, opened oil-sands mines in the area. Both operations stumbled through periods of low oil prices but are now rapidly expanding.

When oil was trading at \$12 a barrel in the late 1990s, Big Oil had little interest in oil sands. But surging energy prices have made heavy-oil investments significantly more attractive. It costs about \$25 a barrel to produce crude from Canada's oil sands, an acceptable cost when oil is trading for \$60 a barrel. By comparison, it can cost as little as about \$5 a barrel to produce crude in the Middle East and \$15 in the deep waters of the Gulf of Mexico.

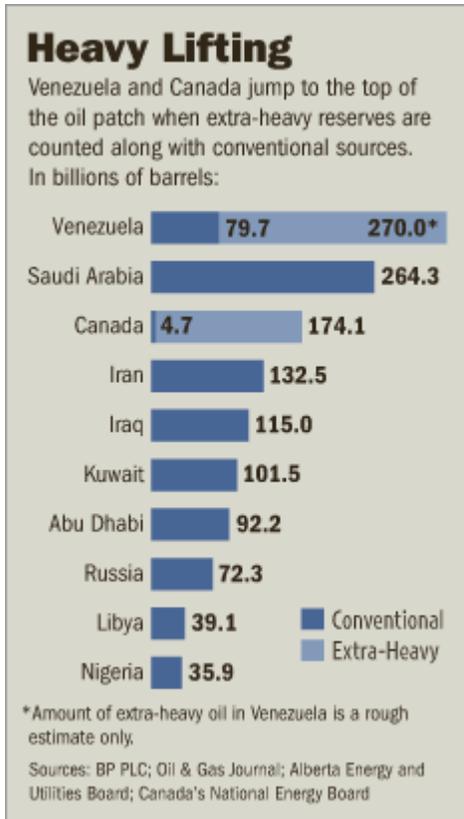
For Paris-based Total, the world's fifth-largest publicly traded energy company by market capitalization, the oil sands play to its strengths. Total had its roots as a refiner rather than an exploration and production company. Oil sands were easy to find but hard to process.

Total's first foray into heavy oil was in Venezuela's Orinoco belt. In 1997, the company's giant \$4.2 billion Sincor project there began producing market-grade crude. Sincor, which Total owns with Norway's Statoil ASA and Petróleos de Venezuela SA, now produces 180,000 barrels of oil a day.

The same year, Total opened an office in Calgary to determine if a similar investment was warranted near Fort McMurray. It was soon clear to Total engineers brought in from Sincor that Canadian oil sands were more technically difficult than Venezuela's heavy-oil belt. The key difference: The heavy oil in Venezuela was quite warm and flowed easily, albeit slowly, while in Canada the oil-sand mixture had the look and consistency of tar-like Play-Doh. But Canada was attractive because it offered a haven from politically unstable oil hotspots.

In November 1999, Total teamed up with the financially struggling Gulf Canada Resources Ltd. on a promising project called Surmont. Gulf Canada was later acquired by Conoco Inc. and is now part of Houston-based ConocoPhillips.

For Total, sorting out the mechanics of producing this heaviest of oils fell on the shoulders of Mr. Guiziou, a French earth scientist who had worked his way into management from his first assignment studying the geology of Argentina. In 2001, when he was being considered for the



Canadian job, he flew into Fort McMurray to see what the oil sands were about. Having worked in the industry for years, he was accustomed to the look and feel of oil fields. But when he visited Syncrude's mine, where giant cranes scooped up the oil-soaked earth in buckets capable of carrying 100 tons, he was flabbergasted. "It was another world," the 44-year-old Mr. Guiziou says.

In some places near Fort McMurray, the oil sands are close to the surface and can be mined. But at Surmont, located southeast of Fort McMurray, the oil sands are 1,200 feet underground, far too deep for a mining operation. The partners in the venture needed to find a way to get the oil.

The solution was steam. In 1978, Roger Butler, an engineer with Imperial Oil Ltd., an independent company majority-owned by Exxon Mobil, hit on the idea of drilling two wells that start off vertically, then slowly bend until they are horizontal and located one on top of the other. The top well would pump steam into the reservoir while the other pumped oil out.

Surmont was to be Total's and Conoco's first venture with the technology, so in late 1997 they started small with a 1,000-barrel-a-day pilot. They pumped steam down a pipe

laced with millions of tiny slits, each no wider than the thickness of a piece of paper. The initial results were encouraging but expanding into a full-scale project took several more years.

One pressing issue: Several companies, including Paramount Resources Ltd., were producing natural gas from a shallow underground zone above the oil sands. Total and its partner convinced an Alberta regulatory body that the gas project threatened the much larger oil deposit. The theory was that if the gas were allowed to be pumped out, the steam chamber would lose pressure and Surmont would have to be scrapped. In a landmark ruling, an Alberta regulatory body ordered 146 gas wells shut off in 2000.

In December 2003, Total and ConocoPhillips decided to build the first phase of Surmont. The steaming is slated to begin later this year, with production expected to grow to 27,000 barrels a day next year. Future expansions could bring it to 200,000 barrels a day -- a good-size oil field but not the biggest in the area.

At Surmont, Total was merely an investor with ConocoPhillips and its predecessor companies operating the project. Last year, the French company went from being an investor to a full-fledged participant in the oil-sands boom.

In September, it bought Deer Creek Energy Ltd. for \$1.6 billion, acquiring its only significant asset: a giant oil-sands project called Joslyn north of Fort McMurray. Once fully developed, Joslyn is expected to yield 200,000 barrels a day for decades. Total plans to produce oil from Joslyn by both mining and by shooting steam underground.

Becoming an operator, Mr. Guiziou needed to confront environmental problems as Total expanded its heavy-oil holdings in Canada. Mining oil sands generates enormous volumes of liquid waste that are stored in toxic lakes that have concentrations of naturally occurring naphthenic acid, an odorless liquid used to help paint dry quickly. The prospect of cleaning up these lakes is

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"daunting," the Canadian National Energy Board, a federal regulatory body, noted in a 2004 report. "There is currently no demonstrated means to reclaim fluid fine tailings," it said.

Since the lakes are likely to be around for years to come, Mr. Guiziou is working on a plan that will result in smaller lakes. He hopes to install a new technology at Joslyn that will suck out water and leave a smaller volume of waste laced with metals before it is dumped in the lakes. But he said the technology "needs to be proved at the industrial scale." Total expects to conduct a test later this year at a neighboring facility.

Total is also trying to figure out ways to curb greenhouse-gas emissions at its Fort McMurray facilities by using pure oxygen instead of air in its combustion engines. The company is running a pilot project in Lacq, France, to capture carbon dioxide in exhaust flues more effectively. If the technology proves workable, it could be used in Fort McMurray as well.

Despite the environmental concerns, there is a strong economic incentive for Alberta's free-market-oriented government to let oil-sands development gallop ahead. Alberta added nearly 26,000 jobs in resource extraction in the past two years. That 25% jump helped drive the province's unemployment rate down to 3.1%, a 30-year low, according to the government. For the first time, every Albertan received a 400 Canadian-dollar (\$340) check from the government earlier this year from an unexpected fiscal surplus.

Total and other oil companies are continuing to announce new oil-sand projects and shovel money into the region. Earlier this month, Chevron Corp. said it planned to spend "billions" to turn 75,000 acres into a 100,000-barrel-a day field. And last week, Royal Dutch Shell PLC said it had spent nearly \$400 million to lease 219,000 acres west of Fort McMurray, shattering records for public-land leases.

In February, Total moved quickly to file the regulatory permit for Joslyn to move to the front of a growing queue of projects. With all the development, everything is in short supply, including steel, energy to power the projects, fresh water and skilled construction workers.

Some projects could end up being delayed for years. "It's like you've got one door frame and the Three Stooges trying to get through at the same time," said Tom Ebborn, executive managing director of Tristone Capital, a Calgary-based investment adviser. "Without a doubt, we can become the next Saudi Arabia but it will take 10 years longer than the market thinks."

## High ethanol, gasoline prices likely in near term

Paula Dittrick Oil & Gas Journal *Mar.* 28

Gasoline and ethanol prices are likely to rise in the near term across the US, according to D. Mark Routt, a Dallas-based senior oil analyst with Energy Security Analysis Inc. of Wakefield, Mass.

Ethanol increasingly is being shipped to the US East Coast for blending with reformulated blendstock for oxygenate blending (RBOB) to make reformulated gasoline (RFG) required in that region.

"East Coast finished RFG prices are expected to rise in order to 'price up' ethanol and attract a constant supply," Routt said. "At the same time, Midwest gasoline, now without ethanol, would need to find another octane alternative. But those alternatives are either banned or much more expensive than ethanol."

Midwestern states prohibiting methyl tertiary butyl ether in gasoline can expect higher prices, Routt said. Some refiners are shutting down sales of gasoline containing ethanol in the Midwest.

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California already has replaced MTBE with ethanol in RFG. Now the New England states in particular are demanding more ethanol in order to avoid using MTBE in gasoline.

"You've got this huge demand pull from the eastern seaboard, really it's the northern third of the eastern seaboard. . .these areas haven't got a choice, they've got to take ethanol," Routt told Oil & Gas Journal. That will pull ethanol out of the Midwest, particularly from areas where it is blended primarily for use as an octane booster.

### **RFG supply**

Midwestern refiners will have to decide how to replace the ethanol supply being shipped to the East, Routt said.

He estimates that over one third of US gasoline demand is RFG. Of this amount, 60% currently contains MTBE and is going to switch to ethanol.

"We do know that replacing MTBE-RFG with ethanol-RFG is going to worsen the supply-demand balance because ethanol-based RFG is less energy dense than MTBE gasoline," Routt said. "We are going to have an immediate 1.5-2% increase in demand for those areas making the switch for drivers to go the same distance."

Although he believes ethanol supply to be sufficient, he also expects "spot price excursions, particularly in the New England area" where gasoline prices could briefly spike above \$3/gal.

### **Logistics**

The ethanol supply crunch already is being felt now and will continue at least through May 6 when MTBE lawsuits can be moved into the federal court system. The ethanol supply chain faces issues of delivery of this new and necessary component of gasoline into terminals, then blended with RBOB to make finished gasoline, and finally delivered into service stations.

"Every single tank on the eastern coastal area that used to contain MTBE gasoline is going to have to be pumped, and the old MTBE gasoline has to come out," Routt said. "Then they have to make sure that there is no water in all those underground tanks. They also have to make sure the tank is suitable for ethanol use; not all of them are. Finally, they may also have to remeter the pumps and ensure they are compatible with the ethanol mix."

At the terminals, ethanol needs to get blended into RBOB, Routt said, adding that many terminals do not have the space for separate tanks to do this, and many terminals lack access to the rail system used to deliver bulk ethanol.

For instance, he said one solution being contemplated is taking a tank wagon full of RBOB and then driving it to a railroad spur where ethanol is splashed into it. Then, the tank wagon will be driven to the service stations.

Home fuel bills show no sign of mild winter, New York Times, Mar. 23.

<http://www.nytimes.com/2006/03/22/national/22heat.html>

City commits to big cuts in greenhouse gases, Seattle PI, Mar. 24.

[http://seattlepi.nwsourc.com/local/264194\\_warm24.html](http://seattlepi.nwsourc.com/local/264194_warm24.html)

Avista mulls renewable energy buy – Company hopes to decide on supplier shortly, also will seek efficiency ideas

[http://www.spokanejournal.com/spokane\\_id=article&sub=2714](http://www.spokanejournal.com/spokane_id=article&sub=2714)

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Pumping gas isn't an exact science. Mar. 27.

[http://seattlepi.nwsourc.com/local/264462\\_gasumps27.html](http://seattlepi.nwsourc.com/local/264462_gasumps27.html)

On the Ethanol Bandwagon, Big Names and Big Risks. New York Times, Mar. 26

<http://www.nytimes.com/2006/03/26/business/yourmoney/26etha.html?ex=1301029200&en=7c21ddc350bd9274&ei=5088&partner=rssnyt&emc=rss>

Governors object to Bush plan to divert BPA funds, Seattle Times, Mar. 27

[http://seattletimes.nwsourc.com/html/localnews/2002890279\\_bonneville26.html](http://seattletimes.nwsourc.com/html/localnews/2002890279_bonneville26.html)

Idaho overwhelmingly pass moratorium on coal power plants. Star Tribune, Mar. 28.

<http://www.casperstartribune.net/articles/2006/03/22/news/regional/d3b58c904e769ce187257139005f3e44.txt>

Riding high on a tide of oil. New York Times, Mar. 28.

<http://www.nytimes.com/2006/03/28/business/28alberta.html>

Canada won't derail Alaska natural gas pipeline. New York Times, Mar. 29

<http://www.nytimes.com/reuters/politics/politics-energy-alaska-canada.html>

In Russia, ample supplies, few pipelines, New York Times, Mar. 29.

<http://www.nytimes.com/2006/03/28/business/worldbusiness/28gaz.html>

Auto industry gets new fuel economy rules. New York Times, Mar. 29.

<http://www.nytimes.com/aponline/business/AP-Fuel-Economy.html>

22 Senators Call for Renewable Energy's Full Funding for FY 2007

<http://www.renewableenergyaccess.com/rea/news/story?id=44479>