

# Peak Oil Review

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## 1. Crude and gasoline

Brent Crude surged to an 11-month high above \$76 a barrel on Friday. That's close to the all-time record of \$78.65 set last August and has led to talk of \$80 or more oil before the summer is out. There does not seem to be a single major factor behind the increasing prices. US commercial crude stockpiles grew to a 9-year high last week. Refiners still are having trouble getting their utilization above 90 percent of capacity --- 5 percent below the 5-year average at this time of year. Most analysts cite more trouble in Nigeria, summer maintenance in the North Sea and a general drop in stockpiles outside of the US as reasons behind the increase. Many suggest the price surge is mainly technical, triggered by prices crossing the \$70 threshold.

The immediate prospects for US gasoline supplies are unclear. Problems continue to plague the aging and overworked US refineries and last week there were additional reports of unscheduled outages. The EIA, however, tells us that so long as we can keep importing at least 1.2 million b/d of gasoline and blending components we should be able to get through the summer. Demand remains about 1.2 percent above last year despite numerous surveys in which Americans claim to be cutting back on discretionary driving. Retail gasoline prices, which have fallen by an average of more than 32 cents a gallon since late May, are likely to begin rising again in response to last week's surge in both crude and wholesale gasoline prices.

## 2. Report of the National Petroleum Council

Nearly two years ago, Energy Secretary Bodman asked the National Petroleum Council, a group of senior oil company executives set up by President Truman in 1946, to study the concept of peak oil and prospects for oil and gas production through 2030. Last week the Council announced it will release the report on Wednesday July 18<sup>th</sup>.

In its press release, the Council claims "the report takes an integrated view of supply, demand, infrastructure, technology, and geopolitics, offering a comprehensive review of public and aggregated proprietary energy outlooks. Featuring in-depth analyses of technology trends and opportunities, the report offers policy options viewed through economic, security, and environmental perspectives. More than 350 expert participants from diverse backgrounds and organizations participated in its preparation."

As is normal in these situations, a copy or summary of the report was passed to a friendly journalist, in this case Reuters, in order to add to the pre-release hype. The Reuters story gives us an idea what is coming next week.

In a draft cover letter to Bodman outlining its findings, the Council says, "The world is not running out of energy resources, but there are accumulating risks to continuing expansion of oil and natural gas production from the conventional sources relied upon historically." Those risks include "political hurdles, infrastructure requirements and availability of trained work force." "The group calls for "a new assessment of the global oil and natural gas endowment and resources to provide more current data for the continuing debate."

### **3. A world energy crisis**

In recent weeks, there have been an increasing number of reports concerning serious electricity and gasoline shortages in no less than 24 countries around the world. In many cases, the leaders of these countries have announced that the situation is critical while at the same time offering assurances that they have plans to improve the situation shortly.

In about half the countries, the problem is simply not enough electricity capacity to meet growing demand sparked in part by rising world temperatures. In many cases, urban population is increasing so fast that investment in new infrastructure is not keeping up. In those countries which depend on hydro dams for a significant portion of their electricity, droughts have lowered water levels to the point where generators are being shut down. Countries that use oil for thermal or diesel power generation are finding their customers simply can't afford electricity from \$70 oil. Finally, in a few places such as Iraq and Nigeria, insurgents keep blowing up fuel lines to the generating stations. Rolling blackouts ranging from a few hours to most of the day are becoming far more common around the world than most of us realize.

Incidences of oil and gasoline shortages are becoming more common too. Nepal is completely out of retail gasoline and diesel as they can't afford to pay India for their imports. A few weeks ago, Gambia nearly shut off all electricity production as the country could no longer afford the fuel. This list of woes goes on and on.

For most, there is little prospect that the situation will improve in the foreseeable future. Blackouts will grow longer and more widespread. Gasoline shortages will increase and supplies increasingly will be sold at black market prices.

### **4. Venezuela – the aftermath of Orinoco**

Just before Conoco and Exxon pulled the plug on their heavy oil projects in Venezuela's Orinoco River basin, President Chavez declared "They can leave. They won't be missed."

Although four major oil firms — Chevron, BP, Total of France and Statoil of Norway — opted to stay on as junior partners, Venezuela now has an average 78 percent stake in the four Orinoco projects. Chavez has offered stakes in the projects to firms from Argentina, Belarus, Brazil, China, India, Iran, Norway, Spain, Russia, Uruguay and Vietnam, but the Chinese seem to be the only ones in sight with the capital to participate.

Chavez has announced plans to expand Venezuela's declining production oil production to 5.8 million b/d and to double Orinoco production to 1.2 million b/d in the next five years.

Many are skeptical. Unlike Conoco and Exxon, none of the state-owned companies in the Orinoco basin have much experience producing heavy oil, which requires more technical know-how than conventional petroleum. That's a key factor because experts believe breakthroughs soon could lead to higher recovery rates for heavy oil as only about 10 to 15 percent of the oil in the Orinoco can be recovered using current technology.

The key issue at the minute seems to be whether the Chinese are willing to step in with a major effort in both investment and developing the heavy oil expertise to help Chavez arrest the decline in his oil industry.

## 5. Energy Briefs

- Followers of Shiite cleric Moqtada al-Sadr have joined a growing chorus of Sunni, Kurdish and Shiite **opposition to a draft oil law** approved by Iraq's cabinet and backed by Washington. Sadr's supporters said they would not support any law that would allow firms "whose governments are occupying Iraq" to sign Iraqi oil deals.
- Iran announced that it will stop producing purely gasoline-driven cars and produce more **dual-fuel vehicles**, which also run on natural gas. Last year, some 1,150,000 vehicles were manufactured in Iran.
- **China's coal output** rose 7.1 percent on year in the first half of 2007 to 1.1 billion metric tons. The growth is slower than the year-over-year 12.8 percent, mainly due to the government's closure of small illegal coal mines and an increase in coal imports.
- A **World Bank report**, produced in co-operation with the Chinese government, found that 750,000 people die prematurely in China each year, mainly from air pollution in large cities. Beijing censored large parts of the report because of concerns that findings on premature deaths could provoke "social unrest".
- Iranian Oil Minister Hamaneh admitted that international **sanctions** imposed over its controversial nuclear program were harming its ability to invest in oil infrastructure.
- Militant gunmen attacked an oil drilling rig and kidnapped five expatriates in the **Niger Delta** early on Wednesday. This came as the rebel Movement for the Emancipation of the Niger Delta (MEND), responsible for most of the attacks that have crippled the Nigerian oil industry, called off a one-month truce.
- After days of shortages in **Nepal**, the state-owned petroleum importer and distributor finally reached the minimum mandatory level of fuel stocks and stopped delivering supplies to gas stations.
- Scattered fuel shortages continued in **North Dakota** last week as wholesalers and retailers scrambled to find gasoline. Petroleum marketers say refinery slowdowns in the region are forcing truckers to wait longer at pipeline terminals to get fuel.
- **ConocoPhillips** said last week its global production likely fell in the second quarter from the first three months of 2007, but it benefited from higher crude oil and natural gas prices for the period.
- The decline in **UK North Sea oil** and gas production continued in April with output falling to 2.8 million boe/d. The underlying year-over-year decline rate was 7.8 percent.
- **Russia's** crude exports fell 6.9 percent in June as higher export duties encouraged oil companies to refine more crude domestically.
- Saudi Arabia says it is on track to complete in December the **Khursaniyah project** to bring online around 500,000 barrels per day of light crude. Some western experts are skeptical that the Saudis will be able to get so much production out of an older field.
- Russia's parliament voted to allow Gazprom and the state oil pipeline company Transneft to employ and arm **private security units**. Russia's interior ministry will

supply Gazprom with guns from its own armory. Supporters of the plan say that Russia's oil and gas installations have to be protected from terrorist attack at all cost.

- Russia announced that it has territorial rights to a significant chunk of **Arctic seabed**, and is seeking UN approval to develop it for oil, gas, and mining potential. The claim centers on the 1,220-mile long underwater Lomonosov Ridge, which joins Siberia to Canada. According to Russian media, the ridge is technically a part of Russia, and therefore open to exploitation.
- **Australia** admitted for the first time that securing oil supply is a key factor behind its involvement in the Iraq war. Defense Minister Brendan Nelson said a review of Australia's defense strategy that maintaining "resource security" in the Middle East was a priority.
- **Argentina** has admitted that the energy sector is in trouble. For the first time, President Kirchner used the word "crisis" to describe the severe shortages that have forced the government to ration natural gas for factories to guarantee energy for heating homes.
- **ExxonMobil** pumped just 3 percent of the world's oil last week while national oil companies produced the bulk of the world's supply.
- An article in the *Oil & Gas Journal* questions the press release from IHS energy consultants last April claiming that there may be 100 billion barrels of oil under **Iraq's western desert**. The story points to a 2004 study which concluded reserves in the region may only be 500 million barrels at the 95 percent confidence level.

### Quote of the Week

"If you want to buy petrol illegally from the black market you have to pay seven times the price." -- Iranian motorist

### Commentary: A 10% Reduction in America's Oil Use in Ten to Twelve Years An Overlooked, Practical, and Affordable Approach Using Today's Technology

By Alan S. Drake

*(Note: Commentaries do not necessarily represent ASPO-USA's positions; they are personal statements and observations by informed commentators.)*

#### Step One – Electrify US Freight Rail Lines and Shift Freight to Rail

Japanese and most European railroads are electrified. The Russians recently finished electrifying the Trans-Siberian Railroad, from Moscow to the Pacific, and to the Arctic port of Murmansk. So there are no technical limitations. Electrifying railroads and transferring half the truck ton-miles to rail should save 6.3% of US oil consumption.

Electrified railroads also expand rail capacity since they accelerate and brake faster.

Today's diesel railroads are roughly eight times more energy-efficient than heavy diesel trucks. Railroads carried 27.8% of the ton-miles with 220,000 barrels/day while trucks carried 32.1% of the ton-miles with 2,070,000 b/day (2002 data).

When we convert trains to electricity, the rule of thumb is that 1 Btu of electricity will do the work of 2.5 Btus of diesel on rural plains, and 1 to 3 in mountainous and urban areas. Generating electricity back into the grid when braking is the difference.

These savings are multiplicative. Switch freight from truck to diesel rail (x8 savings) and electrify the railroad (x2.5 savings) and end-use goes from 20 BTUs of diesel to one BTU of electricity.

Faced with cheap oil and toll-free interstate highways for decades, US railroads reduced their capacity (often by tearing up one of two tracks) and ceded much cargo to trucking. Today, intermodal shipments (local trucking, long distance by rail via containers) are growing rapidly – but this trend must be accelerated.

USA railroads have pointed to property taxes as the reason that they have not electrified (no taxes on their diesel, property taxes on electrification infrastructure). Exempting any rail line that electrifies from property taxes under the Interstate Commerce clause would promote the rapid electrification of many rail lines. Expanding capacity would then be more economically attractive without the burden of property taxes. Removing property taxes on electrified rail lines would take the thumb off the scale in the economic competition between rail and trucks. Trucks pay no property taxes, directly or indirectly, on their right-of-way. Trains do. Local property tax losses above a certain percentage of total taxes could have the excess compensated by the Federal Government.

### **Step Two – Increase Urban Rail Federal Funding**

Building the gas-saving equivalent of twelve DC Metros would save 4% of US oil use (6% of transportation oil use). New electric mass transit will benefit the USA much more than new highways.

In 1970, 4% of DC commuters used city buses to get to work. Today over 40% use public transit. The difference is the 106 miles of Washington Metro. Washington Metro saves between a half-billion and a billion gallons of gasoline per year; changes in urban and suburban development patterns contribute to these savings. Such savings will only increase over time.

Miami passed a sales tax to build a 103-mile system of elevated "Subway in the Sky".  
<http://www.miamidade.gov/trafficrelief/RailMap.htm> [brown lines are 2016+]

Twenty-five years to build a system that will save billions of gallons of gasoline: why so long? Limited Federal Transit Administration (FTA) funding. Robust federal funding would result in an explosion of urban rail, from streetcars to light rail and rapid rail, combined with widespread commuter rail.

The Interstate Highway system was built with 90% federal funding; yet federal funding for new urban rail has been cut from 80% to de facto 30%.

The United States once built 500 electric streetcar systems in 20 years. Most towns of 25,000 and larger built a non-oil electrical transportation system. The USA did this with a population of less than one-third of today's, approximately 3% of today's GNP, and simple technology. We did it once; we can do it again!

### **Step Three – Promote Electric Trolley Buses**

They require electrical infrastructure but electric trolley buses are cheaper and lighter, they last longer, they are pollution-free, and are quiet, smooth (much less jerky) and more attractive to passengers than fossil-fuel buses.

The FTA currently funds 80% of bus replacement costs on a twelve-year cycle; 15 years might be more appropriate. Perhaps FTA could fund fossil-fuel replacement buses on a 13.5-year cycle at 75% and trolley buses (with their electrical infrastructure) at 92%.

### **Step Four – Promote Transportation Bicycling**

Only 0.4% of Americans commute by bike to work; 3.5% of Portland (OR) commuters use bicycles. Increasing the national average of bicycling commuting will have a measurable impact on oil consumption, and public health. Bicycling, like rail, has “Elasticity of Supply” in an emergency. Local steps plus national support, including making it patriotic to bicycle and walk, can help.

### **Step Five – Create a Strategic Railcar Reserve (SRR) to Supplement the Strategic Petroleum Reserve (SPR)**

One future scenario: The Islamic Republic of Arabia replaces the Kingdom of Saudi Arabia and the new Islamic Republic cuts exports to buy just essentials. The USA would face a severe and prolonged oil supply interruption.

The US government would immediately institute a variety of oil conservation measures and start draining the SPR. Demand would swamp the capacity of every urban rail system in the country. Freight railroads and Amtrak would be overwhelmed. Soon more severe oil demand restrictions would be required, such as rationing.

Every urban rail system will need more rolling stock. Rail cars are the first limiting factor. Freight railroads and Amtrak will need more cars as well.

More rolling stock will reduce USA oil demand and allow the SPR to last a few days longer. Once the SPR is exhausted, the SRR (and all the steps above) will still be benefiting the nation. Rail cars are made in the USA, their benefit will last much longer than barrels of oil, they can be used and not disappear in minor oil supply interruptions, and they are cheaper, per barrel saved, than \$100+ oil in a prolonged emergency.

Urban rail systems should estimate demand in the case of an oil supply interruption and what would be required to handle this demand. Sometimes retired cars could be mothballed, but usually new cars would be required for the SRR.

### **Summary**

Twenty BTUs of diesel fuel consumption replaced by one BTU of electricity is the energy trade by shifting from heavy trucks to electrified railroads. Replacing 2 million barrels/day of heavy truck diesel fuel would take just 1.4% of US electricity.

Transportation uses 0.19% of US electrical demand today. The gasoline-saving equivalent of a dozen new DC Metros would likely double that 0.19% figure.

These proposals would complement the widely discussed steps of higher CAFE, etc.. They are complementary and not mutually exclusive. And these steps can start immediately, they require no new technology, and they would have a significant impact in the medium term.

These steps would be faster than drilling in the Alaskan National Wildlife Refuge, would produce at least twice as much oil savings as ANWR would produce at its peak, and would never deplete (Prudhoe Bay is producing at 20% of its peak, Washington Metro hits a new peak in oil saved every year).

Sometimes good public policy is good politics. Reducing US oil consumption, reducing greenhouse gases, improving the US economy, reducing congestion, providing non-oil transportation alternatives, and reducing the number of 18-wheel trucks on the highways should be both good public policy and good politics!

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