

MUSINGS FROM THE OIL PATCH

April 4, 2006

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Note: *Musings from the Oil Patch* reflects an eclectic collection of stories and analyses dealing with issues and developments within the energy industry that I feel have potentially significant implications for executives operating oilfield service companies. The newsletter currently anticipates a semi-monthly publishing schedule, but periodically the event and news flow may dictate a more frequent schedule. As always, I welcome your comments and observations. Allen Brooks

Energy Claiming More of America's Income

“The hand-wringing is way overdone with regard to oil prices’ effect on the consumer”

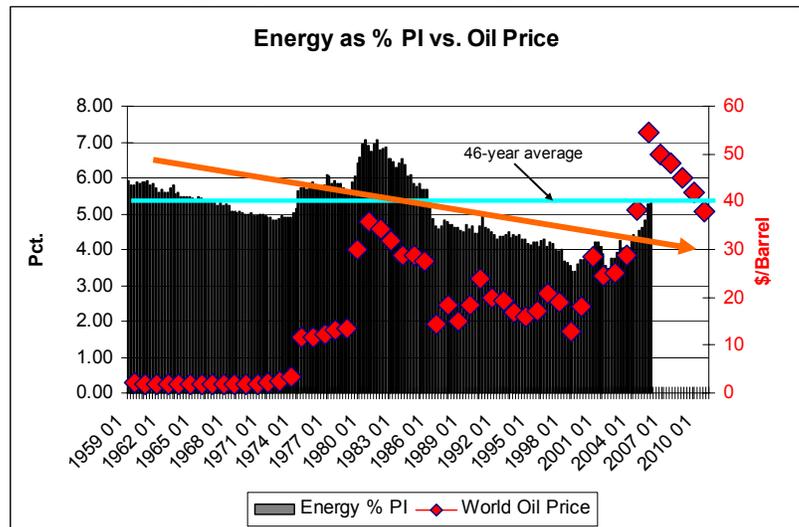
Several issues ago we discussed a report of a study done by Thomson Financial that showed that U.S. consumers averaged spending 5.67% of their personal income on energy products in 2005, but less than the historical average of 5.78%. The conclusion from the study was that, “The hand-wringing is way overdone with regard to oil prices’ effect on the consumer,” according to Mike Thompson, research director at Thomson Financial.

We decided to go back and look at the income data and see if we found anything different. We utilized the national income accounts provided on Economagic.com and looked at spending on gasoline, fuel oil and other energy plus expenditures for electricity, gas and household operation as a percentage of personal income on a quarterly basis at seasonally adjusted annual rates and in constant 2000 dollars starting in 1959. What we found was that energy expenditures averaged 5.09% over the 46-year period, but in the fourth quarter of 2005, it averaged 5.32%.

In recent years the amount of personal income devoted to energy has been climbing

If one looks at a chart (Exhibit 1) of the quarterly rate of spending, there is a clear downward trend, especially compared to the 46-year average as displayed by the line on the chart, with the exception of the mid 1970s through mid 1980s. The chart shows that in recent years the amount of personal income devoted to energy has been climbing. We thought it would be interesting to plot the annual average global oil price against the percent of energy expenditure data. This oil price data shows how the sharp jump in oil prices in the 1970s and early 1980s forced the percentage of expenditures on energy well above the long-term average. Given the recent rise in oil prices and the Energy Information Administration (EIA) forecast for oil prices, we could expect that the current percentage will go above the long-term average in future periods.

Exhibit 1. Energy Expenditures Claiming More Income



Source: Economagic.com, EIA, PPHB

An important consideration in figuring out whether energy expenditures will become a problem for the U.S. economy is the relationship between the growth in energy costs and personal income. For most of our economic history, personal income has demonstrated healthy growth compared to our expenditures. This is how we have been able to raise living standards. However, if we look at select time periods, we find varying results. For the 13-year period of 1987 through 2000, personal income grew at an average annual rate of 8.5% while energy expenditures increased at only a 6.85% rate. This was a period when crude oil prices languished in the mid-teens.

If one goes back to look at the 1974 through 1985 period, both personal income and energy expenditures grew at virtually the same rate (16.7% versus 16.4%), which contributed to the energy expenditure percentage falling only slightly from 5.75% to 5.66%. Of course, energy expenditures as a percentage of personal income were well above the 46-year average of 5.09%. What we find in recent years is that energy expenditures have been growing at a much faster rate than personal income. Between 2001 and 2005, personal income grew at a 4.95% average annual rate while energy expenditures rose at a 19.7% annual average rate. The critical issue now is what will be the growth rate in personal income? Energy expenditures will continue to climb higher since utility energy expenditures rise at a slower rate than gasoline and fuel oil because they are subject to dampening regulatory processes. If income growth remains weak, or weakens further, energy expenditures will become more of a problem in the future than the conclusion of the Thomson Financial study suggests.

What we find in recent years is that energy expenditures have been growing at a much faster rate than personal income

EIA Cuts January Demand Estimate

The January-February estimated demand of 20.397 million b/d is 0.9% lower than the same period a year ago and the lowest level for this period since 2003

Last week, the U.S. Energy Information Administration (EIA) cut its estimate of U.S. oil demand for the month of January. The EIA now estimates that U.S. demand averaged 20.11 million barrels per day (b/d), some 2% lower than last year and the lowest monthly demand since September 2005. The new estimate is 177,000 b/d below the prior forecast, or about 0.9% lower. Only distillate fuel was not below the prior estimate. Gasoline (-1.8%), jet fuel (-3.5%) and residual fuel (-18.6%) were all below their prior forecasts.

The EIA's preliminary forecast for February oil demand is 20.714 million b/d, or 0.3% higher than last year and the highest February since 2004. Combined, the January-February estimated demand of 20.397 million b/d is 0.9% lower than the same period a year ago and the lowest level for this period since 2003. The EIA is maintaining its first quarter 2006 demand estimate of 20.63 million b/d, which is unchanged from demand in the prior year period.

As we have stated numerous times, we believe the demand side of the supply equation is the variable receiving too little attention in oil and gas market forecasts. So we thought we would look at the EIA's forecasts for oil and natural gas demand growth in 2006. The current forecast calls for oil demand to increase 1.4% over last year while natural gas demand should be flat. In the December 2005 *Monthly Energy Review*, the EIA projected 2006 oil demand to rise by 2.3% and for natural gas demand to increase by 1.0%. So when we look at the current EIA projections for 2007 oil and natural gas demand growth of 2.2% and 2.4%, respectively, we remain skeptical.

Unless economic activity starts to grow faster than last year, it is hard to see how the energy demand growth rate will rise as strongly as currently projected

If the 2006 demand continues to fall short of current estimates, then either the 2007 numbers need to be lowered, or the projected growth rates will skyrocket and look way too high. Unless economic activity starts to grow faster than last year, it is hard to see how the energy demand growth rate will rise as strongly as currently projected.

US Imports Up - Northern Neighbors' Concern Growing

U.S. oil and gas imports are growing and the U.S. needs to provide greater access to acreage currently off-limits to the petroleum industry said NOIA speakers

We listened to Energy Secretary Samuel Bodman and former Louisiana Senator John Breaux at the annual meeting of the National Ocean Industries Association (NOIA) in Washington last week tell attendees that U.S. oil and gas imports are growing and the U.S. needs to provide greater access to acreage currently off-limits to the petroleum industry. Yes, the industry needs more prospective oil and gas acreage to explore for new reserves that will help offset our declining production. However, in the interim we continue to survive on increasing crude oil and natural gas imports from Canada, our northern neighbor. Canada has become the largest foreign supplier of crude oil, natural gas, electricity and uranium for energy to the United States. Can the U.S. continue to

The report believes the U.S. is taking advantage of Canada and that the country is making a significant long-term mistake by not restricting the development of its energy resources and allowing its society to be hurt by this exploitation

depend on Canada to meet our growing import needs?

We just finished reading *Fueling Fortress America: A Report on the Athabasca Tar Sands and U.S. Demands for Canada's Energy*. The report, released in late February, was authored by the Canadian Centre for Policy Alternatives, the Parkland Institute and the Polaris Institute. While we do not know the political leanings of these organizations, we believe one can tell from the language used and the conclusions of the report where they stand. The authors of the report take a belligerent attitude toward the U.S. over the development and exploitation of Canada's oil and gas resources. They believe the U.S. is taking advantage of Canada and that the country is making a significant long-term mistake by not restricting the development of its energy resources and allowing its society to be hurt by this exploitation. They invoke concerns about peak oil and its implications for Canada's energy security, which they believe is being damaged by the growth of exports to the United States. They also characterize U.S. foreign policy, including the war in Iraq, as totally motivated by the need to secure oil supplies for the U.S. military and economy.

The report states its purpose as follows: "Its [the report's] underlying purpose is to cast a spotlight on the Athabasca tar sands, including the profound economic, ecological, and social costs at stake in their development, in such a way as to stimulate public discussion, debate, and action towards a new made-in-Canada energy policy and strategy." The report is divided into five chapters, each dealing with a particular line of inquiry. The five lines of inquiry are: The U.S. empire and its demands for energy security; The role that Canada plays as a U.S. energy satellite; The environmental costs of this new energy corridor; The fueling of the U.S. military-industrial complex; and The social impacts of the tar sands and pipeline.

The report should be read since it mirrors many of the views about the United States and its profligate energy ways held by foreigners

While this is not the most pleasant report to read, and its conclusion suggests that Canada needs to institute a protectionist energy policy, which would have a severe economic impact on the U.S. economy, the report should be read since it mirrors many of the views about the United States and its profligate energy ways held by foreigners. (See the web site www.policyalternatives.ca)

One of the key targets of the report is the proportional sharing clause of the North America Free Trade Agreement (NAFTA). The essence of that clause was negotiated in 1989 when the U.S.-Canada Free Trade Agreement (FTA) was signed. The FTA was "grandfathered" into the NAFTA agreement in 1994. The rules under this clause prohibit the use of tools by governments to regulate energy exports, including export prices or export taxes and export bans, or even export quotas. Under the GATT (General Agreement on Tariffs and Trade) articles, which modify NAFTA Article 605, Canada is not able to conserve energy of any kind if it is in short supply. Canada must continue exporting to the U.S. the same proportion of its total supply that it has exported during the prior three years. The report argues that Canada should obtain an

exemption from the clause just as Mexico has obtained, and if that is not possible, then Canada should withdraw from NAFTA to preserve its own energy supplies.

The report also argues that Canada should reinstitute the previous practice of maintaining a national 25-year supply of oil and gas reserves to meet domestic needs. The report is also highly critical of the willingness of Alberta to allow the rapid development of its tar sands deposits, coalbed methane deposits and the construction of the Mackenzie Valley natural gas pipeline since the country will largely be using one energy resource to exploit another energy resource. In addition, these developments are creating inflation, pollution and social problems for the province that will lead to a boom-and-bust scenario with great costs.

A beggar-thy-neighbor attitude by energy-rich countries could devastate the United States economy

Even if one ignores the anti-American political views of the authors of the report, the discussion highlights the potentially unpleasant results for the United States by the adoption of its conclusions. If, and when, peak oil becomes a reality, these debates will become more prevalent among the energy suppliers to the United States. A beggar-thy-neighbor attitude by energy-rich countries could devastate the United States economy. It would force our citizens to face, and deal with, the NIMBY (not-in-my-backyard) attitude toward the exploration and development of domestic energy resources. It could also become the Sputnik catalyst for the development of our next energy resource.

The Battle Over Cape Wind

The Cape Wind project to erect a wind farm in Nantucket Sound has become a target of bitter emotional warfare

The Cape Wind project to erect a wind farm in Nantucket Sound that would supply Cape Cod with upwards of two-thirds of its electricity needs has become a target of bitter emotional warfare. The emotions are running very high among environmentalists who own homes on the Cape or neighboring Nantucket Island and who object to the potential for any "visual pollution" from wind turbines even though they produce clean power. The warfare has spilled over into attacks on the legitimacy of the wind farm by congressional allies of the locals opposed to the project who want to "protect" the water-views of a handful of rich and powerful people. According to the local media, the effort is designed to keep energy facilities away from the elite, even as fossil-fuel power plants near-by keep pumping out pollution.

Rep. Delahunt called for more hearings on the project, but based on an outdated study about the impact of British windmills on radar

Recently, U.S. Rep. William Delahunt (D.-Mass.), a close friend and ally of Massachusetts Senator Ted Kennedy who is staunchly opposed to the wind farm, suggested that the Cape Wind project would threaten national security. He asserts that the project could endanger security by hampering civilian and military radar systems. He called for more hearings on the project, but this time by the House Committee on Homeland Security, based on an outdated study about the impact of British windmills on radar. Delahunt failed to mention, however, that the Federal Aviation Administration (FAA)

had already provided in 2004 the needed permits for the project. The FAA ruled that the windmills present “no hazard” to civilian radar. In addition, last year the U.S. Air Force also concluded that it would have no negative impact on military radar.

The battle has even involved reporters examining the lobbying expenditures of energy mogul Bill Koch, who has a big summer house in Oysters Harbors, the tony Cape village that is the ground zero of opposition to the wind farm. Koch has been putting substantial effort and funds into trying to kill the Cape Wind effort and has even enlisted the help of people such as Alaska Congressman Don Young, the man who introduced legislation to force the banning of any windmill located within 1.5 miles of any ferry or ship traffic. Don Young is an old pal of the wind-farm’s main Washington lobbyist, Guy Martin.

According to reporters with *The Cape Cod Times* and the *Cape Cod Today* web site, newly released lobbying-disclosure forms raise serious questions about Mr. Koch, co-chairman of the Alliance to Protect Nantucket Sound, Cape Wind’s main opponent. Also being scrutinized are two Washington lobbying firms – U.S. Strategies, which does work for Mr. Koch’s energy company, Oxbow Industries, and Kessler & Associates Business Services. Reporters are trying to assess how much money Mr. Koch has spent so far in trying to stop Cape Wind, and exactly how Mr. Koch’s outlays dovetail with federal lobbying laws.

For people with money, not-in-my-backyard (NIMBY) attitudes trump even clean energy if anything about their pampered existence might be altered

The message from this battle appears to be that for people with money, not-in-my-backyard (NIMBY) attitudes trump even clean energy if anything about their pampered existence might be altered. The only logical outcome from this attitude is that eventually this region will need to depend upon virtual energy supplies. Ah-ha! We now know the fuel of the future – virtual energy!

Barclays Commodity Analyst Sees \$65 Oil as New Norm

“\$65 is the new \$20 oil”

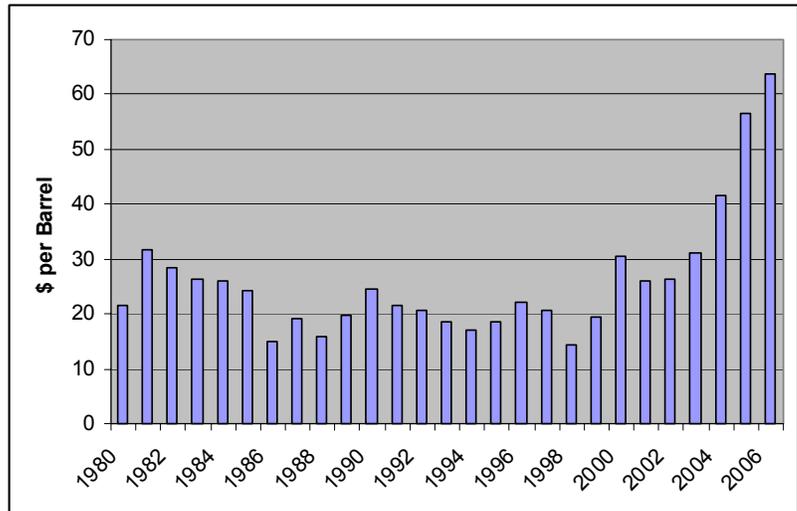
According to a media report, investment bank Barclays Capital’s Head of Commodity Research, Paul Horsnell, told a gathering of shipping industry executives with the International Association of Independent Tanker Owners that he believes, “\$65 is the new \$20 oil,” the former benchmark price that the industry perceived to be the level around which oil prices would trade. However, as shown in Exhibit 2, the \$20 per barrel price really marked a cap on oil prices for almost 15 years from the mid 1980s to 2000 that was not exceeded as demand would fall and supply expand each time prices neared that \$20 level.

Mr. Horsnell said that oil prices at current levels are fully justified by industry fundamentals

Mr. Horsnell said that oil prices at current levels are fully justified by industry fundamentals since the long-term market tightness of supply and demand will not lessen appreciably in the near future as a result of the absence of non-OPEC supply growth. “The market has given up on the idea that non-OPEC growth will come out

quickly,” Mr. Horsnell opined. He pointed to a lack of non-OPEC supply growth last year as endemic of the oil market’s problem in building spare production capacity that would lead to lower global oil prices.

Exhibit 2. \$20 Was a Cap on Prices From 1986 to 2000



Source: EIA, PPHB

Larger inventories are the only protection countries have against supply disruptions

Facing a world with little spare production capacity, consumer nations are building inventories of both crude oil and refined products. However, due to the limited global refining capacity available, the ability to build significant refined product inventories is limited. According to Mr. Horsnell, “It’s a very rational market response.” By that we believe he means that larger inventories are the only protection countries have against supply disruptions. A key issue remains what impact this high oil price may have on demand, since we know that the ramping up of capital spending currently underway by the global oil industry is likely to produce more oil supply.

Barclays Capital is forecasting the price of West Texas Intermediate to average \$68 for 2006, up from the \$56.70 per barrel average of last year.

Supply Shortfall Trumped by Hurricane Fears

The week before last, crude oil prices soared to a seven-week high as Royal Dutch Shell (RDS.A-NYSE) announced that the lack of military security in the Delta region of Nigeria had forced the company to continue the shutdown of its export facilities that had lead to a shut-in of almost 20% of the country’s crude oil production. Due to the Shell decision, the Italian oil company, Eni (E-NYSE), was forced to declare force majeure for its oil production in the region.

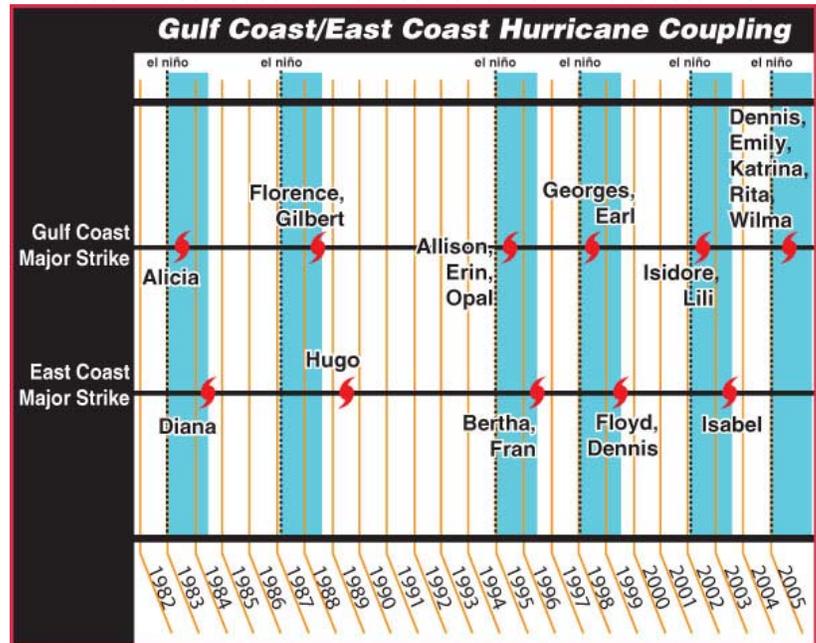
The media seized upon the AccuWeather.com forecast as its explanation for higher crude oil prices, rather than the Nigerian supply problems

What may have spooked the Eastern media, however, was AccuWeather’s projection that this year could see a major hurricane of the scale of Hurricane Katrina, targeting the East Coast, and more likely the Northeast region

As one would have logically expected, the potential for an extended shut-in of almost 600,000 barrels per day (b/d) of crude oil production was perceived as a significant problem for the global oil market as it moves through the seasonally weak demand period and into the period of seasonally stronger summer demand. The possibility that the market would be unable to meet global oil demand forced oil prices higher in order to restrict future demand growth. At the same time this news was hitting the market, AccuWeather.com released a new study about the outlook for the upcoming hurricane season in the United States. While the gist of the AccuWeather forecast was little different from that of other recent hurricane forecast updates, the media seized upon this forecast as its explanation for higher crude oil prices. This U.S.-centric view of what influences world commodity prices is in keeping with the myopic view of the national business media and its inability to analyze news and events.

AccuWeather stated that in terms of the number of storms the 2006 hurricane season will again be more active than normal, but less active than last summer’s historic storm season. Last year saw a total of 26 named storms and 14 hurricanes. As we reported in the last issue of *Musings From the Oil Patch* (March 21, 2006), the latest Tropical Storm Risk forecast prepared by two professors at University College London was moderated from its prior forecast and is below the leading hurricane forecast estimate. What may have spooked the Eastern media, however, was AccuWeather’s projection that this year could see a major hurricane of the scale of Hurricane Katrina, targeting the East Coast, and more likely the Northeast region. They said a devastating storm could happen as

Exhibit 3. East Coast Hurricanes Follow Gulf Coast Storms



Source: AccuWeather.com

The 1938 hurricane caused \$306 million in damage that, when adjusted for inflation, would total nearly \$6 billion today

Hurricanes in the last 50 years have been a southern U.S. phenomenon and the Northeast coast is not as thoroughly prepared as it should be

early as this summer based on the historic pattern of East Coast storms following strong Gulf Coast storms in the subsequent year.

The AccuWeather report focused on the potential for a severe hurricane mimicking the 1938 hurricane that destroyed the northern end of Long Island and the city of Providence, Rhode Island. As AccuWeather reported, the 1938 hurricane, known as “the Long Island Express,” caused \$306 million in damage that, when adjusted for inflation, would total nearly \$6 billion today. However, today’s more developed and populous coastal regions of the Northeast would likely sustain greater damage and potentially greater loss of life, despite the best efforts of the government to protect U.S. citizens and property.

Prior to the arrival of Hurricane Katrina, New Orleans followed its standard evacuation procedures, minimizing the potential death toll. Several weeks later, the upper Texas Gulf Coast also evacuated before the arrival of Hurricane Rita. Northeast states are ill-prepared to evacuate, assuming there was somewhere for them to go. We know from the local media that Rhode Island’s evacuation plans are way out of date.

As AccuWeather put it, a hurricane of the magnitude of Katrina has not made landfall in the northeastern U.S. in nearly 55 years. Most hurricanes in the last 50 years have been a southern U.S. phenomenon and the Northeast coast is not as thoroughly prepared as it should be. AccuWeather summed up its view by saying that many meteorologists believe that the next time a storm like “the Long Island Express” hits the Northeast coast, it could become the greatest natural disaster in U.S. history. Imagine the impact on U.S. energy demand if this scenario occurs.

Exhibit 4. Is 1938 Hurricane A Template?



Source: AccuWeather.com

Weaver's Cove LNG Plant to Be Reviewed by FERC

In a highly unusual move, FERC announced that it will reconsider its prior approval of the construction of the Weaver's Cove LNG re-gasification terminal in Fall River, Massachusetts

In a highly unusual move, the Federal Energy Regulatory Commission (FERC) announced that it will reconsider its prior approval of the construction of the Weaver's Cove liquefied natural gas (LNG) re-gasification terminal in Fall River, Massachusetts. The terminal has been the subject of extensive local lobbying to stop the facility both before FERC approved it last year and since. The project has been targeted by local politicians and citizens concerned about the physical safety of homes located close to the proposed terminal. Objections were raised by safety experts hired by Fall River who questioned the ability of the large LNG ships to traverse Narragansett Bay and navigate in the Taunton River and then to be able to maneuver around a bridge across the river close to the proposed terminal location, without having problems.

One tactic employed in battling the terminal was having language inserted into federal legislation that banned the use of federal money to dismantle the old Brightman Street bridge over the Taunton River, which was to be replaced by a new bridge. When the legislation was signed into law, the terminal owners, a joint venture of Hess Energy (AHC-NYSE) and Poten & Partners, announced that they would employ smaller LNG ships to deliver the gas. This shift would have resulted in more than twice as many ships traversing the route each year than originally planned.

FERC's move may signal they will reject the plan and end the process before heading to court

Recently the Coast Guard signaled that it would re-examine the safety aspect of these smaller ships maneuvering around the two bridges. After that statement, FERC announced it would re-examine the terminal. This is quite unusual since the normal path for objections to FERC-approved projects is the federal courts. In this case, FERC's move may signal they will reject the plan and end the process before heading to court. This could be a signal that FERC wants to only fight over those LNG projects it believes can realistically deliver significant quantities of supply to the domestic gas market.

Oregon Starts Pilot Program to Replace Gasoline Tax

The increase in vehicle fuel efficiency is eroding the flow of Oregon gasoline tax revenue that is needed to support its road facilities

Oregon has begun a pilot program to test the technology for measuring mileage driven by locally-based automobiles that would enable the state to levy a "per-mile driven" tax. Like most states in the country, the increase in vehicle fuel efficiency is eroding the flow of Oregon gasoline tax revenue that is needed to support its road facilities. The prospect of further fuel efficiency gains, as high gasoline pump prices force citizens to drive less and/or to purchase more fuel efficient vehicles, will eventually create a financial crisis in which Oregon will be unable to support its transportation infrastructure. Developing an alternative revenue source is becoming a high priority for local government jurisdictions such as Oregon.

The task force determined that a new road revenue system based on a properly designed per-mile charge would not be vulnerable to motorists obtaining increasingly fuel efficient vehicles

In 2001, the Oregon State Assembly established the Road User Fee Task Force (RUFTF) to investigate new ways of generating revenue for the state's transportation system. The task force determined that a new road revenue system based on a properly designed per-mile charge would not be vulnerable to motorists obtaining increasingly fuel efficient vehicles in response to rising prices at the gasoline pump. After several years of investigating the issue and the technologies possibly available for implementation of a new tax system, Oregon is starting a pilot program to evaluate the aspects of charging a per-mile fee at the pump in lieu of paying the state gasoline tax.

Exhibit 5. Oregon's Gasoline Tax Revenue Problem

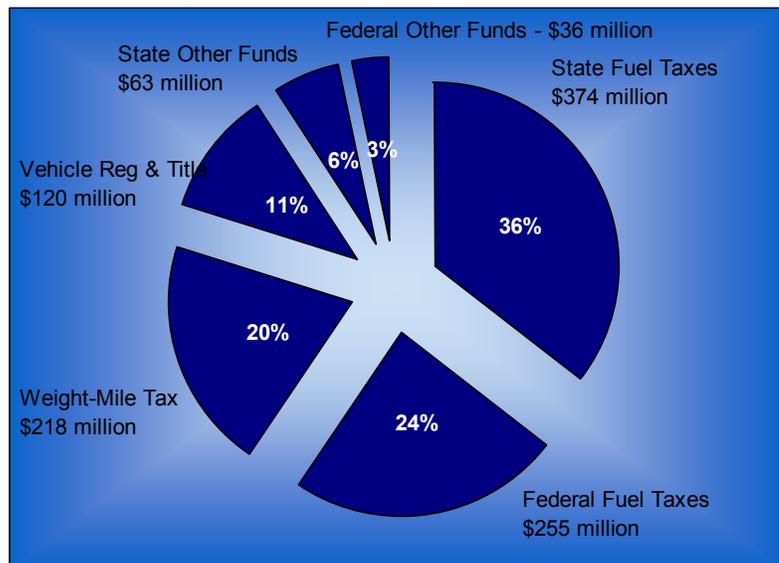
| Oregon Statewide Data | Population | Real Per Capita Personal Income (\$2,003) | Statewide Vehicle Miles Traveled (Billions) | VMT Per Capita (miles) | Total Gasoline Tax Revenue (Millions \$2002) | Gasoline Tax Revenue in Cents per VMT (\$2,002) |
|-----------------------------|------------|---|---|------------------------|--|---|
| 1970 Data | 2,091,533 | \$18,606 | 11.55 | 5,524 | \$266.33 | 2.31 cents |
| 2003 Data | 3,541,500 | \$28,734 | 31.36 | 8,855 | \$362.69 | 1.16 cents |
| Percent Change 1970 to 2003 | 69% | 54% | 171% | 60% | 36% | (50%) |

Source: Oregon State Assembly, PPHB

On a constant dollar basis, total gasoline tax revenue grew by 36%, but in terms of revenue per vehicle mile traveled, it fell in half

The challenge for Oregon is summed up in the economic data contained in Exhibit 5. Between 1970 and 2003, Oregon's population grew by 69% to over 3.5 million people. Because of the population growth, expanded economic activity and general economic health, total statewide vehicle miles traveled grew by 171%. On a per capita basis, vehicle miles traveled increased 60%, or roughly in line with the state's population growth. On a constant dollar basis, total gasoline tax revenue grew by 36%, but in terms of revenue per vehicle mile traveled, it fell in half.

Exhibit 6. Oregon's Roads Depend On Gasoline Taxes



Source: RUFTF, PPHB

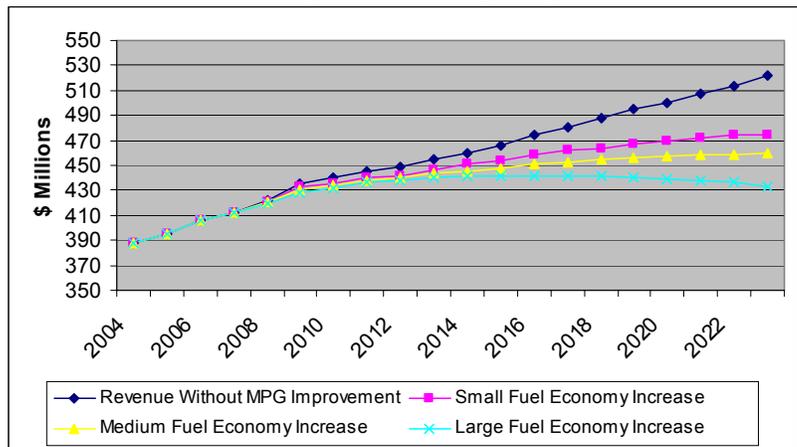
Based on the historical trends in miles driven and taxes raised, the state will face a growing funding gap

In 2005, fully 80% of Oregon's road revenues will depend on gasoline taxes, either directly or indirectly, as shown in Exhibit Z. Based on the historical trends in miles driven and taxes raised, the state will face a growing funding gap as the rapidly developing fuel efficiency improvements for conventional vehicles, the market penetration of innovative vehicle technology and the development of non-gasoline fuel sources eat away at the traditional gasoline tax revenue stream. Facing this outlook, RUFTF was charged with the mission to develop a revenue-collection system designed to be funded through user payment methods, acceptable and visible to the public, that ensures a flow of revenue sufficient to annually maintain, preserve and improve Oregon's state, county and city highway and road system.

After eight to 12 years, the negative revenue impact from improved fuel efficiency becomes large in dollar terms and likely will grow at a very rapid rate

Based on a review of Oregon's gasoline tax revenues in cents per vehicle mile traveled, had vehicle fuel efficiency not improved since 1993, the state would be consuming approximately 50 million gallons more gasoline with a corresponding increase in state gasoline taxes. As vehicle fuel efficiency is projected to continue to increase, RUFTF was able to prepare an analysis of what would likely happen to the state's gasoline tax revenues based on various assumptions about the amount of future fuel-efficiency improvement. After eight to 12 years, the negative revenue impact from improved fuel efficiency becomes large in dollar terms and likely will grow at a very rapid rate. Under any of the increased mileage efficiency scenarios, revenue reductions of significant magnitude will severely cripple the ability of the Oregon Department of Transportation to operate, maintain and improve the state's roads.

Exhibit 7. Fuel Efficiency Weakens Highway Tax Revenue



Source: RUFTF, PPHB

Besides the impact of improved fuel efficiency, the growth of alternatively powered vehicles will erode the road tax revenue. Oregon does have a Use Fuel tax statute in place, which charges alternative, i.e., non-gasoline, fuel purchases at the retail level based on the energy contained in the fuel. Just as the gasoline tax is not indexed for inflation, neither is the Use Fuel tax. In addition, this tax

may be difficult to administer, audit and enforce. The mileage fee plan proposed for Oregon would bring alternative fuel vehicles under its umbrella and would establish a fair and uniform market-based fee based on actual mileage driven.

Oregon is about to start testing its electronic system for tracking the mileage driven by vehicles that will allow for the substitution of a per-mile charge in lieu of the gasoline tax. The technology employs a G.P.S. (global positioning system) receiver that is programmed to only answer the questions, of "Is the vehicle traveling in Oregon?" and "Is the vehicle traveling in a smaller jurisdictional area such as a city?" The questions are answered either "Yes" or "No." There is concern about the privacy issue of travel data, but that will be dealt with legislatively, by limiting what data is captured and retained.

The flat fee per mile will enable the state to earn revenue based on the miles of use of the state's roads regardless of the fuel efficiency of the vehicle

The vehicle mileage in Oregon and in a city will be totaled and the information relayed to computers by the G.P.S. signal to a satellite. That information will be used to calculate the mileage fee that will be added to the cost of the gasoline, in lieu of the cents-per-gallon tax, at the time of a fill-up. The flat fee per mile will enable the state to earn revenue based on the miles of use of the state's roads regardless of the fuel efficiency of the vehicle. This is important since RUFTE determined that there was no difference in damage done to roads by the weight variation of automobiles. In other words, the belief that lighter cars do less damage to roads than heavier cars (one-ton vs. four-tons, for example) is not correct. This flat mile-fee system should insure that all vehicles are paying an equal amount for the wear and tear of existing roads.

On March 31, the "warm-up" phase of the test begins with 10-20 drivers. During April and May, the remaining 260 vehicles will be equipped with the G.P.S. devices. The first six months of the pilot will be the "control" phase. Participants will drive as they normally do and will continue to pay the state gas tax at the pump as usual (24 cents per gallon). The state user fee is being established at 1.2 cents per mile, which equates to 24 cents per gallon based on 20-mpg vehicle fuel efficiency.

The latter two groups will pay a vehicle mile fee, with one group paying a flat 1.2 cents per mile and the other a varied rate depending on the number of miles driven in the designated rush hour zones

In October, the "test" phase will begin and the participants will be divided into three groups: a control group, a vehicle mile tax group and a congestion pricing group. The latter two groups will be larger than the control group. The latter two groups will pay a vehicle mile fee, with one group paying a flat 1.2 cents per mile and the other a varied rate depending on the number of miles driven in the designated rush hour zones. These two groups will not pay any state gas tax for six months. The congestion testing is designed to see if variable taxes can be implemented to help deal with future transportation challenges.

One of the concepts to be examined during this test phase is the ability to collect the mileage fee at the pump. When the fuel purchase is totaled, the gas tax automatically will be deducted and the road user fee added. The receipt will show the transaction.

The state of California, the Puget Sound regional government and the U.S. Congress, among others, are watching the Oregon test as they have all begun programs to explore similar revenue programs. We suspect every state and locality will be watching before the year's test is up as the long-term trend in gasoline tax revenues is presenting a similar challenge for all governments.

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