



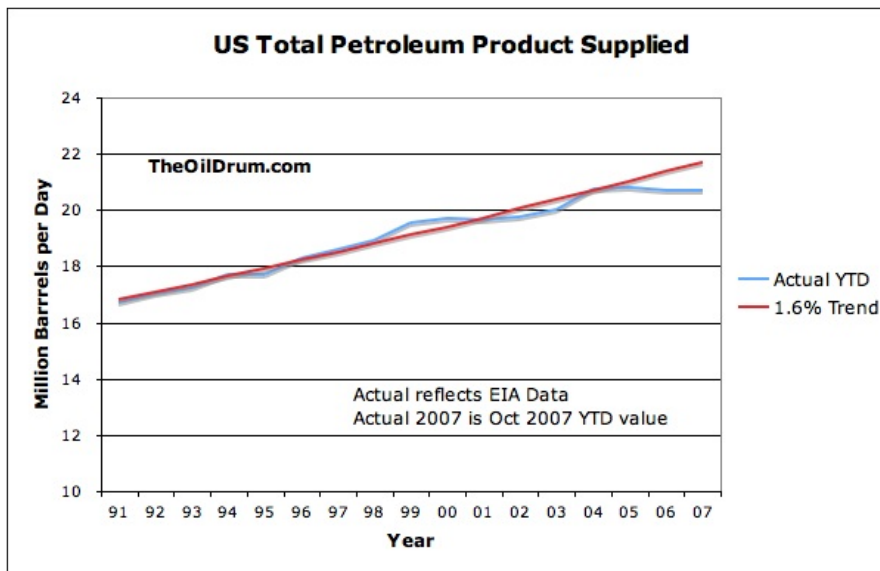
US Petroleum Supply, Ethanol, and State of the Industry - API

Posted by [Gail the Actuary](#) on January 27, 2008 - 10:45am

Topic: [Supply/Production](#)

Tags: [american petroleum institute](#), [blogger call](#), [ethanol](#), [gasoline](#), [oil production](#) [[list all tags](#)]

On Thursday, January 17, the American Petroleum Institute (API) hosted another Blogger Conference Call. The purpose of this call was to talk about 2008 US statistical data regarding oil supply, and various related issues. In this post, I provide insights from API's bloggers call. Since most of the numbers are fairly similar to EIA data, I also look at longer trends using EIA data.



1. API Statistical Report: In 2007, total domestic petroleum deliveries were flat--marking the third year in a row for which they experienced only minimal growth or outright decline.

From the graph, what API says about level US consumption of oil products ("petroleum deliveries") being flat for the last three years is very much in line with what EIA is showing. US Consumption of oil products of all kinds (gasoline, diesel, fuel for airplanes, asphalt, etc) was increasing for many years, then leveled off in the last three years.

Analysis. To get an idea of how much current consumption is below that that might be expected, I fitted an exponential trend line to 1991 to 2004 data. Based on a comparison between this trend line and actual EIA data through October 2007, US consumption of oil products is about 1.03 million barrels per day, or about 4.8%, below what might have been expected, based on 1991 to 2004 data. Even though this is EIA, and not API data, I think that the two sets of data are similar enough for this type of analysis. (My analysis was done for this report, not the call. We received

API Blogger Call

Before going too far, I should provide some information about the API blogger conference call. The call lasted about 75 minutes. The material related to the call (audio recording, transcript, and the documents we received in advance) can be found [here](#). The participants in the call were

American Petroleum Institute

Jane Van Ryan - Host
Red Cavaney, President and CEO, API
John Felmy, Chief Economist, API
Ron Planting, Manager of Statistics, API

Bloggers

Alan Drake - The Oil Drum (non-staff)
Devil's Advocate - Copious Dissent
Nate Hagens - The Oil Drum
Mark Hemingway - National Review Online
Byron King - The Daily Reckoning
Doug Lambert - Granite Grok
Bruce "McQ" McQuain - The QandO Blog
Ed Morrissey - Captain's Quarters
Dave Schuler - The Glittering Eye and Outside the Beltway
Geoff Styles - Energy Outlook
Peter Suderman - FreedomWorks
Gail Tverberg - The Oil Drum
Brian Westenhaus - New Energy and Fuel
Carter Wood - NAM and Shopfloor.org

2. Price Elasticity of Demand

Alan Drake asked a question about oil price elasticity. Ron Felmy, Chief Economist for API, indicated that there was a [new report](#) out by the Congressional Budget Office (CBO) that gives some indications with respect to price elasticity of *gasoline* demand. The CBO report estimates that price elasticity is .06 over the short term. Over a longer term period, the CBO report assumes that people will buy new smaller cars. When this was considered, the long term price elasticity was estimated to be .40.

Analysis After the call, I made a rough estimate of *oil* price elasticity, relative to 2004 expected values. For the supply change, I took the decrease in supply of 4.8% relative to what would have been expected, based on 1991 to 2004 data, calculated in Item 1 above. I estimated crude oil prices to be increasing by approximately 80% between 2004 and 2007, based on [EIA data](#). Using these two pieces of data, the estimated price elasticity of demand is then 4.8% divided by 80%, or .06. By coincidence, this is equal to the short term elasticity of gasoline estimated in the CBO report.

3. US Crude Oil Production

According to API, US production rose 1.1% in 2007, to 5.16 million barrels of per day. This is the first time production rose on a year over year basis since 1991, and was at least partly because of disrupted 2006 production in offshore and from Alaska pipeline problems. Crude oil production increases were seen in the Midwest and Rocky Mountains, and the number of oil wells reached its highest level in more than two decades.

Analysis A 1.1% increase in production is not very much -- about 56,000 barrels a day. Even this

The Oil Drum | US Petroleum Supply, Ethanol, and State of the Industry - API <http://www.theoil Drum.com/node/3531> appears optimistic based on EIA data through October, which is only up by 0.3% or 13,000 barrels a day from the 2006 total. (API and EIA agree on 2006 production.) Oil production in the Rocky Mountain area and the Midwest have been increasing for years, by very small amounts on small bases. If these areas increase by the amounts they did in 2005 and 2006, we would expect about a 25,000 barrel per day increase in 2007 in the Rocky Mountain area, and 10,000 to 15,000 barrels per day increase in the Midwest. Most likely the biggest reason for the indicated increase in production is because the 2006 base was affected by lingering impacts of the 2005 hurricanes.

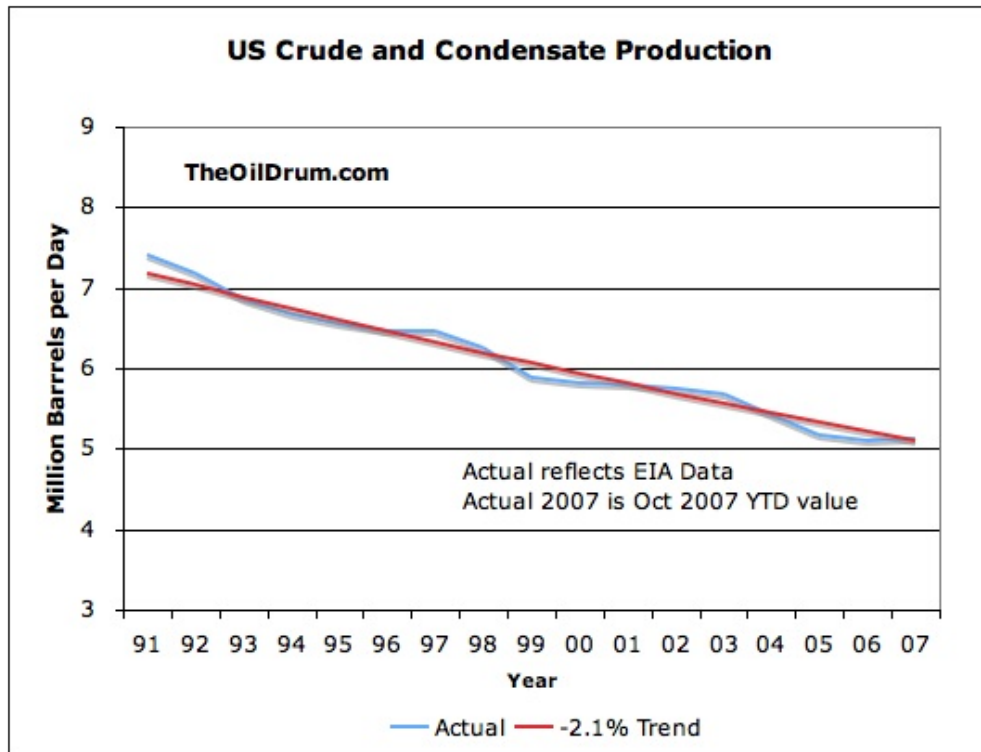


Figure 2

4. Imports

According to API, total imports of petroleum for 2007 fell 1.9 percent from 2006's peak. At 13.7 million barrels per day, they were still the third highest level ever and accounted for about 65 percent of domestic deliveries. Crude imports declined 1.0 percent, while product imports fell 4.5 percent.

Analysis The decline in imports is significant, because imports have been rising by more than 4% per year since 1991. Comparing the actual 2007 EIA imports to the trend lines suggest that 2007 imports were about 1.28 million lower than would be expected based past experience, or an 8.6% shortfall. This shortfall (which is on gross imports, rather than net imports) is sufficient to explain the shortfall in total product supplied of 1.03 million barrels a day, shown in Item 1 above.

On the conference phone call, I pointed out that the lower imports were likely related to the fact that fewer exports were available on the world market, because world production was flat to declining. John Felmy agreed that this was a factor.

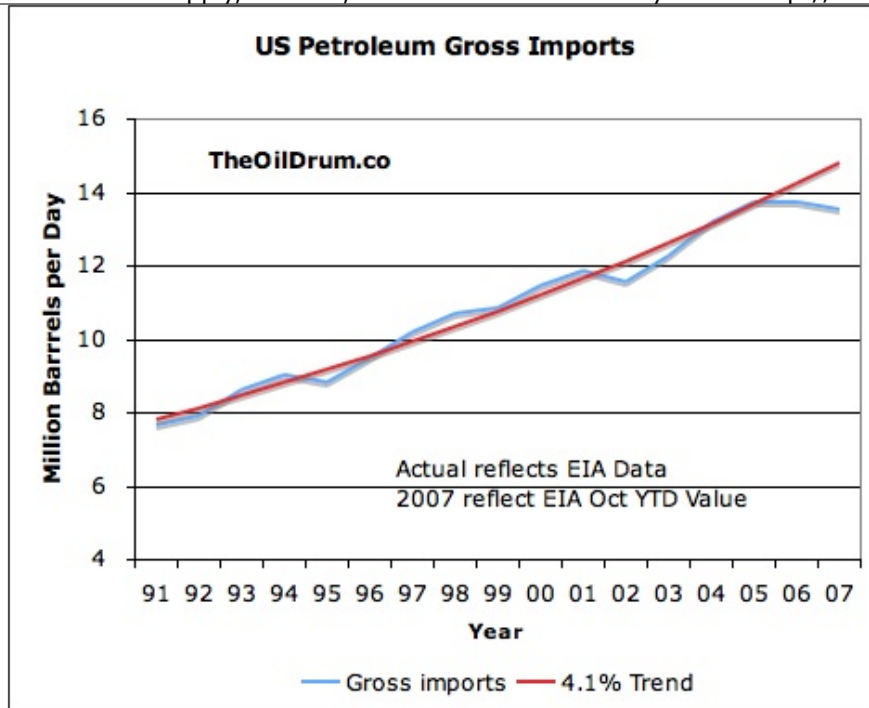


Figure 3

5. Drawdown of Inventories During the Year

According to API, "Mid-year, U.S. crude oil inventories had reached their highest monthly level since 1991 at 355 million barrels – but then fell by more than 60 million barrels to end the year at 294 million barrels, the lowest level since January 2005. However, that was still roughly in line with the five-year average for December. Distillate inventories closed the year at 137 million barrels, down 4.9 percent from a year earlier, but with inventories of ultra-low sulfur diesel reaching an all-time high of over 70 million barrels. Gasoline inventories exceeded year-ago levels at the end of December by 1.3 percent, at 215 million barrels."

Analysis There was a fair amount of discussion about this during the call. Basically, when prices were high at the end of the year, people drew down their inventories. This helped keep product supplied up, even when imports were low.

6. Ethanol

According to API, "The figures cited here include gasoline that contains growing amounts of blended ethanol, amounting to well over 400,000 barrels per day in 2007. If ethanol is excluded from the calculations, total domestic oil deliveries for the year would actually have shown a half percent decline."

Analysis Based on EIA data, I would estimate US ethanol production would amount to 420,000 barrels per day in 2007, which is consistent with API indications. Last year's US ethanol production amounted to 319,000 barrels per day, based on EIA data, so the difference is about 100,000 barrels a day. The 100,000 barrels per day increase during 2007 is about 0.5% of total petroleum products supplied of 20.7 million barrels a day.

7. Ethanol mandates

API is very concerned about the mandate included in the [2007 energy legislation](#) that requires that ethanol production be ramped up very quickly, starting in 2008. The general biofuel category, which includes corn ethanol and most biodiesel produced today, is required to ramp up

Fuels Without Proven CO2 Savings
Required by 2007 Energy Legislation

	<u>Renewable Fuel*</u>	<u>% Increase Over 2007</u>
2007 Est.	6.70	
2008	9.00	34%
2009	11.10	66%
2010	12.95	93%
2011	13.95	108%
2012	15.20	127%

* Billions of gallons per year

Figure 4

There are many issues involved -- the difficulty in growing sufficient additional biofuels, the conflict with food production, and the difficulty in transporting all of the ethanol and blending it into the end products all around the country. When the initial mandate was passed, there was at least a little excess capacity in ground transportation that could be utilized. Adding this so much more ethanol so quickly will very badly strain the system.

According to the telephone discussion, waivers will be required if it is not possible to meet the conditions of the mandate--for example, not enough biofuels will be available on a particular date in a particular city for blending. It is not clear exactly what procedures will be required to get the waivers. It is also not clear that oil companies will know far enough in advance to request the necessary waivers. API is working on putting together a paper explaining the problems regarding the new ethanol mandate more fully.

8. Confusion of the public regarding the role of biofuels.

One of the bloggers (Devil's Advocate) brought up the issue of the people getting the impression that fossil fuels are bad, and that renewable fuels are therefore good. Advertisements fail to point out that renewable fuels are at this point nowhere near capable of replacing oil completely. Education is needed so that people understand the continuing need for petroleum.

9. New EIA Report analyzing oil industry costs.

Nate Hagens asked a question about data on the costs of finding new oil. John Felmy pointed out the EIA's [financial reporting system](#) (FRS). It shows very high finding costs for new oil in the Gulf of Mexico. When including production costs, the [numbers are even higher](#)

Table 11. Finding Costs by Region for FRS Companies, 2003-2005 and 2004-2006 (2006 Dollars per Barrel of Oil Equivalent)

Region	2003-2005	2004-2006	Percent Change
United States			
Onshore	7.05	11.34	60.9
Offshore	45.76	63.71	39.2
Total United States	10.40	15.62	50.2
Foreign			
Canada	17.43	19.39	11.2
Europe	10.26	22.79	122.1
Former Soviet Union	13.74	NM	NM
Africa	16.19	25.66	58.5
Middle East	4.95	5.26	6.3
Other Eastern Hemisphere	9.50	12.59	32.6
Other Western Hemisphere	26.56	42.59	60.4
Total Foreign	12.46	19.51	56.6
Worldwide	11.38	17.23	51.3

Notes: NM = Not meaningful. The above figures are 3-year weighted averages of exploration and development expenditures, excluding expenditures for proven acreage, divided by reserve additions, excluding net

10. Terminology

One of the issues I brought up is API's use of the word "demand" for "product supplied". Back a few years ago when there was plenty of oil, demand really determined the amount of oil products supplied. Now, with oil in short supply and prices rapidly increasing, it seems like supply determines price. Demand decreases because the price is so high. I find it confusing to see demand used as a substitute for product supplied, especially when the interpretation of causality is questionable. These are examples of what I object to from API's materials:

The API statistics also showed that U.S. oil demand was flat in 2007, the third straight year of stagnant or lower oil demand in the world's largest oil-consuming nation.

Given the higher domestic production and flat demand, total oil imports fell 1.9 percent from year-ago levels, though imports still cover about 65 percent of U.S. oil demand.

11. Shift in the mix of petroleum products supplied.

The shift was discussed both in the phone call and the reports provided. The [Statistical Report](#) indicates that distillate is in particularly high demand, with deliveries increasing 1.5% during 2007. Gasoline deliveries increased by 0.4% during the year. "Miscellaneous" products are tending to decline as a percentage of the total. API did not have finer detail for miscellaneous products.

Analysis If we look at longer-term EIA data regarding petroleum products supplied, we see a similar pattern. The highest increase (2.6% per year through 2004) is in distillates (Figure 2). Gasoline supplied (Figure 3) is increasing at a slightly lower rate (1.9% per year through 2004). The other products supplied were growing most slowly (0.9% per year) and have dropped off most recently. Compared to the trend lines, recent production has dropped for all three categories. For 2007, EIA data shows distillate consumption is 4.0% below trend line expected quantities; gasoline is 3.8% below trend line expected quantities, and other products are 6.7% below expected quantities. These differences in supply shortfalls may help explain differences in price increases since 2004.

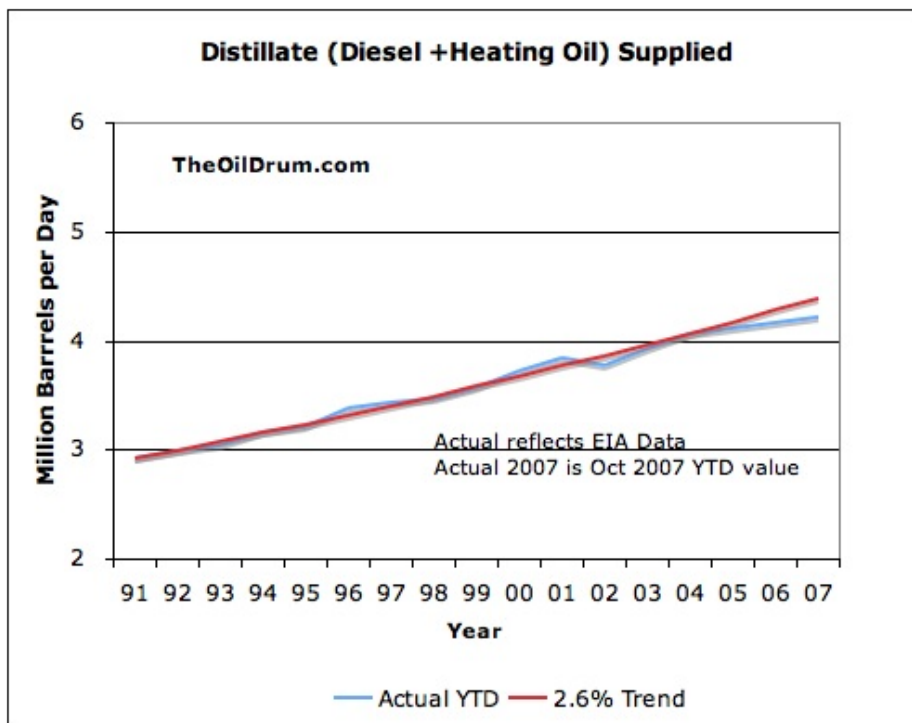


Figure 5

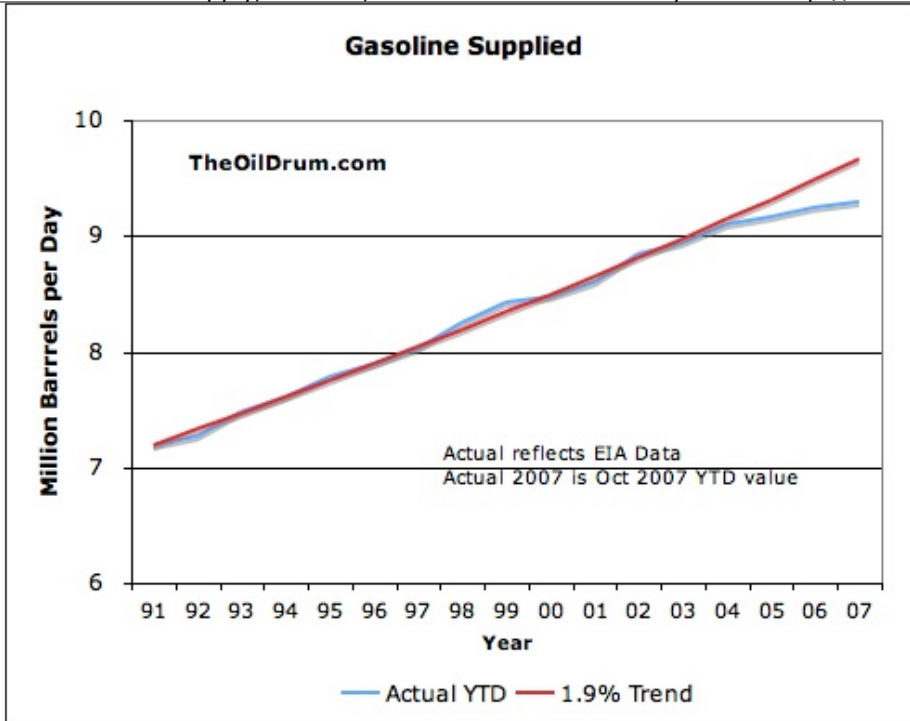


Figure 6

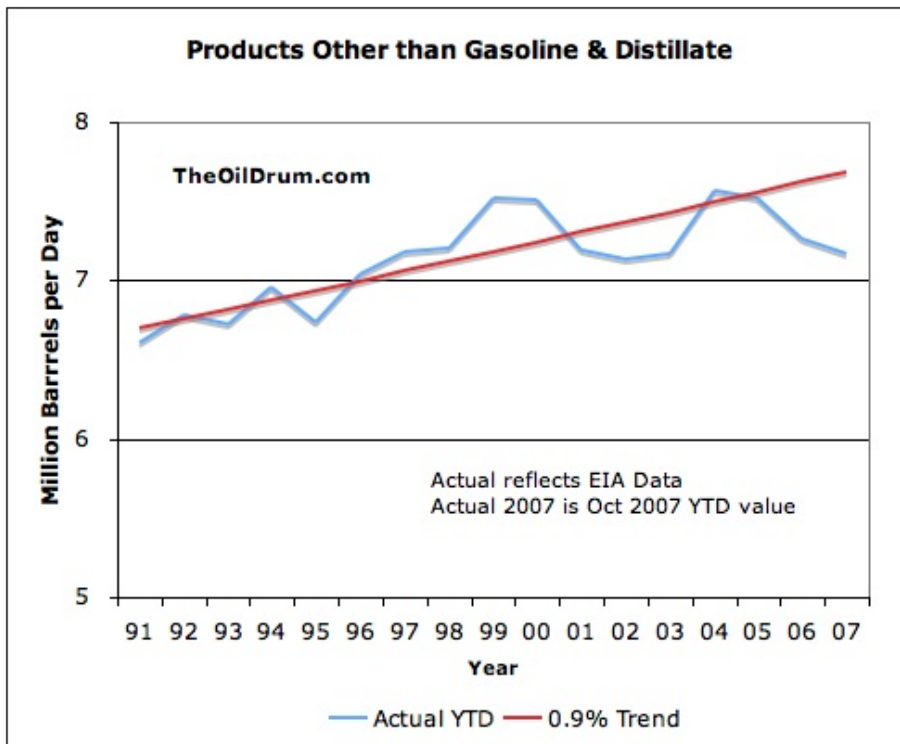


Figure 7

12. US Energy Association State of the Industry Forum

We were sent a [speech](#) which API's CEO Red Cavaney prepared for the [USEA industry forum](#). This speech concludes:

What we need is a public policy framework to ensure future energy security for our

nation. We need elected and appointed officials who understand the energy challenges we face. We need a greater commitment to increased energy efficiency. We need to diversify our energy resources, drawing upon the full range of energy sources, including alternatives. We also need to increase and diversify our oil and natural gas supplies, both within this country and abroad. And, we need to enhance energy technologies, remaining on the cutting edge of advanced technology. We need to get it right on energy. Too much is at stake for our nation to do otherwise.

Analysis This sounds like motherhood and apple pie, but it is surprising how far we are away from this goal.



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