



WHAT IS THE FUTURE OF US DIESEL PRODUCTION?

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Past DEER Conferences



At DEER Conferences over the last three years I have discussed:

- ◆ **The needs and drivers for US diesel fuel production**
- ◆ **The reasons why diesel fuel is likely to be more costly than gasoline in the US**
- ◆ **Marathon's investment in diesel production**

Recent Diesel Events



In the past year, we have seen:

- ◆ **Diesel priced significantly below gasoline**
- ◆ **A large drop in diesel demand**
- ◆ **Increases in diesel exports**

Was I wrong?



- ◆ Failed to predict the major recession that we are currently in
- ◆ Failed to predict the significant drop in gasoline and diesel demand
- ◆ Failed to predict the size of the biofuels requirements in RFS2 (EISA07)

But My Original Principles Are Still In Place



- ◆ **US Diesel fuel demand is driven by the economy**
- ◆ **The world demand for future diesel fuel is increasing faster than gasoline demand**
- ◆ **Over the next 3-10 years US diesel demand will grow and US gasoline demand will not.**

Marathon Future View



Garyville

\$3.2 billion expansion

**Increases Crude Capacity by
120,000 bpd**

Still on schedule for Q4 2009



Detroit

Heavy Oil Upgrade

\$1.9 billion expansion

**Will increase Heavy Oil
Processing by 80,000 bpd**

Delayed from 2010 to 2012



Upcoming Challenges for Diesel Fuel



- ◆ Renewable Fuels Standard 2 (EISA07)
- ◆ Low Carbon Fuels Standard(s)
- ◆ Other Carbon Reduction Requirements

Renewable Fuel Standard 2 (RFS2)

Biofuel Impact on Diesel



- ◆ Under RFS2 a gallon of gasoline and a gallon of diesel fuel have the same cellulosic, biomass-based diesel, advanced biofuel and total requirements
- ◆ However, more than 95% of mandated biofuels will be compatible with gasoline and not compatible with diesel. In fact FAME biodiesel may not meet the GHG reduction requirements.
- ◆ Availability of feed stocks will limit FAME biodiesel production to about 1 billion gallons per year.
- ◆ New technologies, such as renewable diesel, BTL and cellulosic diesel, will need to be advanced.
- ◆ The biofuel requirements on incremental diesel production will require more gasoline to be produced (to absorb the additional biofuel) or more E85 to be marketed.
- ◆ The economic decision to produce incremental diesel fuel will require a sufficiently large enough margin to cover the cost of unneeded gasoline production plus the costs of the additional biofuels that must be blended and sold.

Low Carbon Fuels Standard (LCFS) Biofuel Impact on Diesel



- ◆ California LCFS has similar problems to RFS2. Most of the desirable biofuels are compatible with gasoline and not diesel.
- ◆ Many Life Cycle Analyses for FAME biodiesel indicate very little GHG reduction benefit.
- ◆ The eventual goal of the California LCFS is not increased biofuels. After 3-5 years current biofuels will be unable to meet the GHG reduction requirements.
- ◆ The ultimate goal of the California LCFS is to **ELIMINATE DIESEL AND GASOLINE** and replace them with electric vehicles.

Other Carbon Reduction Requirements



- ◆ **Cap and Trade programs may or may not include diesel fuel usage but will certainly place requirements on refineries and increase fuel costs.**
- ◆ **If a Cap and Trade program does not include transportation fuels, a linked carbon tax or a national low carbon fuels standard becomes likely.**
- ◆ **A carbon tax on transportation fuels would increase fuel costs and would likely tax diesel more than gasoline.**

Future Trends



- ◆ **Electric engines and batteries will not replace heavy duty diesel applications for many years.**
- ◆ **Little further penetration of diesel engines in the light duty/passenger car market due to high diesel fuel costs.**
- ◆ **In spite of the costs from renewable fuels mandates and carbon reduction programs, diesel fuel demand growth may slow but it will continue to track the nation's economic growth.**
- ◆ **Diesel fuel will become the primary profit driver for US refineries.**