Trucking Goes Green: The Transition from "Mandates" to "Benefits" as Force Behind Change

May, 2010

When looking at environmental or sustainability issues, the trucking industry has to date been largely pushed forward by external forces, most of which increased trucker and manufacturer costs and decreased efficiency. However, the shift in focus to fuel efficiency creates the opportunity for economic gains. This paper looks at:

- The emerging technologies
- Factors that drive performance and payback
- Challenges truckers face in implementing

The window of opportunity is upon the industry. If truckers can leverage technology and get ahead of upcoming regulations, the benefits could be extremely positive for the industry.

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Trucking Goes Green: The Transition from "Mandates" to "Benefits" as Force Behind Change

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EXCERPTS FROM “TRUCKING GOES GREEN”

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Contents

EXECUTIVE SUMMARY

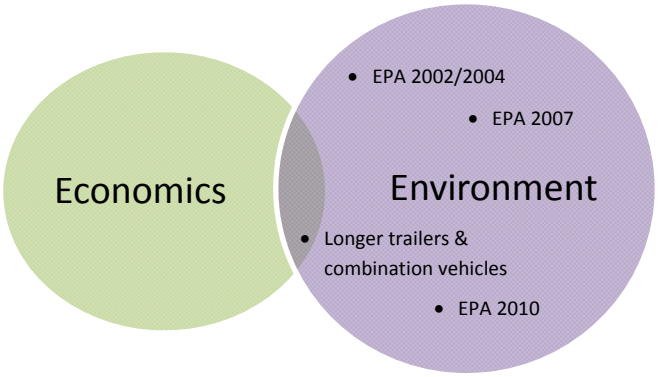
- There has been very little opportunity for fleet operators to seize upon any economic benefit from the environmental initiatives implemented over the past two decades. With the primary focus on reducing engine emissions as a result of the Clean Air Act, the reduction in pollutants has been nothing short of phenomenal, with the new EPA 2010 engines generating approximately 98% fewer emissions compared to engines produced prior to 1998. While the environmental benefits of multiple EPA engine mandates have and will be very good for the overall environment, the trucking industry, its suppliers, and its customers have all been forced to pay a huge price for those gains.
- With improvements in emissions rates reaching the point of diminishing returns, truckers' focus has shifted from emissions to the source of emissions – ***fuel consumption***. Operating fuel efficient equipment is…

THE HISTORY OF SUSTAINABILITY IN TRUCKING

Mandates: Truckers Pay – Everyone Else Gains

The type of corporate responsibility demonstrated by Pepsico's sustainability statement is relatively new. Looking back over the past couple of decades, efforts to reduce the environmental impact of trucking has been addressed through government mandates. The reason for using a mandate approach is simple – *the areas being addressed by the mandates for improvement created an economic hardship for the industry*.

As shown in the graphic at right, the options that have moved forward in past years have leaned heavily towards environmental benefit. There has been very little opportunity for carriers to seize upon an economic benefit from changes in the past 15-20 years.



The majority of improvements in environmental aspects of trucking have come from…

Moving from Reducing Emissions to Reducing Carbon (e.g., Fuel)

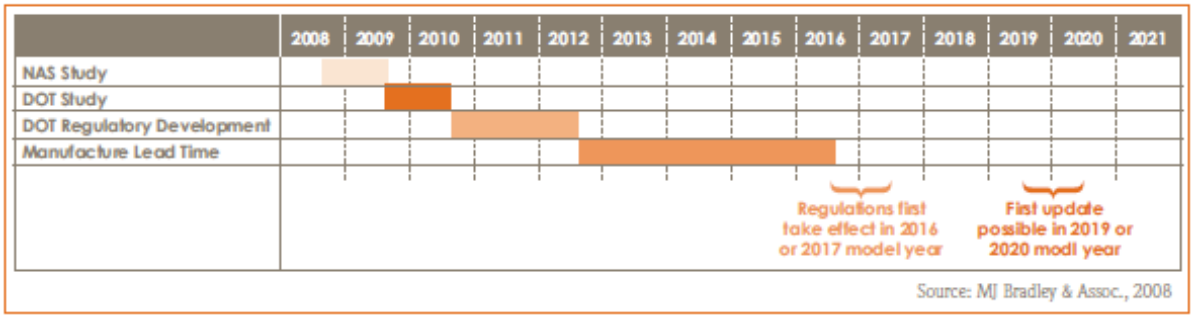
With improvements in emissions rates reaching the point of diminishing returns, the industry has recently shifted focus from the emissions themselves to the source of emissions – ***fuel consumption***.

Governments around the world are now studying the regulation of fuel consumption for commercial vehicles. Passenger cars have been impacted by legislation on fuel consumption for decades, and it is widely believed that increases in fuel economy have only been achieved because of them. Due to the lower miles travelled and the consumer aspect of passenger cars, fuel is often considered to be a relatively small and elective cost.

Trucks, on the other hand, are a key component of the global economy, and their fuel is a major expense to be managed. Fuel-related legislation has not been a requirement of the commercial truck world until recently…

The likely timetable for US regulation is shown in the chart below. It is expected that the legislation will recognize the freight element with the primary metric being gallons used per ton-mile of freight moved.

FIGURE 5 POTENTIAL TIMELINE FOR A US DOT MEDIUM- AND HEAVY-DUTY FUEL ECONOMY REGULATION



Fuel efficiency regulations will also provide a benefit, but regulatory efforts usually come with added costs...

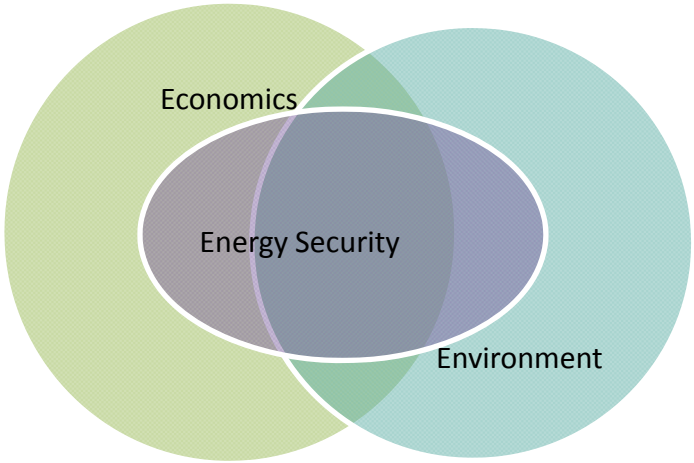
Leveraging Benefits: Truckers Save – We All Gain

Had we started with consumption first, we likely never would have made the gains in emissions reduction (reducing fuel consumption by 98% would be unthinkable). However, several factors have come together to make the focus on consumption important for a variety of reasons. Operating greener trucks is not increasing in importance just because companies are more environmentally conscious (although they clearly are). As the focus shifts to consumption, achieving successful results now has a three-fold benefit.

Economics.

Environment.

Energy Security.



As a result, there is now significant overlap in opportunities that can provide both economic and environmental benefit. And to make things even better, the overlap with energy security is essentially 100%. For the trucking industry, mandates should not be needed because the opportunities are there to be seized.

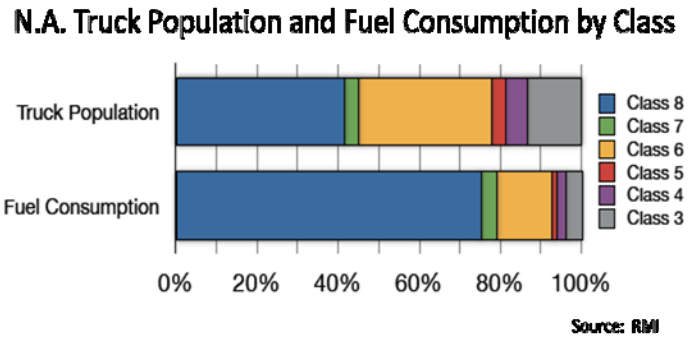
Why the Slow Progress?

However, the technologies available today are not entirely new. Many have been around for a number of years. Why has adoption been moving so slowly? Three reasons – a weak economy, low demand for new equipment, and capital constraints.

The trucking industry has faced a challenging and changing economic environment for several years...

FUEL EFFICIENCY: *GETTING THE BANG FOR THE BUCK*

The freight transportation sector, comprised of trucks, railroads, and barges, is a large user of petroleum-based fuels, consuming about 25 billion gallons of diesel per year in the United States. Within commercial vehicle market, Class 8 units consume the largest amount of fuel. Class 8 commercial vehicles make up 41.5% of the trucks in operation, but consume 75.3% of the fuel…



The Emerging Technologies

Cummins in their *"Framework for the Regulation of Greenhouse Gases from Commercial Vehicles"* categorized the opportunity for heavy-duty trucks into three distinct areas - the vehicle; the power train or engine, including the recycling of waste heat; and the overall operation of the truck. Each had about the same potential contribution at around 20%, each offering significant potential in overall savings if…

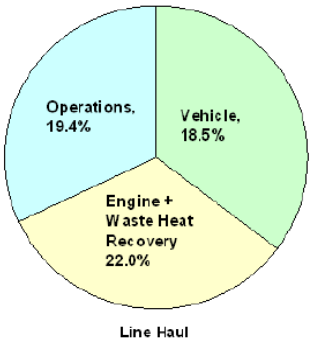


Figure 6, Estimated potential CO_2 savings from Line Haul applications, showing the contribution from the vehicle, engine and operations as percentage CO_2 savings from a 2007 baseline. *[Source: Internal Cummins Analysis]*

PERFORMANCE AND PAYBACK – DECISION TIME

So, how does a fleet know if they should invest in all or any of these features for their new truck purchases? There is assistance provided by differing organizations. The launch of the SmartWay initiative was a significant first step, helping to educate the truck buying public on early adoption alternatives and providing tools to help fleets understand their payback given varying financing options.

For a vehicle that operates 125,000 miles per year at about 6.5 miles per gallon of $3 diesel, the cost of fuel annually is about $50,000. Therefore the adoption of any of these technologies can save $500 for every 1% decrease in fuel consumption. At a 5% fuel consumption improvement level, that would deliver about $2,500 of fuel savings *per year per truck*. Should fuel costs move back to 2008 levels of $4.75 per gallon, that savings rises to nearly $4,000.

However, not every fleet has the same miles per tractor and fuel efficiency metrics. Therefore, the evaluation of potential opportunities becomes more difficult. In general, the benefit of a fuel efficiency technology is determined by four factors:

CONCLUSIONS

Many of the technologies needed to dramatically improve fuel efficiency of Class 8 commercial vehicles are either already available or in development and/or deployment. While the cost of individual components may be reasonable, the cost of "bundles" that can improve efficiency by significant percentages can be very costly and…

The window of opportunity is upon the industry. Tractor, trailer and engine manufacturers, along with their suppliers, must quickly deliver these technologies for availability and…

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