Marine Highway Perspective from Private Sector

Prepared by DJMP Engine Solutions, LLC.

Introduction

DJMP Engine Solutions, LLC was formed to provide best value solutions to marine vessel owners. This work includes technical and funding assistance. In that pursuit we have met with DOT MARAD and presented findings which provide a unique public sector view. We are providing feedback from our business network which includes input from fleet owners, engine dealers, port authorities, DOT, EPA, US Coast Guard, and USACE.

Conclusions

- The current trends in DOT and EPA funding will result in an integrated marine highway system, but many fleets will continue to operate with unregulated engines. After 2012 the remaining vessels owned by fewer large fleet owners will be facing a significant financial challenge to upgrade their fleets to EPA regulations.

- Many Marine Highway fleet owners have generally not been successful in obtaining funding through the EPA Clean Diesel program due to numerous barriers:
  - Emissions regulations for legacy vessels are very complex. Fleet owners do not have the time or expertise to interpret what is required to meet emissions levels or have proper documentation required by the Coast Guard.
  - Approved grant writing entities, like port authorities, do not understand the regulatory requirements. Neither are they staffed to spend the time required to connect the network of engine dealers and fleet owners to orchestrate the process of obtaining and administering Clean Diesel Grant awards.

- The focus of Clean Diesel and TIGER funding is on-highway sector, as opposed to marine, even though the marine highway could result in reduced highway congestion and maintenance, more fuel efficient transport, improved safety and reduced diesel emissions.

Discussion

- Many EPA air quality nonattainment areas are located on the Marine Highway, particularly on the inland waterway system.
  - A majority of legacy vessels are powered by unregulated diesel engines which are 20-40 years old. They continue to be overhauled and operate with poor fuel consumption and high output of emissions compared to Tier 1 or 2 compliant engine technologies. Unlike on-highway vehicles, tugs and tows operate at very high load factors most every day of the year.

- Category 1 & 2 vessels with keels laid before 2000 are allowed to overhaul engines, and will continue to do so as the most profitable business alternative, as long as parts are available and the core engine is intact. But when this ceases to be the case, new engines will be required. Beginning in 2012 this will require Tier 3 compliant engines. Tier 3 engine technology solutions will likely require SCR and PM traps. For numerous technical reasons, this repower solution will require major engine room and/or vessel architecture changes that could be cost prohibitive. While financially sound companies may survive the high cost of capital investment (and pass it on to consumers), some fleet owners may be forced to retire vessels and buy new or different vessels to stay in business. This capital cost would be too much for smaller fleet owners.
- Clean-up has been mandated in a few ports like Long Beach, California. Many other noncompliant areas have local mandates which require Tier 2 to come to port. There are also commercial conditions of contracts requiring Tier 2. This trend is spreading across the country.
- Grant awards from the EPA Clean Diesel Program have heavily favored the on-highway truck and transit sectors, while marine sector grants receive less than 10% of the total. It is our opinion that the EPA's Diesel Emissions Quantifier (DEQ) used in grant applications understates the cost effectiveness of marine engine replacement / repower - the only available technology solution available. Upgrades to existing engines are not included in the DEQ analysis, but are currently on the EPA Emerging Technology list of projects.
    - The DEQ uses one generic engine as the baseline Category 2 engine applicable to tugs/tows. We believe this baseline understates the PM emissions used in calculating PM reduction by the Tier 2 engine replacement.
    - The DEQ gives no credit for 3-5% fuel consumption improvement of Tier 2 engines.
    - The DEQ lifetime reduction benefits are inconsistent. Lifetime benefits are calculated to be 1-3 years when the engine has a 30 year life. This results in cost effectiveness values for NOx and PM reduction which are not competitive with on-highway solutions. The EPA states the life of these marine engines is 30 years, but the DEQ does not reflect the benefits. As a result, health benefits related to lifetime PM reduction are understated.
- DOT MARAD has a mission to expand a marine highway system integrated with an intermodal landside transport system that is cost effective, green, and decreases urban congestion of land based transport. According to the Modal Comparison of Domestic Freight Transportation Effects on the General Public study published December, 2007, and endorsed by the Waterways Council, marine transportation is more energy efficient in terms of fuel usage, GHG produced, and injuries/fatalities per ton of cargo per mile versus either rail or on-highway truck.
    - Current funding is directed towards building waterway, port infrastructure, and some funding available for new vessels.
    - Marine Highway funding competes with other modes of transport. The latest overview of the program shows 85% of grant application are for for highway, transit, and rail sectors, while only 6% of funding goes to the port sector.
    - No funds are available, at this time, for marine engine repowers.

- Coast Guard enforcement policy of EPA regulations is inconsistent. If the regulations were uniformly enforced with all vessel owners, there would be more urgency with fleet owners to upgrade/repower their vessels. Fleet owners are concerned with this issue. They are willing to participate with DOT to help secure funding.
    - An example of a Fleet Analysis document from individual owners will be provided with this paper. The document provides fleet owners both with Technical Analysis and Funding options. The funding component is critical for successful solutions.

Recommendations

1. The EPA Clean Diesel Program needs to place greater priority on funding initiatives to upgrade or repower commercial marine vessels to Tier 2. Without assistance, many companies are at risk of going out of business as their unregulated engines wear out.

2. A new program (associated with DOT Marine Highway) needs to allocate funds for the same purpose above, targeted towards marine highway fleet owners. Existing discretionary funding designated for this purpose is one possibility. Order of magnitude funding required would be $300 M to address the entire eligible commercial marine fleet.

3. There are numerous benefits to assisting Marine Highway vessel operations:
    a. The life of existing vessels upgraded or repowered to Tier 2 would be significantly extended, keeping profitable fleets operating and avoiding costly retirement.
    b. Emerging Technology Projects can be brought to the vessel owners to reduce the overall cost of upgrading their engines to Tier 2.
    c. DOT goals for a cost effective, fuel efficient, environmentally friendly marine transport system are enhanced.
    d. EPA's goals for improved air quality are accelerated. The ever increasing contribution of marine operation to overall poor air quality is reduced. The effort targets many nonattainment areas located on the marine highway
    e. Jobs are created or maintained for engine manufacturers, installation contractors, and vessel owners.
    f. Reliance on foreign oil is reduced.
    g. Congestion on major highways and rail is reduced.

We hope that this information will help both DOT and the EPA realize their objectives in the most cost effect manner possible.