CARB: IGNORING SHIPS AND TUGS AS SUSTAINABLE FREIGHT TRANSPORTERS?

BY STAS MARGARONIS

The California Air Resources Board (CARB) has been a trailblazer in reducing emissions in California and is now engaged in a new initiative to reduce greenhouse gases (GHG) in the transportation of freight. The result could be a transformation of the California economy that will make California the role model for the world.

CARB is holding hearings on its 2015 "Sustainable Freight" draft in which it proposes that California freight transportation be shifted away from fossil fuel engines to zero emission power.

Unfortunately, the use of waterborne transportation to help California achieve the zero emission goal has been largely ignored by CARB. This means that the potential for significantly less congestion and less emissions transporting freight by ship and tug/barge could be lost.

Lack of Waterborne Transportation Focus in CARB Sustainable Freight Draft

In the draft, CARB did not research new developments in marine propulsion and shipping. In the California Air Resources Board, Sustainable Freight: Pathways to Zero and Near-Zero Emissions (discussion draft dated April, 2015) on pages 59-60, emission projections for ocean-going vessels (OGV) are based on a 2011 CARB report entitled, "Emissions Estimation Methodology for Ocean-Going Vessels" which is out of date. The footnotes and references related to vessel emissions are based on 2007 data and earlier.[1]

The reason using outdated information from a 2011 report is a problem is that a lot has happened since 2007 and is missing from CARB's 2015 Sustainable Freight draft:

1) The 2011 report lists the average container ship speed as 23 knots (see page D-13), but today most container ships have slowed their speeds down to 16 knots which substantially reduces ship fuel consumption and emissions.
2) The 2011 report reference to 'Hoteling' on page D-11 does not discuss or account for emissions reduction achieved by shore power (electrical) connections between ships and harbor berths, such as at Los Angeles, Long Beach and Oakland. This is a CARB mandate that ship engines must be shut down so as to reduce emissions in California ports.
3) A battery powered ferry, the Ampere, is operating in Norway and could provide for waterborne freight applications in California.[2]
4) Similarly, a new hybrid ferry using battery power is about to begin service between Denmark and Germany. This also deserves research into possible applications in California.[3]

[1] http://www.arb.ca.gov/regact/2011/ogv11/ogv11appd.pdf
[2] http://www.eaem.co.uk/news/worlds-first-battery-powered-electric-ferry-enters-service

[3] http://www.scandlines.com/en/about-scandlines/newferry.aspx

5) Since 2007, there has been a major change in ship designs and construction of mega-container ships that further reduce fuel consumption and GHG emissions.
6) The cumulative effect of these omissions is that CARB may need to revise its emission projections for ocean-going vessels and reconsider the viability of waterborne transportation.

One additional small fact: Tesla is looking at possible battery-powered ships

The result is that the CARB Sustainable Freight draft does not take into account the role of coastal/marine highway shipping as a mode to move thousands of long-haul truckloads along California's I-5 corridor and dramatically reduce emissions.

The Port of Stockton commissioned a study on the potential impact of the M-580 tug/ barge service that carried containerized truckloads between the Ports of Stockton and Oakland until 2014. The study found that the tug/barge had the capacity to reduce GHG and other emissions by 80% per containerized truckload-even when powered by diesel fuel.[4]

New coastal/marine highway ships can reduce fuel consumption and emissions because ships are a more efficient transporter of freight than trucks for long-haul routes. One ship carrying 350 forty-foot containers is powered by a 12,954 horsepower engine.[5] Transporting a similar load by road would require 350 trucks, each powered by a 375 horsepower engine requires 131,250 horsepower.

The lack of emphasis on ships and tugs as freight transporters is also evident in the way the CARB draft defines California's 'Freight Transport System':

"The vehicles and equipment that move freight range from aircraft and ocean-going vessels for international transport, to locomotives and trucks for interstate transport, and smaller trucks/vans and harbor craft for in-state operations."[6]

Two transportation officials say that CARB does not consider waterborne transportation to be a viable sustainable freight option because ships and tug/barges burn diesel fuel and cannot viably be powered by any sustainable source. These officials suggest this was CARB's reason for largely excluding waterborne transportation and marine highway shipping from the Sustainable Freight draft.

An added factor is politics. Some California ports, who have provided input to CARB on the Sustainable Freight draft, have been resistant to the marine highway shipping concept. This is because containers that are picked up and delivered by coastal/marine highway vessels are likely to generate less revenue for the ports than truck or rail transport. Thus, some port

[4] Port of Stockton, "Air Quality/Greenhouse Gas Technical Report for the Short-Sea Shipping Project" (2010)
[5] 9660 KW engine check with Bo = 12954.2734 horsepower see: http://www.containership-info.com/misc_publ_feedergrowth.pdf
[6] http://www.arb.ca.gov/gmp/sfti/Sustainable_Freight_Draft_4-3-2015.pdf, page 8

executives cite the discontinuation of the M-580 tug/barge service between Stockton and Oakland as 'proof' that coastal/marine highway shipping is not viable. However, harbor trucking costs at major California ports have nearly doubled in the last two years and so the M-580 tug/barge would be very cost competitive today. The distance between the Ports of Stockton and Oakland is 75 miles.

Smaller ports such as Stockton, Sacramento and even Oakland could benefit from the new coastal/marine highway business. A Caltrans official has been encouraging California ports to consider marine highway shipping as a means to relieve port congestion and emission generation. CARB needs to follow the Caltrans lead.

San Joaquin Valley trucking companies are also showing interest in the marine highway following the M-580 tug/barge experience. They saw that picking up and dropping container loads at smaller ports such as Stockton and Sacramento is much faster and results in less delays and congestion than at larger ports such as Los Angeles, Long Beach and Oakland.

Less congestion also means less emissions.

Personal Experience

When the CARB draft came out in April 2015, I contacted the CARB Ombudsman's office where a staff person put me in touch with a CARB staffer working on the Sustainable Freight draft. I explained to the CARB staffer that there were a number of innovations going on in the maritime industry that were driving ships and tugs to generate less emissions and become more sustainable.

I urged that CARB look at the potential of a coastal/marine highway service to reduce long-haul truckloads off the I-5 corridor. This type of service could substantially reduce emissions generated by long-haul trucks. The staff person was very polite and promised to set up a time for me to meet with CARB staff to discuss my ideas and case studies. Unfortunately, there was no follow up from the CARB staffer.

I persisted in asking for a response from CARB and finally got a response from the CARB staffer in May 2016. The staffer wrote in an email: "We do talk about Inland Marine Corridors. It is discussed in Appendix E–Discussion Concepts for Potential Future Action."

Unfortunately, the Appendix E language does not make clear that a firm commitment to support the marine highway will result:

"The State agencies will continue to gather more detail on the concepts described here, and will develop any subsequent actions through separate public processes. As the State agencies move forward, the concepts may change, be adjusted or new concepts may be added. Implementation of these concepts and any subsequently identified actions will also be

conditional based on applicable public processes, necessary financing approvals, and environmental reviews…."

One transportation official who has been following the Sustainable Freight draft process described the treatment of waterborne freight transportation in the CARB draft as superficial.

The Need for Coastal/Marine Highway Shipping

Since 2015, an estimated 1,000 additional truckloads travel daily along California's I-5 corridor between the Ports of Los Angeles (LA) and Long Beach and San Joaquin Valley distribution centers and farmers, according to California port officials. The reason is: as more mega-container ships arrive at the Los Angeles/Long Beach ports, ocean carriers are cutting back on service to the smaller Port of Oakland, causing increased trucking on the I-5 corridor between Southern and Northern California.

Caltrans Official Endorses Coastal/Marine Highway

A senior California Department of Transportation (Caltrans) official says that road and rail congestion at major California ports is reaching a saturation point and that it is time to start transporting containerized freight by water.

Kome Ajise, chief deputy director for Caltrans, told participants at a Los Angeles Sustainability Coalition Summit on April 5th that California port congestion requires relief by moving containerized truckloads on a waterborne/marine highway service using coastal ships and tug/barges.

Ajise said that California, like other states, is financially constrained by decreased revenues from its traditional base of gas taxes as a result of improved fuel efficiencies in cars and trucks. He added that California needs to move truck traffic off freeways to reduce the maintenance costs on its roads and bridges.

A fleet of new U.S.-built container ships can significantly reduce long-haul trucking on I-5. Also, vessels can reduce truck emissions by as much as 80% per truckload, according to the Port of Stockton report.

As a reflection of growing confidence in the concept, the U.S. Maritime Administration is supporting several new marine highway projects proposed for the Mississippi River and Lake Erie.[7]

[7] http://www.joc.com/maritime-news/new-us-marine-highways-aimed-flexibility-inland-transport_20160502.html

Conclusion

The CARB Sustainable Freight initiative can have a transformative effect in modernizing freight transportation in California. However, CARB should study the potential of hybrid, battery and other low emission developments powering new ships, tugboats and ferries.

CARB should encourage California port executives to drop their opposition to coastal/marine highway shipping so as to reduce emissions and congestion at major California ports and along California's 1-5 corridor. This will reduce port truck traffic and also reduce the $10 billion projected price tag for widening the 710 freeway linking the Los Angeles/Long Beach ports to the I-5 freeway and to Southern California distribution centers.

This will also create new shipping business for smaller ports such as Oakland, Stockton, Sacramento, Richmond, San Francisco and others.

CARB could be the catalyst for this maritime modal shift that might also make it possible to build the ships and tugboats in California creating new jobs, economic development and zero emission marine power.

California's sustainable freight system could be the role model for the world.[8]

[8] Stas Margaronis is president of the Propeller Club of Northern California. He is an advocate for the marine highway and for building new, fuel-efficient and low emissions ships in the United States. His opinions are his own.