Ocean Transport: Mo mega-ships, mo problems

Challenges associated with the ongoing deployment of larger containerships are resulting in higher terminal costs, and in some cases, poorer terminal service for the same volumes, according to industry analysts at a recent "Talking Freight" seminar.

By Hailey Desormeaux | Friday, July 07, 2017

Over the years, ocean carriers have been making waves with the ongoing deployment of larger containerships, touting how much capacity these new ships can transport, along with how much more fuel efficient they are compared to their predecessors.

In illustrating the reduction in CO2 emissions and fuel used per container per kilometer with these newer, larger vessels, Lee Kindberg, Director of Environment and Sustainability for Maersk Line, pointed out that the 1,713-TEU Maersk Wolfsburg, which was built in 2010, has a CO2 dry emissions rate of 75 grams per TEU kilometer. By comparison, the 18,270-TEU Majestic Maersk, built in 2013, clocks in at just 26 grams of CO2 per TEU kilometer.

However, several industry professionals, including Kindberg, noted the ongoing challenges associated with deployment of larger containerships during a “Talking Freight” seminar hosted by the Federal Highway Administration’s Office of Freight Management and Operations and the Office of Planning. The four presentations in the seminar were from a 2017 TRB annual meeting session titled “Mega-ships: Mega-solutions or Mega-problems?”

Dan Smith, principal at the Tioga Group, pointed out that a 1,300-foot mega-ship (13,000 TEUs or above) requires a 1,500-foot berth at port and between four and seven cranes per vessel to unload. In addition to needing more berth space, larger ships also require larger ship-to-shore cranes. And only a small portion of cranes at ports in the U.S. have been elevated to be able to work vessels with containers stacked nine high, according to Kindberg.

"Bigger ships equate to higher terminal costs, and in some cases, poorer terminal service for the same volume." - Tom Ward, senior maritime planner, WSP

The Seagirt Marine Terminal in Baltimore, for example, has 4,350 feet of wharf space and four berths. It is equipped with seven post-Panamax cranes and four super post-Panamax cranes. But although the terminal is “big ship ready,” it can only handle one mega-ship at a time, Smith explained.

Tom Ward, senior maritime planner for WSP, echoed those comments, adding that container wharves are having to be rebuilt to hold these heavier cranes.

Because ships are also getting wider faster than they are longer, and therefore have an increased beam, they require cranes with longer booms, Ward said. When booms are stowed to protect the crane in strong wind conditions, the cranes are taller. A modern crane with its boom up in the storm-stowed position stands 450 feet tall, something airports would not want nearby, he explained.

Mega-ships are also driving a need for deeper harbor drafts and heightened bridges. The Port Authority of New York & New Jersey, for example, recently completed a multiyear project to raise the height of the Bayonne Bridge between New Jersey and Staten Island to allow ships over 10,000 TEUs to call terminals west of the bridge.

Ultra-large containerships carrying up to 18,000 TEUs have been authorized to sail beneath the bridge as of June 8, and are now able to call at APM Terminals and Maher Terminals in Elizabeth, N.J.; the Port Newark Container Terminal in Newark, N.J.; and the GCT New York terminal on Staten Island.
Ward noted how the Bayonne Bridge restriction has effectively constrained trade across the entire U.S. East Coast, since if a ship could not call New York, it may just avoid the East Coast altogether. He projected U.S. East Coast ports will see an almost immediate increase in larger vessels now that the restriction has been lifted.

Mega-ships are also having problems with channel maneuverability and turning basin use, resulting in the need to dredge channels and expand turning basins. However, draft has not been as much of a problem lately since the industry already went through a “draft revolution” when the carriers first introduced post-Panamax vessels, Ward explained.

On the West Coast, especially in the ports of Los Angeles, Long Beach and Oakland, there is added concern over whether these bigger ships can still align with shore power connection locations, said Kindberg.

Increased traffic is also impacting inland cargo distribution, as the domino effect of larger ships trickles down to all modes of off-port distribution.

Mega-ships need mega-modes to handle inbound and out- bound freight, said Anne Strauss-Wieder, director of freight planning for the North Jersey Transportation Planning Authority.

In order to deal with growing volumes, all transportation from ports must be optimized.

In addition, mega-ships are driving the need for more powerful tugs. As vessels are increasing in height and length, a larger sail area is created. A very large containership has a sail area of approximately six acres, and if you put a 20-knot wind on that six-acre sail area, very large tugs will be needed to hold the ship in place, Ward explained.

Overall, bigger ships equate to higher terminal costs, and in some cases, poorer terminal service for the same volume, Ward said.

“The ports are choking on these bigger ships because these capital investments with no increased revenue are generating negative returns on those investments,” he said.

This leaves the ports questioning not only if they want to make the investment, but also how they would pay for it.

It is difficult to sell these projects into public-private partnerships, Ward said. In general, public sources for financing are tolerant of low returns on investments, while private investors are not. This issue is then compounded by the fact that the public does not always understand why it is their problem and why their public port authority has to deal with (and pay for) the issues stemming from the deployment of these mega-ships.