

Pasadena Citizens' Advisory Council

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Summary of Thursday, August 22, 2013 Meeting

Panama Canal Expansion and Its Impacts

Panama Canal expansion was the featured topic of the August 2013 meeting of the Pasadena Citizens' Advisory Council (PCAC). The speaker was Capt. Bill Diehl, US Coast Guard (retired), former Captain of the Port, and current executive director of the Greater Houston Port Bureau, a maritime trade association. Diehl was the US senior diplomat at the Panama Canal at the time expansion was being planned.

Diehl described the Panama Canal as a toll road and ports as highway ramps to the oceans. The Port of Houston is the biggest of the on-ramps. Nearly 20% of the nation's waterborne tonnage is handled by the Texas ports of Houston, Beaumont, Corpus Christi, and Texas City. All four are among the top 10 ports in the US.

Panama is a narrow isthmus connecting North and South America. Sea levels of the Atlantic and Pacific Oceans are not the same, so the canal was built to allow ships to pass from one ocean to another instead of crossing around the southern tip of South America. The canal allows ships to pass through locks that gradually equalize the sea level. It was built in 1914, the same year in which the Port of Houston was built. The Houston Ship Channel is 52 miles long, two miles longer than the Panama Canal 😊 Additional locks are being built at the Panama Canal so it can handle the growing number of large ships.

A ship enters the locks, which act like a hydraulic elevator. The gate closes after the ship enters. Water fills the chamber and raises the water level to that of the next lock and eventually to the other ocean. On a typical day at the Panama Canal, big ships transit first and during daylight because clearance is tight. Mid-size ships then transit the canal, also during daylight. Then small ships transit, at night.

The number of transits through the canal has increased from 4832 in 1955 to 23,889 in 2010. The tonnage carried by each ship has also increased dramatically since the 1950s.

Many of the ships are container ships. Containers are built to move from one mode of transportation to another (e.g. ship to truck) but are not all the same length. To describe the amount of container cargo in a uniform way, it is measured in 20-foot equivalent units, called TEUs.

Ships obviously come in different sizes. A Panamax ship is the largest that can transit the Panama Canal at this time. *Post-Panamax* ships will be able to pass through the new locks of

the Panama Canal after expansion is complete. The existing locks can handle a ship carrying 4400 TEUs. The new locks will be able to handle vessels carrying 12,600 – 14,000 TEUs of cargo. Expansion will not bring more ships to the canal, just bigger ones. Shipping costs decline when cargo travels in large vessels.

The water that is pumped into a lock when the gates are closed comes from the rainforest. For each ship that transits the canal, 52 million gallons of water are flushed to the ocean. When designing the new locks, a goal was to recover some of this water because rainforests cannot supply more than they do. Though the new locks will be bigger, they will use 7% less water.

Houston Ship Channel depth varies.

- 45 feet from the sea buoy to Beltway 8
- 40 feet from Beltway 8 to the 610 Loop
- 36 feet from the 610 Loop to the Turning Basin

The Port of Houston Authority's Bayport and Barbours Cut Terminals are closest to the Gulf of Mexico so it takes the least time for ships to reach them. They deal primarily with container cargo, which must be unloaded quickly for economic reasons. Cruise ships will use the Bayport Terminal so they can get out to sea quickly to please passengers. The next segment upstream is where the chemical tankers operate.

It takes more time to reach the Beltway 8 – Loop 610 stretch and the channel is not as deep there. Here is where commodities like wheat, corn, and fertilizer are shipped. It takes more time to unload these bulk cargos, so it is okay if ships need more time to transit from the sea buoy to the terminal. From Loop 610 to the Turning Basin, the cargo called "break bulk" consists of big items like pipe and locomotives. It takes about 3 days to unload these ships, so they can afford to travel the farthest up the channel.

The Houston Ship Channel depth is currently 45 feet in the area of the Bayport and Barbours Cut Terminals, but the terminals themselves are 40 feet. They can handle Panamax ships but not the post-Panamax ones that carry 8000 TEUs or more. The Port of Houston Authority is dredging just these two terminal channels to 45 feet to be able to handle ships with about 7000 TEUs. The Port of Houston will *not* be able to handle the really big 12,000 TEU ships. Doing so would require the channel to be 50 feet deep. There are no plans or funding to dredge to that depth.