

Technical Report

Space Efficiency in Container Ports

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Conclusion

The Port of Houston Authority claim that it needs more than 1,000 acres for its proposed container and cruise facility is contradicted by comparisons with new, efficient container facilities being built elsewhere in the United States. This exaggerated land requirement has biased both development of feasible alternatives and the financial analysis of the feasibility of alternative sites (such as those that could be built on dredge spoil).

Introduction

The Port of Houston Authority is proposing to build a container and cruise ship terminal in Bayport. As originally proposed, the proposed facility would cover 1,091 acres with seven container ship berths and five cruise ship berths. In July, the Port revised its permit application with the Corps of Engineers to eliminate three cruise berths. The huge footprint of this proposed facility limits the number of feasible alternative sites, as well as increases the cost of some alternative sites that require significant site preparation work. The following report challenges the assumptions behind the acreage needs for a container terminal the capacity of the one proposed for Bayport.

Facility Space Efficiency

A number of container terminals have been built up and down the west, east, and Gulf coasts over the past few decades. The land area needed for these facilities varies from place to place but is generally less than that required by the Port of Houston Authority. The following table presents comparable data for the Ports of Seattle, Long Beach, Texas City (proposed), and Houston (Barbour's Cut and Bayport). A TEU (Twenty-foot Equivalent Unit) represents a 20-foot container and is used as a standardized measure of container terminal through-put.

<i>Port</i>	<i>Size (in acres)</i>	<i>Berth Length (in feet)</i>	<i>Capacity (in TEUs)</i>	<i>TEUs/Acre</i>	<i>Berth Feet/acre</i>
Long Beach ¹	1,017	21,309	6,454,000	6,347	21
Seattle ²	525	14,016	3,200,000	6,095	27
Texas City ³	400	6,000	2,446,400	6,116	15
<i>Average</i>	<i>647</i>	<i>13,775</i>	<i>4,033,467</i>	<i>6,186</i>	<i>21</i>
Barbour's Cut ⁴	500	6,000	918,241	1,837	12
Bayport ⁵	899	7,000	2,240,000	2,492	8

Results

Using the average efficiency numbers from three peer Ports, a seven berth, 7,000 foot container terminal projected to carry about 2.2 million TEUs per year should require only:

- 356 acres based on average TEUs/acre from the peers
- 333 acres based on average berth feet/acre from the peers

This finding is significant for three reasons.

- The Port's demand for a 1,000 site (900 of which are for the container terminal) biased the identification of feasible alternative sites by rejected potential sites as too small which in fact provide plenty of acreage.
- The Port's claim that it needs to stabilize nearly 900 acres at Spilman's Island in order to site the container port is incorrect and leads to biased financial analysis. Realistically, only about 350 acres in total (only some of which will require stabilization) would be required for the facility.
- The Port of Houston Authority—a tax supported public agency—is proposing to spend tax dollars developing a container facility almost three times the size as a modern, efficient port.

¹ All Long Beach data are taken from the Port of Long Beach website.

² Seattle data are from the Port of Seattle website and article "Port of Seattle, SSA Terminals open Northwest's largest container handling complex", April 3, 2002 also on the Port of Seattle web site. Container moves converted to TEUs using the same ratio of container moves to TEU used in the Shoal Point FEIS referenced in footnote 3.

³ All Texas City data are from the U.S. Army Corps of Engineers Galveston District Final Environmental Impact Statement for Texas City's Proposed Shoal Point Container Terminal, November 2002

⁴ Barbour's Cut data are from Port of Houston's website; acreage estimated from Moffatt & Nichol Engineers' Performance Audit of Barbour's Cut, February 1997

⁵ Bayport data are drawn from the U.S. Army Corps of Engineers Galveston District Draft Environmental Impact Statement for the Port of Houston Authority's Proposed Bayport Container/Cruise Terminal. Container moves converted to TEUs using the same ratio of container moves to TEU used in the Shoal Point FEIS referenced in footnote 3.