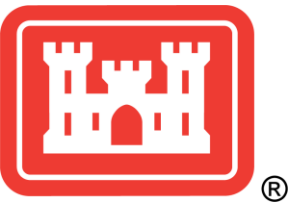


A Briefing to the Stakeholder Evaluation Group SHEP Economic Study 14 December 2010

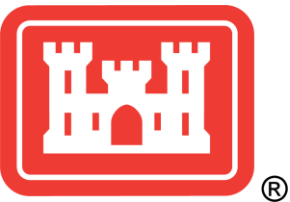


Bernard Moseby
Chief Economic Analysis
Mobile District Corps of Engineers
Deputy Director
Deep Draft Navigation Planning Center of
Expertise (DDNPCX)



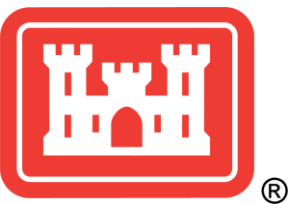
BRIEFING PURPOSE (SEG)

- How did we get here? – A Recap
- To explain how the Corps updated its economic analysis for SHEP
- To present and explain the Corps approach to it's updated economic evaluation
- To present and explain the Updated SHEP Economic Benefit Analysis



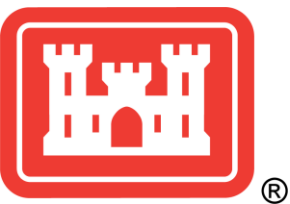
Savannah Harbor Expansion (IRC) Economic Concerns Identified

- a. The Savannah Harbor economic model, developed more than 6 years ago does not have the flexibility to adjust key variables that would reflect current day operations and changes in the container shipping industry.
- b. Simplified assumptions contained in the economic analysis related to the Panama Canal expansion are insufficient in reflecting the Canals potential impacts to the container shipping industry.
- c. The container industry is rapidly evolving and its evolution is not adequately reflected in the existing analysis. Specifically how empty containers and unused container slots on vessels affect vessel drafts and loading practices.



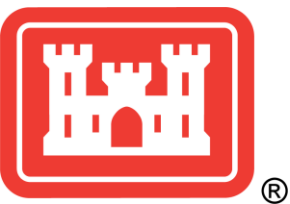
Savannah Harbor Expansion (IRC) Economic Concerns Identified (cont'd)

- d. How vessels use the tide in the Savannah Harbor must be more integrated in the economic analysis.
- e. The commodity forecast was developed in 2003. Recent trends indicate more robust growth in container traffic coming directly to the east coast and specifically, Savannah Harbor which is growing at a faster rate. This information needs to be better factored into the analysis. The current commodity forecast does not accurately represent the Savannah Harbor's South Atlantic Region market share. Accordingly, this market share needs to be adjusted to reflect recent trends and ultimately reforecast container growth.



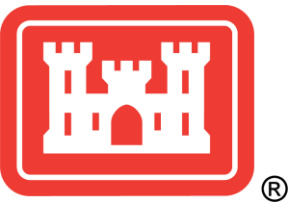
What Have We Done?

- Updated the Economic Analysis
 - New Commodity Forecast
 - New Fleet Forecast
- New SHEP Container Ship Model
 - Transportation Cost Saving Model
- Evaluated Other Benefits with the HarborSym Model
 - Tide Delay, LNG Benefits and Meeting Lanes



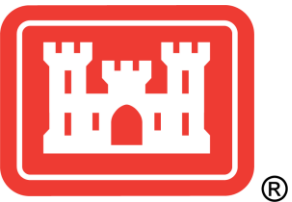
New Commodity Forecast

- Detailed breakdown of projected imports and exports specific to Savannah according to trade partner country or region by commodity in tonnes with data to estimate tonnes per TEU by trade route
- Mobile District assign commodity and tonnage to respective trade routes



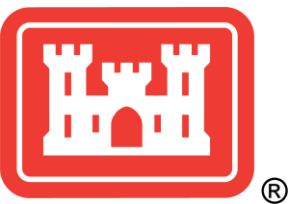
New Fleet Forecast

- Updated world fleet update from MSI
- Vessel calls forecast and transportation cost savings estimated by Transportation Cost Savings Model TCSM
- HarborSym model run with vessel call forecast to estimate tide delay and meeting lane benefits



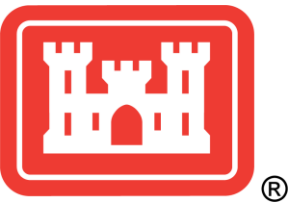
New SHEP Containership Model Load Factor Analysis

- Components of Deadweight Tonnage (DWT)
- Cargo and Non-Cargo components of DWT
 - Cargo (revenue generating)
 - Cargo Carriage (where applicable)
 - Bunkerage
 - Ballast
 - Crew Requirements and Stores



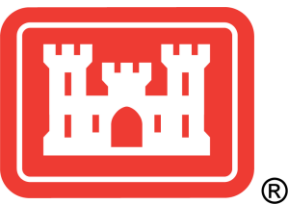
New SHEP Containership Model Load Factor Analysis (cont'd)

- Measures of Capacity
 - By Volume
 - Bulkers
 - Tankers
 - By Weight
 - Ro-Ro
 - Lane meters
 - Fully Cellular Container Vessels
 - Slot capacity



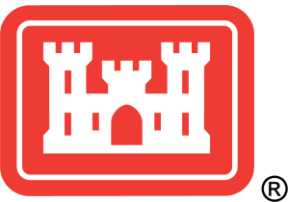
New SHEP Containership Model Load Factor Analysis (cont'd)

- Estimates of primary load factor parameters
 - Ship (type) Specific
 - Class (size) Specific
- Historical Fleet
- Forecasted Fleet



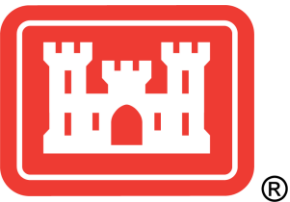
New SHEP Containership Model Load Factor Analysis (cont'd)

- Fully Cellular Container Ships (Savannah)
 - Allowances for occupied slots by empty containers
 - Allowances for vacant slots
 - Allowances for occupied slots by loaded or laden containers
 - Average Cargo Weight per Laden Container (whether TEU, FEU, etc.)
 - Average Weight of Empty Container Unit (carriage weight per unit)



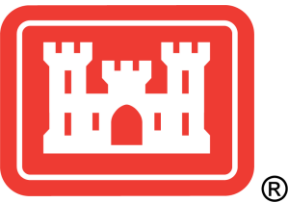
New SHEP Containership Model Load Factor Analysis (cont'd)

- Given relevant vessel specifications and specific information about the disposition of slot utilization, associated cargo weight, and other components of DWT, a vessel's transit or immersed draft (and needs for waterway depth) may be reasonably estimated



New SHEP Containership Model Load Factor Analysis (cont'd)

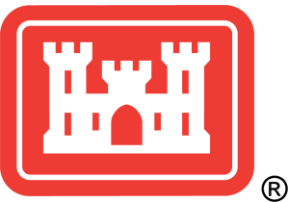
- LFA when combined with information on vessel operating costs is a means of estimating unit costs of cargo carried, expressed in cost per tonne per unit or increment of distance transported.
- In the case of studies for Savannah Harbor, unit costs tables were derived on a per tonne basis commensurate with a distance 1,000 nautical miles for each trade routing.



The Deployment Decision

PPX Deployment by Depth and Trade Route

- TCSM compares unit costs per tonne per 1000 miles for each trade route for each alternative channel depth
- PPX1's will be deployed when less costly than Panamax vessels
- PPX2's will be deployed when less costly than PPX1's
- Average trade route cargo weights for imports and exports are used for these comparisons

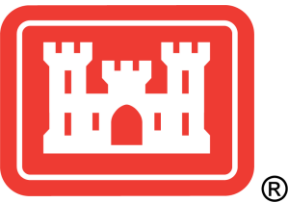


Forecast Vessel Calls by Vessel Size Class, Channel Depth, and Year							
Channel Depths	Year						
42 ft. depth	2008	2010	2015	2020	2025	2030	2032
SPM (Sub-Panamax)	228	247	324	390	485	584	633
PMX (Panamax)	1,261	1,361	1,540	788	759	1,112	1,290
PPXGn I (Post-Panamax Generation I)	32	55	308	1,188	1,704	2,058	2,226
PPX Gn II (Post-Panamax Generation II)	-	-	-	-	-	-	-
<i>Total</i>	<i>1,521</i>	<i>1,663</i>	<i>2,172</i>	<i>2,367</i>	<i>2,948</i>	<i>3,754</i>	<i>4,148</i>
44 ft. depth	2008	2010	2015	2020	2025	2030	2032
SPM	228	247	324	390	485	584	633
PMX	1,257	1,354	1,512	700	641	970	1,137
PPXGn I	32	55	260	647	755	906	977
PPX Gn II	-	-	34	386	677	823	892
<i>Total</i>	<i>1,517</i>	<i>1,655</i>	<i>2,131</i>	<i>2,124</i>	<i>2,559</i>	<i>3,284</i>	<i>3,639</i>
45 ft. depth	2008	2010	2015	2020	2025	2030	2032
SPM	228	247	324	390	485	584	633
PMX	1,255	1,351	1,507	669	596	912	1,074
PPXGn I	32	55	252	564	614	737	795
PPX Gn II	-	-	40	446	777	943	1,022
<i>Total</i>	<i>1,516</i>	<i>1,653</i>	<i>2,123</i>	<i>2,069</i>	<i>2,472</i>	<i>3,177</i>	<i>3,524</i>
46 ft. depth	2008	2010	2015	2020	2025	2030	2032
SPM	228	247	324	390	485	584	633
PMX	1,255	1,351	1,505	658	579	891	1,051
PPXGn I	32	55	248	524	548	662	716
PPX Gn II	-	-	43	475	824	997	1,078
<i>Total</i>	<i>1,515</i>	<i>1,652</i>	<i>2,121</i>	<i>2,047</i>	<i>2,436</i>	<i>3,134</i>	<i>3,478</i>
47 ft. depth	2008	2010	2015	2020	2025	2030	2032
SPM	228	247	324	390	485	584	633
PMX	1,255	1,351	1,505	653	570	880	1,040
PPXGn I	32	55	248	524	548	662	716
PPX Gn II	-	-	43	475	824	997	1,078
<i>Total</i>	<i>1,515</i>	<i>1,652</i>	<i>2,120</i>	<i>2,042</i>	<i>2,426</i>	<i>3,124</i>	<i>3,467</i>
48 ft. depth	2008	2010	2015	2020	2025	2030	2032
SPM	228	247	324	390	485	584	633
PMX	1,255	1,351	1,505	653	570	880	1,040
PPXGn I	32	55	248	524	548	662	716
PPX Gn II	-	-	43	475	824	997	1,078
<i>Total</i>	<i>1,515</i>	<i>1,652</i>	<i>2,120</i>	<i>2,042</i>	<i>2,426</i>	<i>3,124</i>	<i>3,467</i>



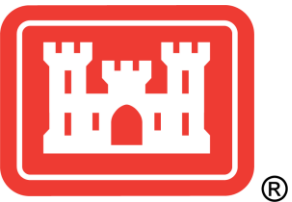
HarborSym Model

- Tide Delay
 - Underkeel Clearance
 - Tide Tables
 - LNG ship restrictions
 - Other Vessel Operation Restrictions
 - Post Panamax Gen II meeting situations



HarborSym Model

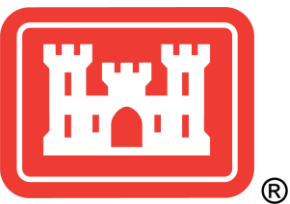
- Meeting Lane Evaluation
 - Oglethorpe
 - Long Island
 - Oglethorpe and Long Island



HarborSym Model

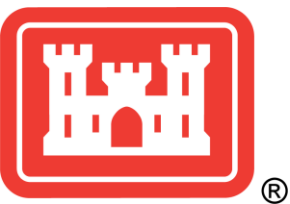
Average Annual Benefits Tide Delay

Project Depth	Tide Benefits	Long Island	Total Benefits
42 to 44	\$ 3,500,000	\$ 510,000	\$ 4,010,000
44 to 45	\$ 5,000,000	\$ 670,000	\$ 5,670,000
45 to 46	\$ 7,000,000	\$ 590,000	\$ 7,590,000
46 to 47	\$ 8,700,000	\$ 590,000	\$ 9,290,000
47 to 48	\$ 10,400,000	\$ 510,000	\$ 10,910,000
Project Depth	Tide Benefits	Oglethorpe	Total Benefits
42 to 44	\$ 3,500,000	\$ 500,000	\$ 4,000,000
44 to 45	\$ 5,000,000	\$ 570,000	\$ 5,570,000
45 to 46	\$ 7,000,000	\$ 530,000	\$ 7,530,000
46 to 47	\$ 8,700,000	\$ 460,000	\$ 9,160,000
47 to 48	\$ 10,400,000	\$ 400,000	\$ 10,800,000
Project Depth	Tide Benefits	Long Island/Oglethorpe	Total Benefits
42 to 44	\$ 3,500,000	\$ 810,000	\$ 4,310,000
44 to 45	\$ 5,000,000	\$ 990,000	\$ 5,990,000
45 to 46	\$ 7,000,000	\$ 950,000	\$ 7,950,000
46 to 47	\$ 8,700,000	\$ 880,000	\$ 9,580,000
47 to 48	\$ 10,400,000	\$ 810,000	\$ 11,210,000



Economic Justification

Alternative Plan Depth	Total AAEQ Costs	Total AAEQ Benefits	Total Net Benefits	Incremental Net Benefits	Benefits/
					Costs
-44	\$25,671,309	\$97,319,000	\$71,647,691		3.8
-45	\$28,151,063	\$128,340,000	\$100,188,937	\$28,541,246	4.6
-46	\$30,882,917	\$142,879,000	\$111,996,083	\$11,807,146	4.6
-47	\$32,798,807	\$148,731,000	\$115,932,193	\$3,936,110	4.5
-48	\$34,721,832	\$150,361,000	\$115,639,169	(\$293,024)	4.3



SHEP ECONOMIC EVALUATION METHODOLOGY

QUESTIONS?

