TRENDS AND DYNAMICS OF THE U.S. MARINE TRANSPORTATION SYSTEM AND KEY ISSUES FACING THE U.S. PORT INDUSTRY

American Association of Port Authorities
Marine Terminal Management Training Program

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September 14, 2015
Agenda

- Cargo trends - Panama Canal vs. Suez Canal
- Infrastructure needs
- Challenges of successful infrastructure projects – Federal funding crisis
- The need for private sector investment
PANAMA VS. THE SUEZ
2014 Was a record year for containerized tonnage – Imported containerized cargo dominates, but exports have been increasing since 2005
West Coast ports handle about 42% of containerized imports – However, share has been declining since 2001; About 40% of containerized exports move via West Coast ports.
Shocks have occurred in the existing logistics patterns of importers/BCOs and these changes primarily occurred between 2002 and 2007

• Consolidation of imports via San Pedro Bay (Los Angeles and Long Beach) Ports - mid 1990’s:
  - Distribution Center (DC) growth
  - Cross-dock operations
  - Rail investments in LA/LB to Midwest routings

• But then...
  - 9/11
  - West Coast Shutdown (2002)
  - Capacity issues – land and labor shortages
  - Rail and truck shortages
  - High intermodal rates

• And more recently...
  - Shifting production centers
  - Economic crisis
  - Continued West Coast labor issues

• Leads to growth in all-water services...
All-water services are growing...

- Significant growth in distribution centers in Gulf and Atlantic port ranges

- Proximity to Southern Asia/India is a positive for Suez Canal routings

- With direct services to East and Gulf Coast, transit time differentials are narrowing

- Port infrastructure investment on East and Gulf Coasts has responded:
  - Terminal development
  - Rail infrastructure
Growth in all-water services accelerated after 2002 - Asian imports via Atlantic and Gulf Coast ports.
Significant growth in distribution centers in Gulf and Atlantic port ranges have driven growth in all-water services

- **Top 25 Retailers**
- **26-50 Retailers**

Source: Chain Store Guide, National Retail Federation
China has been responsible for a growing share of imported containerized tonnage, but share has stabilized.
Asian supply sources are shifting and favor a Suez all-water routing to the East Coast

Source: U.S. Bureau of Census, USA Trade Online
Further implications: East and Gulf Coast ports will need to compete for local market as well as discretionary Midwest “battleground” – rail access is critical.

Source: Chain Store Guide, National Retail Federation
Logistics costs play an important role in total operating costs of a facility...
Rail projects are underway to increase access to Midwestern markets

• **CSX investment in National Gateway project:**
  - ICTF in North Baltimore, Ohio is key
  - Ports of Baltimore and New York, both with 50 ft. of water, are key gateways to this system

• **Heartland Corridor Project, will provide reduced transit times into the Midwestern market via NS:**
  - Norfolk, with 50 ft., is the key gateway for this project

• **Savannah, Houston, Jacksonville and Miami (with 50 ft.), are also targeting traditional intermodal markets in the Southeastern U.S.**

• **Prince Rupert feeds directly into the Midwestern market**
Implications of Panama Canal expansion and growth in Suez traffic

- After 2016, the composition of the fleet will likely change, as 6,500+ TEU vessels will be deployed through Canal
- Actual volume increases through the Panama Canal into the U.S. Atlantic and Gulf Coast may be less than anticipated
- East and Gulf Coasts will have to compete to handle the larger sized vessels that will be deployed:
  - Channel Depth
  - Berth Capacity
  - Crane outreach capability
  - Terminal productivity to minimize time in port
  - All require capital investment
- East and Gulf Coast ports will need to compete for:
  - Local market
  - Access to discretionary cargo for both truck and rail
- West Coast ports and railroads will respond:
- Uncertainty over Panama Canal Tolls
Composition of current Trans-Pacific container fleet at West Coast ports will dictate new all-water vessel size

Distribution of Container Vessel Calls at West Coast Port, by Design Draft

Source: Martin Associates proprietary data file
43% of the container order book consists of vessels in excess of 8,000 TEUS – and growing

<table>
<thead>
<tr>
<th>TEU Size Class</th>
<th>Current Fleet</th>
<th>Order Book</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;999</td>
<td>1,099</td>
<td>32</td>
</tr>
<tr>
<td>1000 &lt; 1999</td>
<td>1,286</td>
<td>87</td>
</tr>
<tr>
<td>2000 &lt; 3999</td>
<td>1,046</td>
<td>89</td>
</tr>
<tr>
<td>4000 &lt; 5999</td>
<td>921</td>
<td>110</td>
</tr>
<tr>
<td>6000 &lt; 7999</td>
<td>250</td>
<td>42</td>
</tr>
<tr>
<td>8000 &lt; 9999</td>
<td>280</td>
<td>106</td>
</tr>
<tr>
<td>&gt;= 10,000</td>
<td>111</td>
<td>165</td>
</tr>
<tr>
<td>Total</td>
<td>4,993</td>
<td>631</td>
</tr>
</tbody>
</table>
Increased investment is necessary to compete with development of transshipment centers and logistics hubs in the Caribbean and Central America.

- **Key transshipment center development capitalizing on water depth and East-West and North-South trade lanes:**
  - Panama
  - Bahamas
  - Jamaica
  - Dominican Republic
  - Costa Rica
  - Trinidad
  - Cuba

- **Natural progression is to logistics center development – Outsourcing of distribution center functions:**
  - Potential to develop competing Logistics/Distribution Centers to mainland locations:
    - Lower cost labor
    - Lower cost land costs
    - Packaging, labeling, pre-racking
    - 53 ft. domestics?
  - Support near market sourcing development in Central America
Investment in port infrastructure is critical to compete with Caribbean transshipment hubs for development of logistics centers/off-shore distribution.
Growth in near-market sourcing in the Caribbean and Central America

• **Location decisions for off-shore production historically were driven by labor costs:**
  - China became the dominant player
  - Transportation and logistics costs were outweighed by labor costs
  - Growth in domestic demand has resulted in growth in labor costs
  - Logistics costs have become more critical in total costs and location decisions:
    - Fuel surcharges
    - Vessel capacity restrictions, service disruptions

• **Increasing development in Mexico, Central America and Caribbean:**
  - Increases market potential for smaller, non-load center ports with limited water
  - Likely growth in Gulf Coast ports and Mexican/Central American ports
Growth of near-market sourcing will continue to compete with Asian-sourced goods

- **Textiles and apparel industry, and manufacturing:**
  - Increased labor costs in China
  - Transportation costs becoming more critical (e.g. fuel):
    - Slow Steaming
    - Capacity Restrictions
    - Increase in logistics costs
  - Faster time to market, quick changes/flexibility
  - Lean supply chains – less inventory in chain
  - Opportunities for ports with limited water depth and berth length

- **U.S. Trade Policy:**
  - Free Trade Agreements (FTA):
    - Colombia and Panama
  - Trans-Pacific Partnership (TPP):
    - 11 countries – Malaysia, Brunei, Vietnam, New Zealand, Chile, Mexico, Canada, Australia, Peru, Singapore and U.S.
FEDERAL FUNDING CRISIS – the Port Productivity Gap
Comparison of CAGR 2008-2013 for top 10 U.S. container ports and key Canadian and Mexican ports

CAGR 2008-2013, TEUS

Source: AAPA; full and empty TEUS
Comparison of productivity at the world’s leading container ports (Journal of Commerce)

<table>
<thead>
<tr>
<th>Port</th>
<th>Country</th>
<th>Berth Productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qingdao</td>
<td>China</td>
<td>96</td>
</tr>
<tr>
<td>Ningbo</td>
<td>China</td>
<td>88</td>
</tr>
<tr>
<td>Dalian</td>
<td>China</td>
<td>86</td>
</tr>
<tr>
<td>Shanghai</td>
<td>China</td>
<td>86</td>
</tr>
<tr>
<td>Tianjin</td>
<td>China</td>
<td>86</td>
</tr>
<tr>
<td>Yokohama</td>
<td>Japan</td>
<td>85</td>
</tr>
<tr>
<td>Jebel Ali</td>
<td>United Arab Emirates</td>
<td>81</td>
</tr>
<tr>
<td>Busan</td>
<td>South Korea</td>
<td>80</td>
</tr>
<tr>
<td>Nhava Sheva (Jawaharlal Nehru)</td>
<td>India</td>
<td>79</td>
</tr>
<tr>
<td>Yantian</td>
<td>China</td>
<td>78</td>
</tr>
<tr>
<td>Taipei</td>
<td>Taiwan</td>
<td>77</td>
</tr>
<tr>
<td>Xiamen</td>
<td>China</td>
<td>76</td>
</tr>
<tr>
<td>Long Beach</td>
<td>U.S.</td>
<td>74</td>
</tr>
<tr>
<td>Khor al Fakkan</td>
<td>United Arab Emirates</td>
<td>74</td>
</tr>
<tr>
<td>Elizabeth</td>
<td>U.S.</td>
<td>74</td>
</tr>
<tr>
<td>Nansha</td>
<td>China</td>
<td>73</td>
</tr>
<tr>
<td>Kaohsiung</td>
<td>Taiwan</td>
<td>72</td>
</tr>
<tr>
<td>Salalah</td>
<td>Oman</td>
<td>72</td>
</tr>
<tr>
<td>Mawan</td>
<td>China</td>
<td>71</td>
</tr>
<tr>
<td>Southampton</td>
<td>U.K.</td>
<td>71</td>
</tr>
</tbody>
</table>

Rankings based on average container moves per hour while ship is in port.
Federal funding is required for deepening projects at Atlantic and Gulf Coast ports

<table>
<thead>
<tr>
<th>State</th>
<th>Port Name</th>
<th>Current Depth</th>
<th>Planned Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maryland</td>
<td>Baltimore</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>Boston</td>
<td>40</td>
<td>48</td>
</tr>
<tr>
<td>South Carolina</td>
<td>Charleston (Authorized)</td>
<td>45</td>
<td>52</td>
</tr>
<tr>
<td>Texas</td>
<td>Corpus Christi (Authorized)</td>
<td>45</td>
<td>55</td>
</tr>
<tr>
<td>Delaware River</td>
<td>DE, PA, NJ Ports Portions Underway</td>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td>Texas</td>
<td>Freeport (Authorized)</td>
<td>45</td>
<td>55</td>
</tr>
<tr>
<td>Texas</td>
<td>Houston-Galveston</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Florida</td>
<td>Jacksonville (Authorized)</td>
<td>40</td>
<td>47</td>
</tr>
<tr>
<td>Florida</td>
<td>Manatee</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Florida</td>
<td>Miami (Under Way)</td>
<td>42</td>
<td>50</td>
</tr>
<tr>
<td>Alabama</td>
<td>Mobile</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Louisiana</td>
<td>New Orleans</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>New York</td>
<td>New York (Underway)</td>
<td>45-50</td>
<td>50</td>
</tr>
<tr>
<td>Virginia</td>
<td>Norfolk/Hampton Roads</td>
<td>50</td>
<td>55</td>
</tr>
<tr>
<td>Florida</td>
<td>Palm Beach</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>Florida</td>
<td>Port Everglades</td>
<td>42</td>
<td>47+</td>
</tr>
<tr>
<td>Florida</td>
<td>Port Canaveral</td>
<td>41</td>
<td>50+</td>
</tr>
<tr>
<td>Texas</td>
<td>Sabine Naches</td>
<td>40-42</td>
<td>42-48</td>
</tr>
<tr>
<td>Georgia</td>
<td>Savannah (Authorized)</td>
<td>42</td>
<td>47+</td>
</tr>
<tr>
<td>Florida</td>
<td>Tampa</td>
<td>43</td>
<td>43</td>
</tr>
</tbody>
</table>

After Miami is deepened, Port**MIAMI** will join New York, Baltimore and Norfolk as the only ports on the USEC/Gulf to have 50 feet of water

Ability to attract **first-in-bound/last-out-bound** vessel call
Infrastructure funding is the critical issue to economic growth

- Ports have lost funding for system preservation projects, let alone major infrastructure projects:
  - After 9/11 - security investments competing with system preservation investments
  - Downturn of trade reducing port revenues
  - Economic crisis reducing state/municipal public funding
  - USACE/Federal Government cannot fund the dredging/deepening projects and infrastructure projects

- $64 billion in the near-term is needed in US – (Mexican Government investing $54 billion in next 6 years)

- Need for highly productive automated terminals to serve the largest container vessels

- Need for efficient rail and highway access
More infrastructure funding in addition to deepwater ports is necessary

- **12,000 miles of inland waterways:**
  - 191 lock systems
  - 237 lock chambers

- Replacement cost estimated at $125 billion in 1994

- 50% of the locks and dams over 60 years of age

- Efficient River Transportation System necessary for bulk exports

- Failure would be catastrophic in terms of:
  - Economic cost
  - Loss of life
The National Export Initiative (NEI) cannot be accomplished without infrastructure investment

- *Doubling exports over five years (2014)*

- **Policy decision-making efforts:**
  - Improving trade advocacy and export promotion efforts
  - Increasing access to credit
  - Removing barriers to the sale of U.S. goods/services abroad
  - Pursuing policies at the global level to promote sustainable growth

- **Without adequately maintained shipping channels and port infrastructure, the U.S. participation and benefits will not be maximized:**
  - Heavy weight exports (agricultural products, forest products, chemicals)
  - Last port of call for exports – deep water critical
Possible solutions to Federal funding crisis

- **Fiscal 2016 budget reduces money for port infrastructure and navigation projects**
  - Planned for 100% of Harbor Maintenance Fund Money to be returned to ports by 2025

- **To date, there is a very limited understanding at the Federal level of:**
  - Importance of the U.S. port industry
  - Impact of the delays in navigational projects
  - Overall bureaucratic process and often “changing rules” of the USACE
  - To date, the port industry has not been unified in its message to the Federal government, focusing on individual/state issues
Possible solutions to Federal funding crisis

• **Undertake navigational solutions at local level:**
  - State investments
  - Private sector investment

• **Focus efforts at a national maritime system level, rather than the Port/State level**

• **Direct communications to “highest level” of Federal government, with a bi-partisan effort:**
  - Cabinet level focus
  - Transportation and Infrastructure Committee Focus
  - Get a voice/message in Federal government
PORT-SPECIFIC INFRASTRUCTURE FUNDING – Is Private Sector the Answer???
Private Sector Investment

• **Private sector participation reached a peak in 2006-2007 period:**
  - Multiples on EBITDA were over 25
  - Expectations of a continued 6-10% annual growth
  - Anticipated returns 12-15%

• **Most funds are now looking at emerging markets where returns can be made:**
  - Caribbean
  - Africa
  - South America
  - Vietnam

• **High level of perceived risk in U.S. port investment:**
  - Labor
  - Navigational projects uncertainty

• **However, there is a current resurgent of interest in the U.S.**
Private Sector Investment

• Conduit financing of projects where port provides access to municipal bonds:
  - However, bonding capacity becomes issue
  - Lease specifications are critical

• U.S. Ports need to refocus on participation by the terminal operators:
  - Reduced lease payments but increased lease length in response to terminal operator investment in capital projects:
    - Baltimore (Ports America Chesapeake)
    - New York (GLOBAL)
    - Los Angeles (MOL)
    - Port Canaveral (Gulftainer)
  - Outright purchase of terminals – Kinder Morgan at Wilmington, DE
  - SSA Sacramento agreement

• State’s take on larger role in direct investment:
  - Florida is key example
In closing, is a National Port Plan the answer???

- Possible solution to port funding issues

- Could result in optimization of resources:
  - Consolidation of ports in same geographical region
  - Winners and losers with respect to navigational and funding issues

- Levels the playing field with other modes of transportation, even the private railroads with federal support on key regional/national projects/corridors

- Potentially result in greater investment in infrastructure to improve competitive position of U.S. economy

- Can it be removed from politics -- A Slippery Slope!!
THANK YOU!