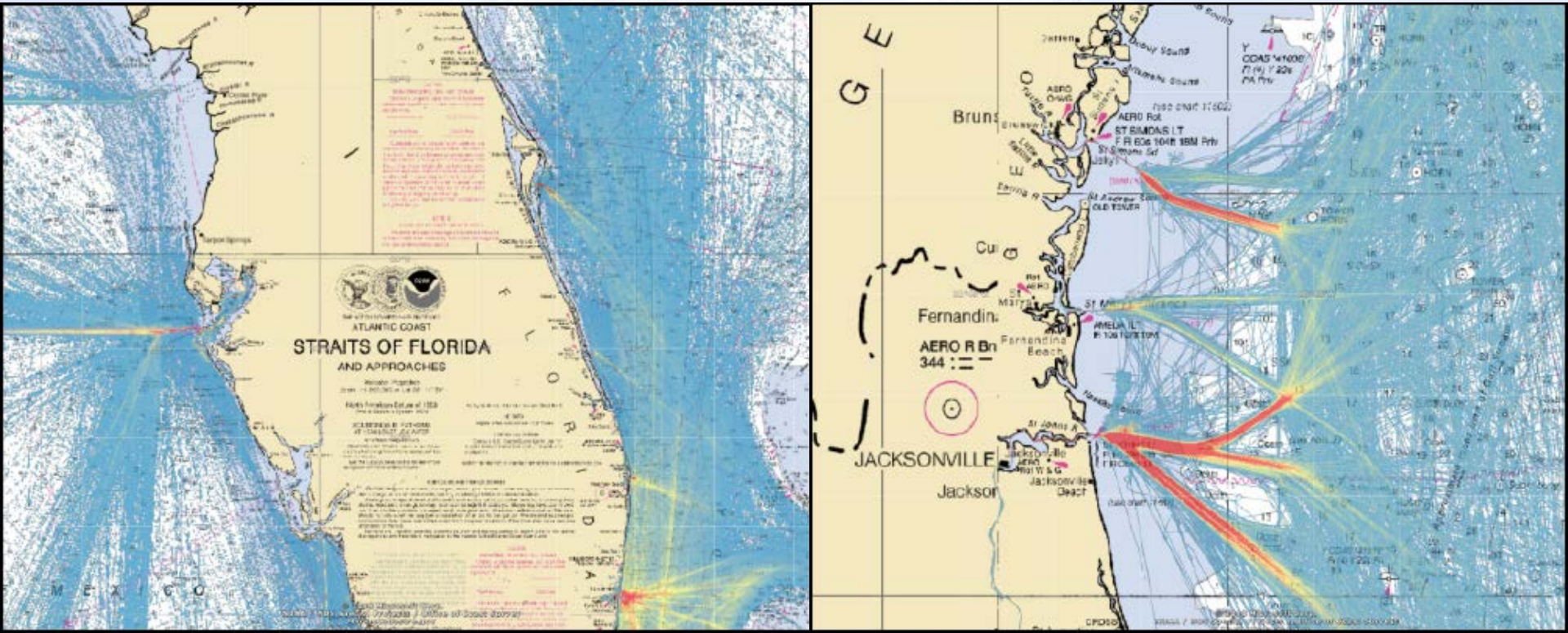
Navigational Safety Considerations in Marine Planning

Florida Renewable Energy State Task Force Meeting



Coast Guard's Role as a Cooperating Agency

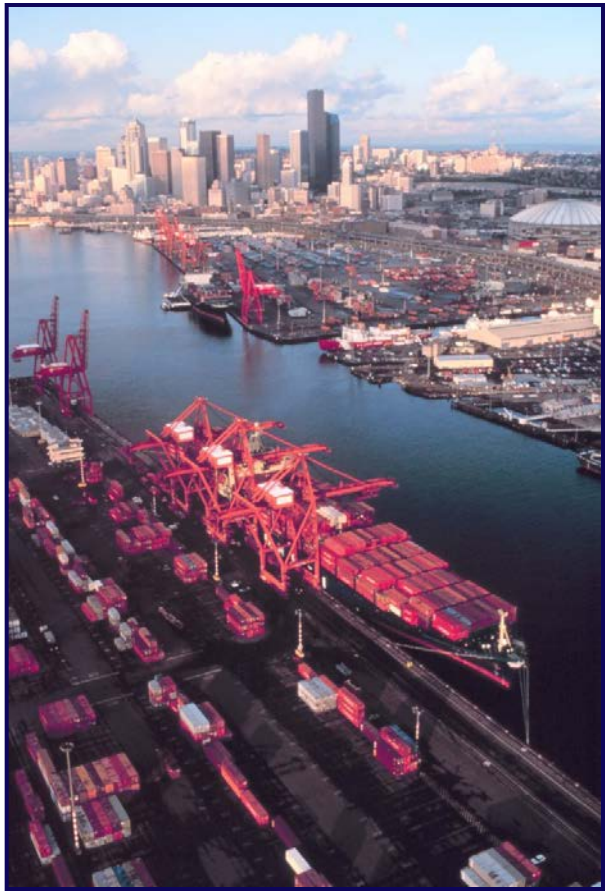
- CG responsible to waterways users for safe and efficient operation of the Marine Transportation System (MTS)

- BOEM consultation w/ Coast Guard
  - Maritime safety, maritime security, maritime mobility, national defense, and protection of natural resources
  - Traditional uses
  - Impact to CG missions

- Navigational Safety Risk Assessment required of the developer

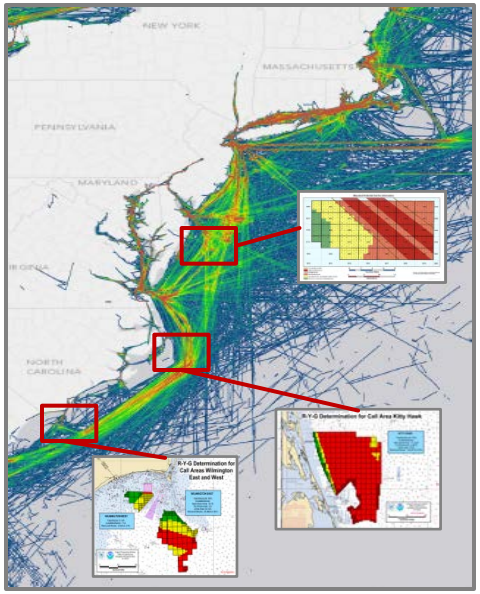
Value of the Marine Transportation System

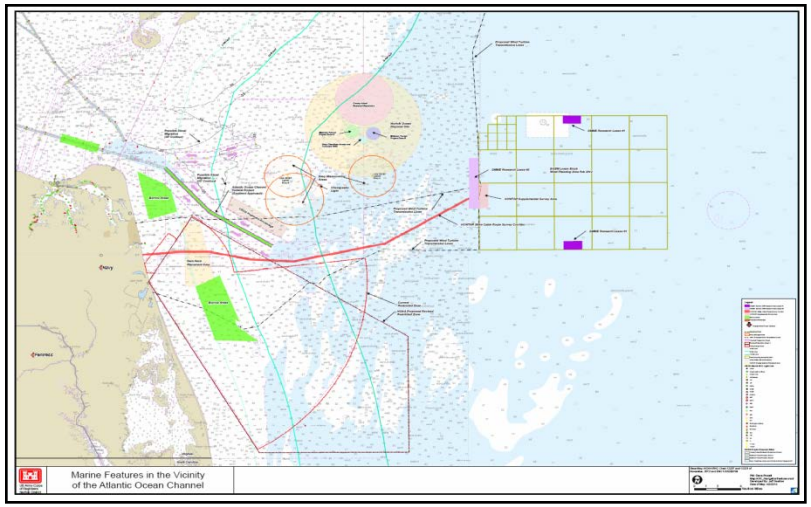
- More than 95% of the world's trade is carried on the water
- Carries 78% of all U.S. international trade
- Transports 66% of all U.S. crude oil
- Contributes $742 billion annually to U.S. GDP
- 51,000 port calls by 7,500 foreign ships
- 6.5 million cruise ship passengers
- 6 million loaded containers from overseas
- Safest, most efficient and "greenest" mode of transportation



Marine Planning Considerations

- Safety of Navigation
- Efficiency of the MTS
- Competitiveness of Ports
- Competitiveness of transportation modes- Marine Highways
- Environmental Impacts
- Future of Navigation
- Future of Maritime Commerce

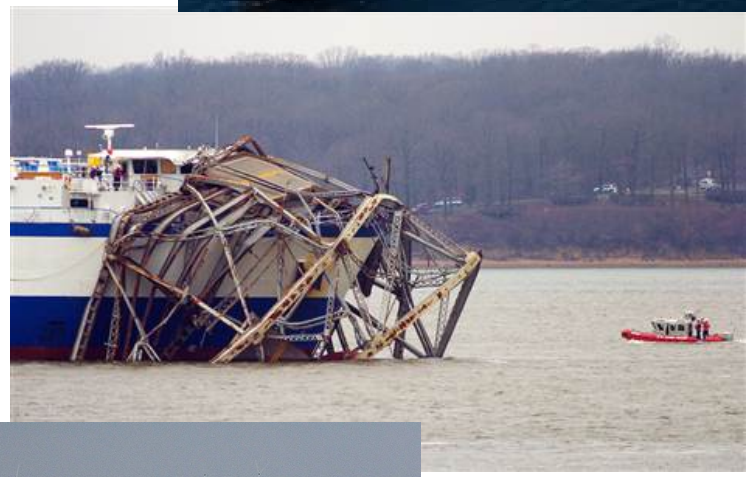


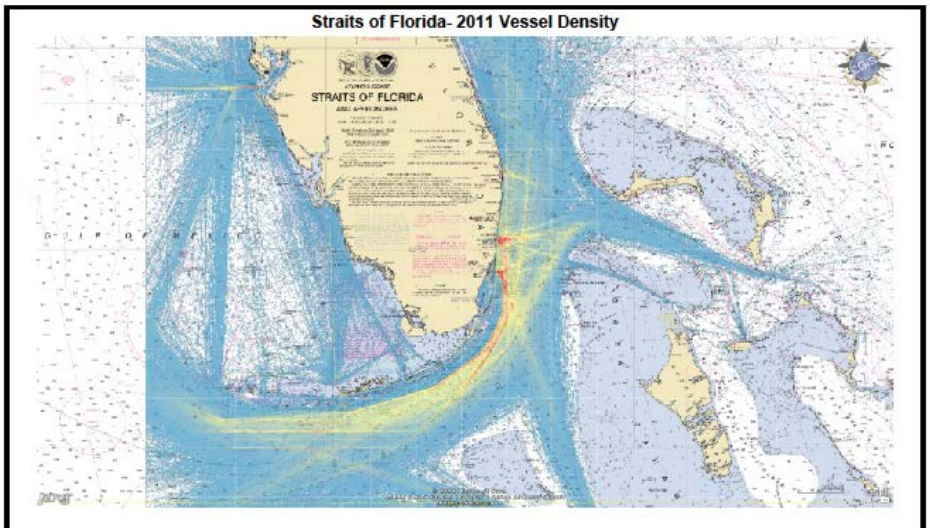


Impacts to Navigation

Safety

- Δ Vessel Density (collisions)
- Δ Allisions w/ fixed objects
- Δ Weather & Environs

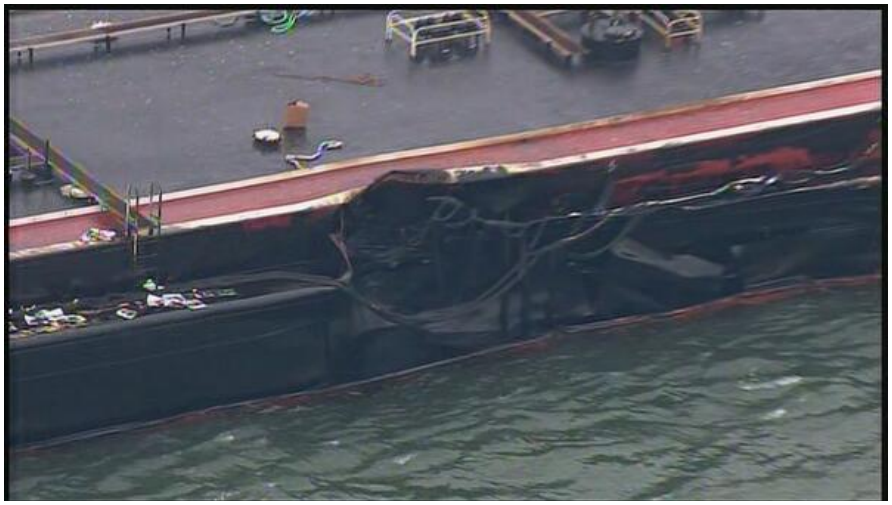




Impacts to Navigation

Safety

- Mixing Vessel Types
- Complexity of vessel interactions
- Decreased Sea Room



UK Maritime Guidance Note MGN-371

Distance	Factors	Risk	
< 0.25 NM	Inter-turbine spacing = only small craft recommended	Very High	RED
0.5 NM	Mariner's high traffic density domain	High	
1.0 NM	Minimum distance to parallel boundary of TSS	Medium	YELLOW
1.5 NM	S band radar interference - ARPA affected	Medium	
2.0 NM	Compliance with COLREGS becomes less challenging	Medium	
> 2.0 NM	But not near a TSS	Low	
5.0 NM	Adjacent wind farm introduces cumulative effect. Distance from TSS entry/exit	Very Low	GREEN
10.0 NM	No other wind farms	Very Low	

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> 2 NM from route would be low risk except near a TSS

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5 NM is the minimum distance to the entry/exit of a TSS

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At 2 NM from route COLREGS becomes less challenging

Other Guidelines

- **German Guidelines-** A distance of at least 2 nautical miles plus a 500 m safety zone is necessary between the traffic separation areas and the wind generators.
- **World Shipping Council**- A minimum distance of 2NM from traffic lanes. Increase distance as vessel speeds increase.
- **CESMA**- Minimum distance equals distance to comply with COLREG 0.3NM+ 2NM+ 500m

International Regulations and Guidelines

1. United Nations Convention on the Law of the Sea (UNCLOS)
2. General Provisions on Ships' Routeing of International Marine Organization (GPSR)
3. International Regulations for Preventing Collisions at Sea, 1972, as amended: (COLREG)

United Nations Convention on the Law of the Sea (UNCLOS)

- **UNCLOS 60(7)-** “Artificial islands, installations and structures and the safety zones around them may not be established where interference may be caused to the use of recognized sea lanes essential to international navigation.”
- Requires vessels to comply with "generally accepted international regulations relating to the prevention of collisions at sea" (COLREG)
- Interference can be considered to limit a ship’s ability to comply with COLREGs

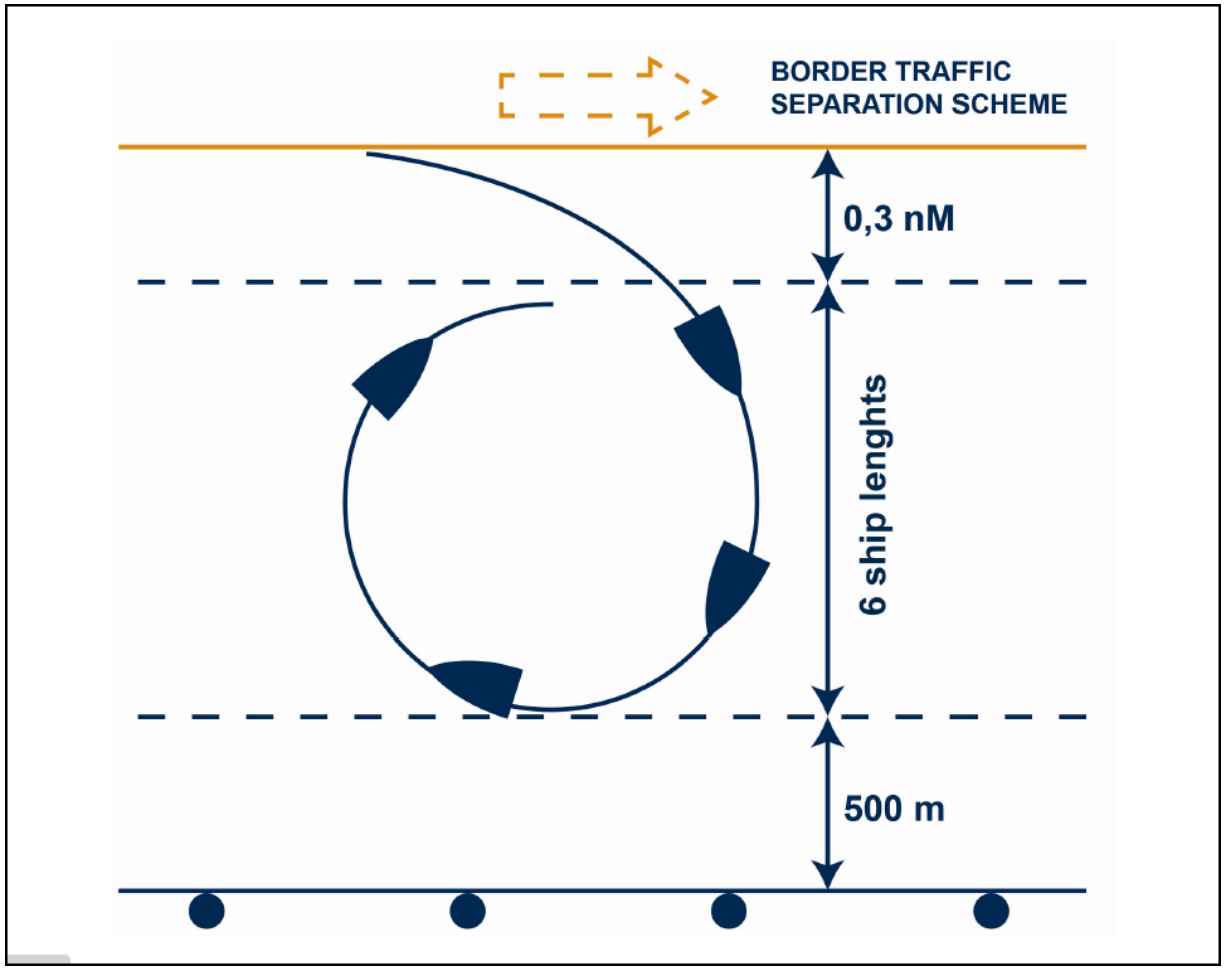
International Marine Organization General Provisions on Ships' Routeing

- **GPSR 1.1-** The purpose of ships' routeing is to improve the safety of navigation in converging areas and in areas where the density of traffic is great or where freedom of movement of shipping is inhibited by restricted sea room, the existence of obstructions to navigation, limited depths or unfavorable meteorological conditions.
- **GPSR 6.8-** Traffic separation schemes shall be designed so as to enable ships using them to fully comply at all times with the International Regulations for Preventing Collisions at Sea, 1972, as amended.
- **GPSR 6.10-** Traffic lanes should be designed to make optimum use of available depths of water and the safe navigable areas, taking into account the maximum depth of water attainable along the length of the route. The width of lanes should take account of the traffic density, the general usage of the area and the sea-room available.

International Regulations for Preventing Collisions at Sea (COLREG)

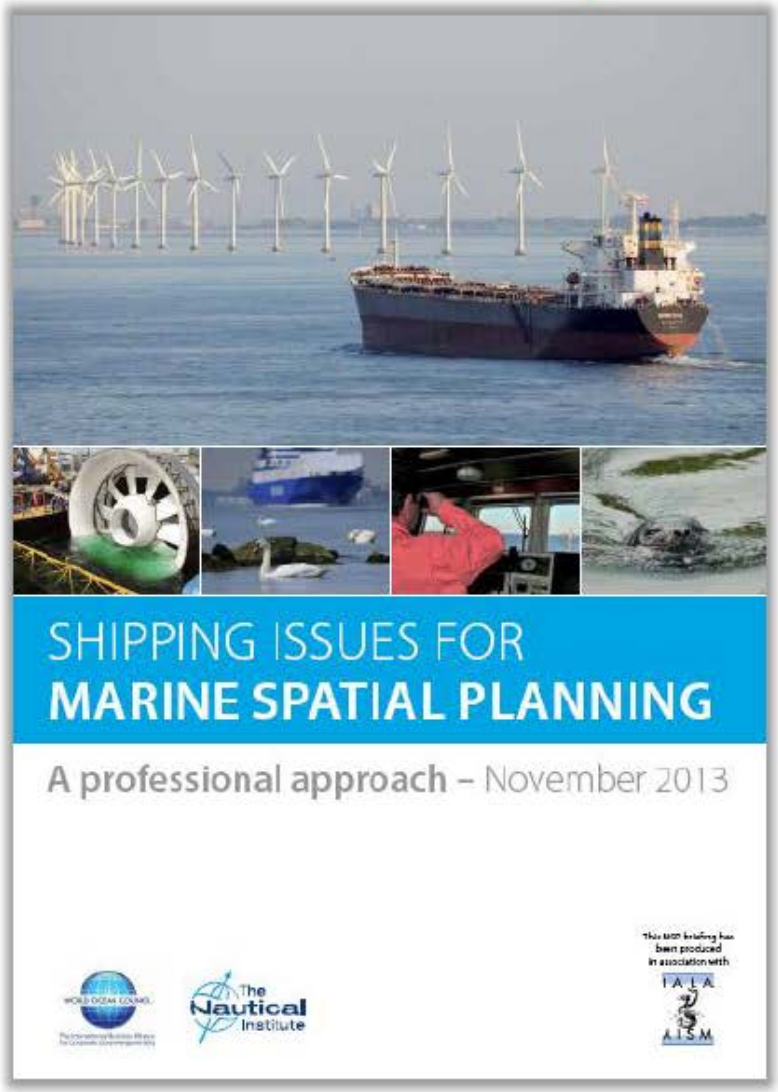
- **COLREG 2a) and b)-** Nothing in these Rules shall exonerate any vessel, or the owner, master or crew thereof, from the consequences of any neglect to comply with these Rules or the of the neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case In construing and complying with these Rules due regard shall be had to all dangers of navigation and collision and to any special circumstances, including the limitations of the vessels involved, which may make a departure from the Rules necessary to avoid immediate danger.
- **COLREG 7c)-** Assumptions shall not be made on the basis of scanty information, especially scanty radar information.
- **COLREG 8-** Action taken to avoid collision with another vessel shall be such as to result in passing at a safe distance. The effectiveness of the action shall be carefully checked until the other vessel is finally past and clear.

Confederation of European Shipmasters' Associations (CESMA)

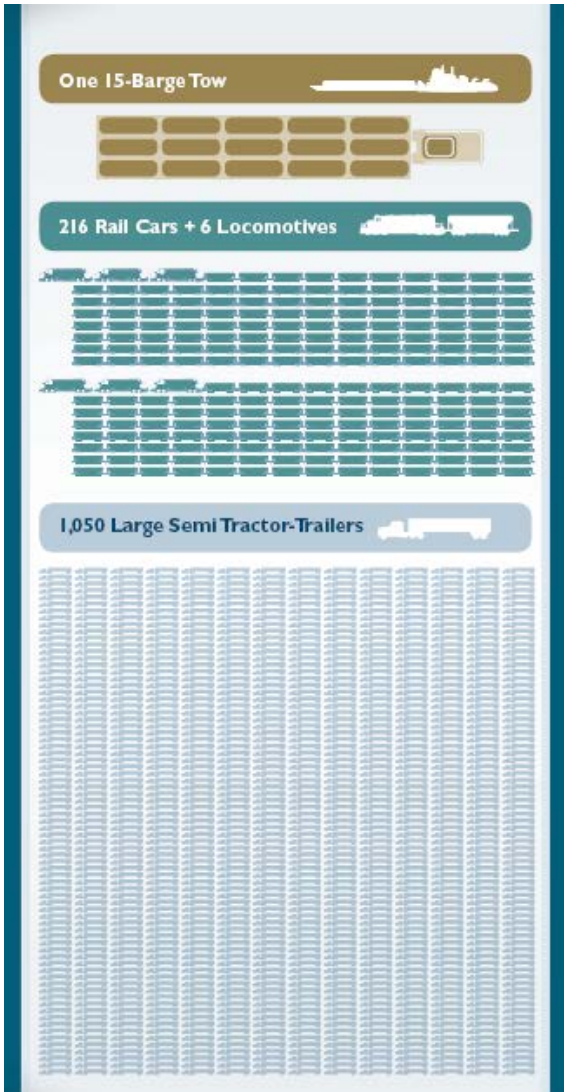


Required Room for a Full Round Turn

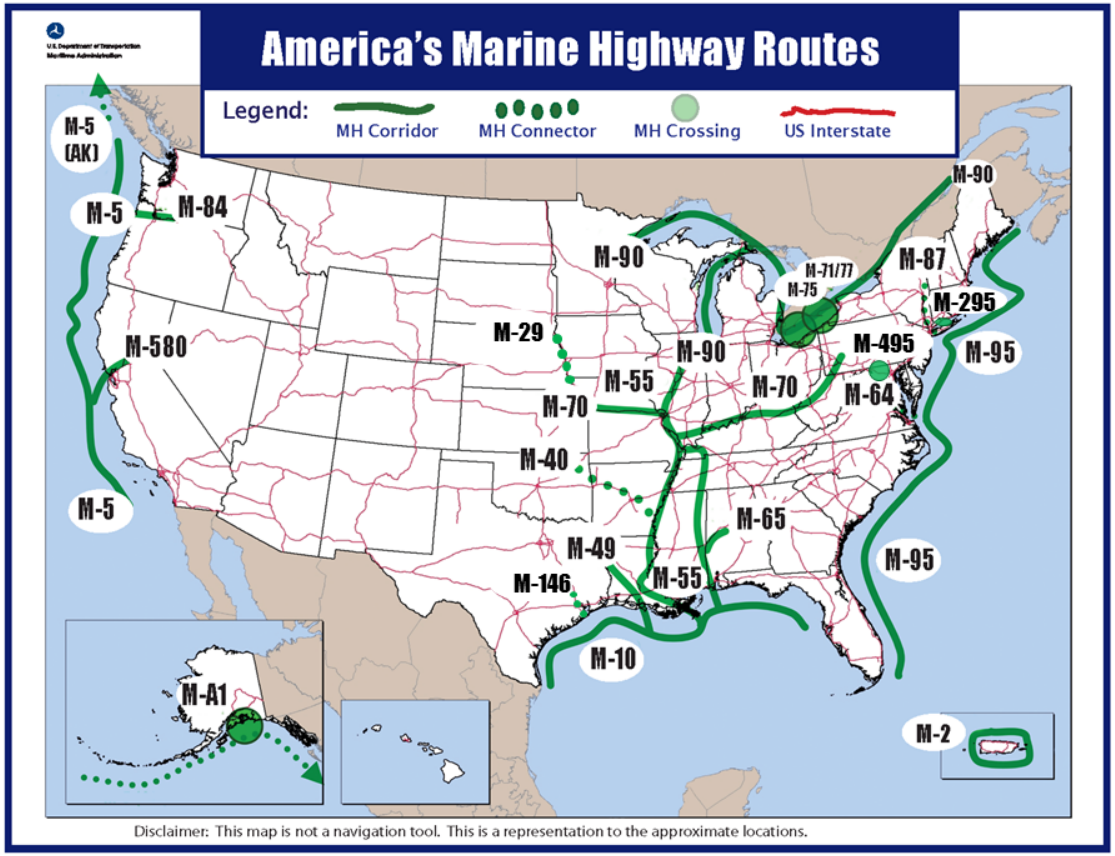
- Visit www.nautinst.org/msp
- Free download
- Promote within your community
- Feedback for 'version 2.0'



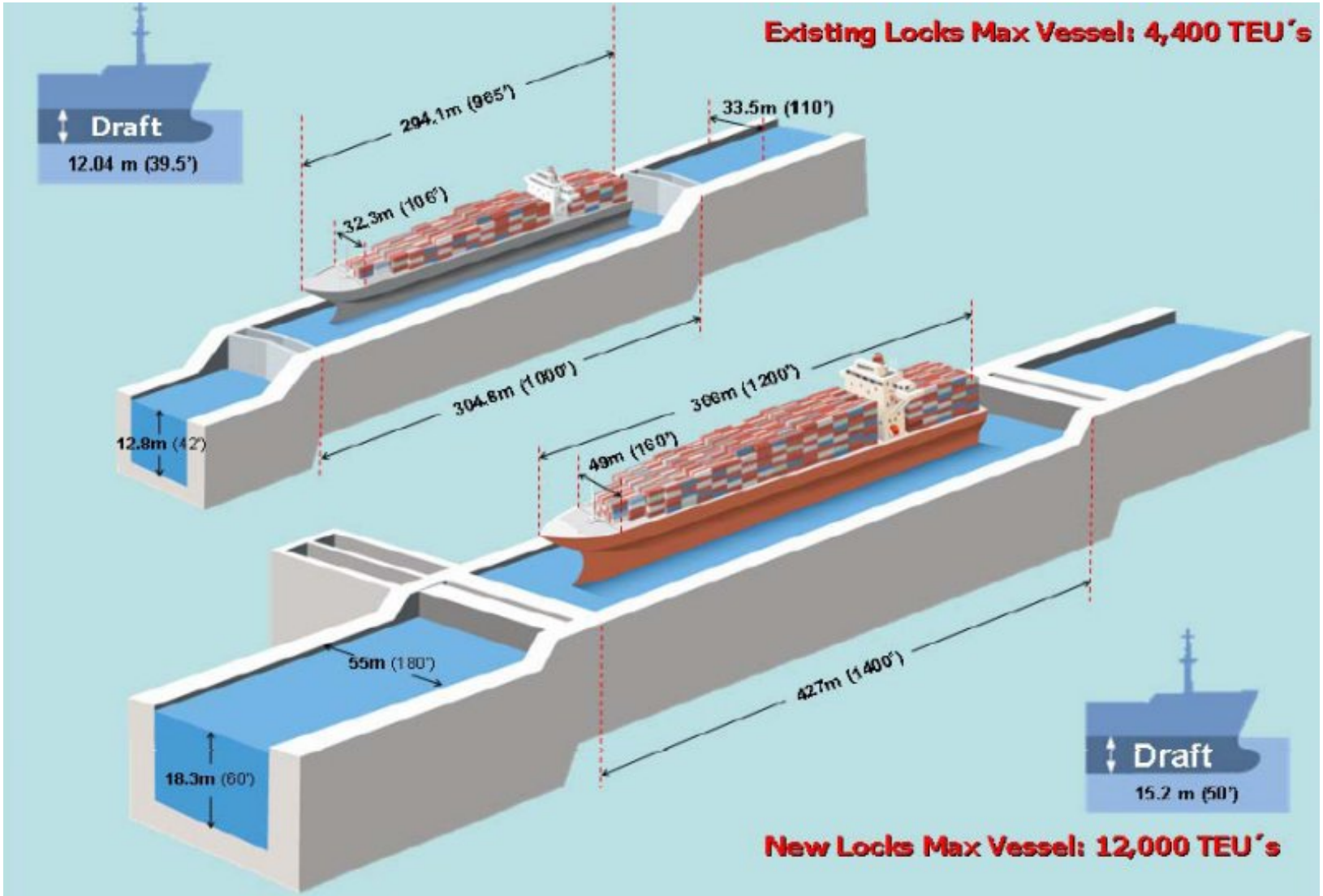
Future Considerations- Marine Highways



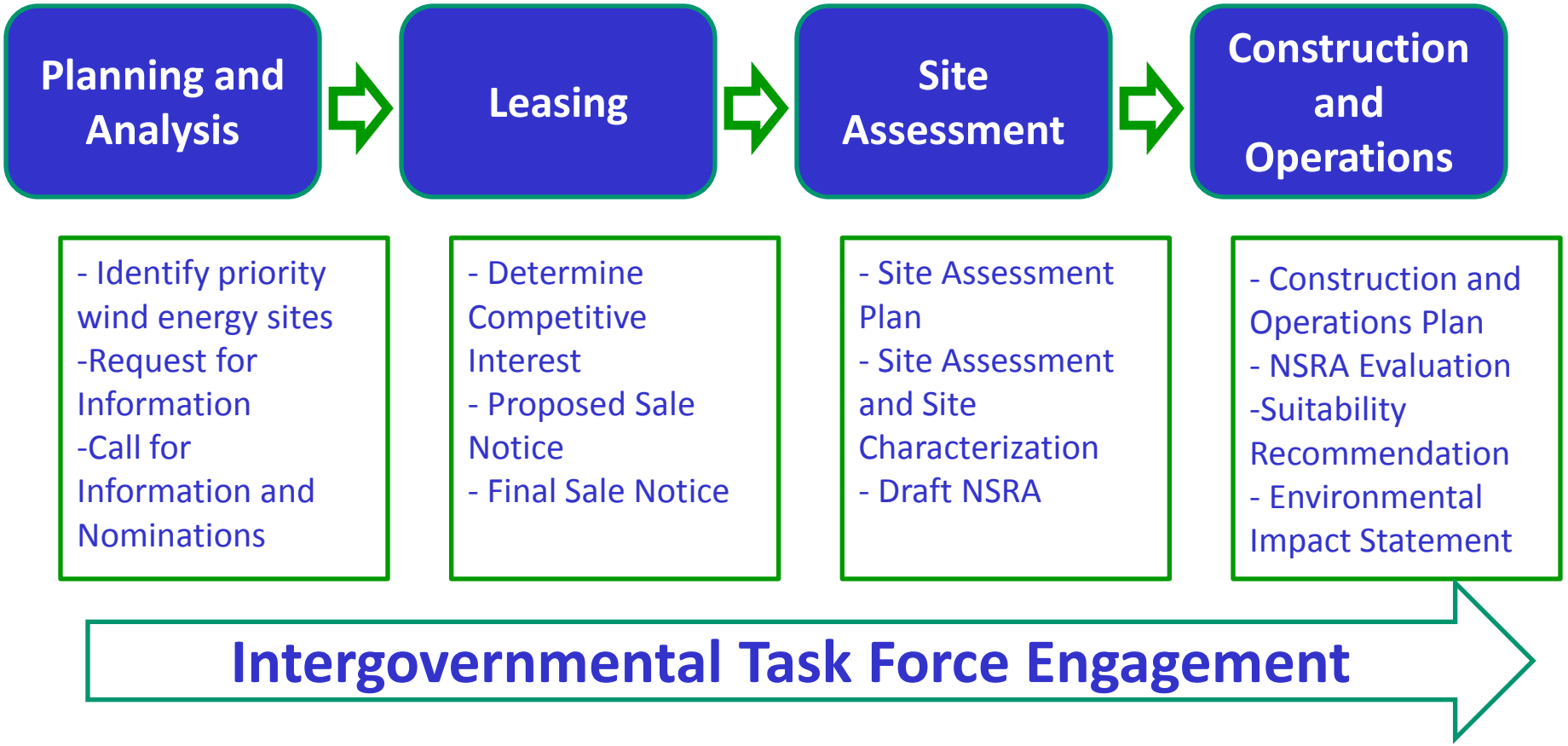
Maritime = Safer, More Efficient, Greener



Future Considerations- Panama Canal Expansion

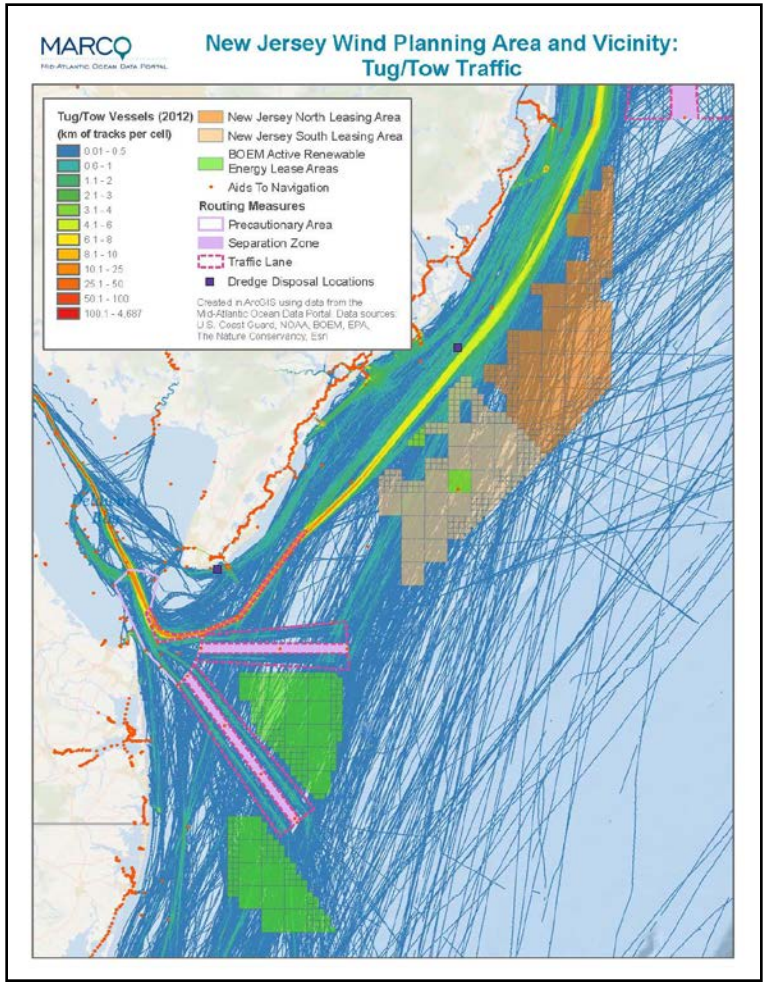


BOEM Four Stage Process



Lessons Learned

- **Coastwise Traffic-** may be unsafe to transit further offshore.
- **Port Entrances-** Limited ability to modify traffic, areas of highest risk.
- **Engage maritime industry-** working together early in the siting process has achieved very good results



Recommendations

- Address navigation early in the process along with other conflicts…consistent with the "Smart from the Start" approach.
- Utilize best available marine planning guidance
- Engage maritime industry to identify areas compatible for wind, navigation and other uses.

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