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CONGRESSIONAL BRIEFING

Ports Leading the Way on Mitigation and Resilience

Briefing Series: By Air, Land, and Sea: Navigating the Climate Future

Tuesday, November 17, 2020

About EESI...



NON-PROFIT

Founded in 1984 by a bipartisan Congressional caucus as an independent (i.e., not federally-funded) non-profit organization

💲 🛛 NON-PARTISAN

Source of non-partisan information on environmental, energy, and climate policies

S DIRECT ASSISTANCE

In addition to a full portfolio of federal policy work, EESI provides direct assistance to utilities to develop "on-bill financing" programs

SUSTAINABLE SOCIETIES

Focused on win-win solutions to make our energy, buildings, and transportation sectors sustainable, resilient, and more equitable

...About EESI





HILL BRIEFINGS

Video recordings and written summaries of Congressional briefings

CLIMATE CHANGE SOLUTIONS

Bi-weekly newsletter with all you need to know including a legislation tracker

SOCIAL MEDIA (@EESIONLINE)

Follow us on Twitter, Facebook, LinkedIn, Instagram, and YouTube

FACT SHEETS

Timely, science-based coverage of climate and clean energy topics



A Strategic Alliance for Maritime Innovation and a Sustainable Blue Economy

A Maritime Clean Energy Future through Collaboration and Joint Innovation

Joshua Berger

Founder & Board Chair, Washington Maritime Blue Governor's Maritime Sector Lead, State of Washington Joshua@maritimeblue.org



The maritime industry paid nearly **\$4.5 billion** in wages in 2015 with average salaries of **\$65,300**. In comparison, the state's average wage in 2015 was **\$56,700** (does not include benefits).

Industry-wide, revenues have grown **2.4%** per year from 2012 to 2015, with the largest growth rate in Maritime Logistics & Shipping at **5.2%**.

2016 Economic Impact Study, Community Attributes

25,000

Maritime Sector's Economic Impact





The Blue Economy

"the sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of ocean ecosystem." – World Bank



GLOBAL MARITIME FORUM Unleashing the potential of the global maritime industry

Getting to Zero Coalition







The Blue Economy "Will double to \$3 Trillion by 2030 – but if, and only if, we are focused on innovation and sustainability."– OECD

blue

Washington State's Strategy for the Blue Economy

The first, and only, US statewide strategy for the Blue Economy was delivered in January 2019 by Governor Inslee's Maritime Innovation Advisory Council and Washington State Dept. of Commerce after 18 months of stakeholder engagement.



Advisory Council Co-Chairs:

Rep.Gael Tarleton, Washington State Legislature Dennis McLerran, Fmr. EPA Region 10 Administrator Frank Foti, CEO and Board Chair, Vigor Shipyard (link to Full Strategy and Council)





blue Independent, Innovation Cluster Formed

Formal Ocean/Maritime Clusters have emerged as organizational entities that enhance competitiveness and collaboration. To ensure accountability and implementation we spun out an independent, nonprofit, Cluster Organization charged to Implement the State's strategy – using the "Quadruple Helix" approach.





NWSeaport

daritime Heritage Center tion & Heritage & Education & Skills

V Northwest

FOUNDATION

DESLING IN METHING THINK

CleanTech Alliance

Centres of Expertise

NCE Maritime CleanTech

Straits

NAMEPA

WORKING NATERFRONT COALITION

OF WHATCOM COUNT

NORTHWEST

SCHOOL # WOODEN

BOATBUILDING

GREEN MARINE



Part of a Global Enterprise for the Blue Economy



blue Scope of Work – The 6 Blue "F"s

Blue Focus		Blue Forum	Blue Forward
Marketing & Communications	1	Networking & Knowledge Sharing Events	Facilitating Joint Innovation Projects
Blue Force		Blue Finance	Blue Founders

Maritime Blue engages members, partners and stakeholders in a number of ways in order to fulfill its mission. Taking lessons learned and models from other cluster organizations and innovation ecosystem builders around the globe.

Blue Focus

Creating a world-class cluster through a sustainable organization rooted in values of equity and resilience.

- Growing membership and leadership
- International recognition and speaking engagements
- Cluster to Cluster relationships



Blue Forums

Networking and strengthening of the knowledge base: host events, workshops, and public forums on key topics and critical discussions utilizing member expertise and outside thought leaders.

- Uptown Tech Meets the Working Waterfront
- R&D Pathways for Maritime Energy Solutions
- Investing in the Blue Economy
- Equity in a 21st Century Maritime Workforce
- Maritime Battery Safety Forum
- Technology Innovation for Marine Conservation

Blue Force **Enable an equitable and diverse 21st century workforce** of the future through coordination, funding, and public forums for industry-driven, career connected learning opportunities.

Providing organizational support, resources and employer/agency network for the Youth Maritime Collaborative started in 2017.



Blue Founders & Finance **Entrepreneurship** and start-up incubation, acceleration, mentorship, coworking, and public meeting spaces as a hub to the many spokes of maritime communities across the state.

Conduit for public and private funding opportunities for a diverse and varied financing approach to the Blue Economy, including fund pipeline development and establishing common impact metrics.

Blue Forward

Members come together through **Joint Industry Projects (JIP)** and collaboration to implement key demonstration projects and strategic planning for growth in the Blue Economy

- Washington State Ferry Electrification
- Seattle Waterfront Decarbonization Strategy
- JIP: Zero-emission Foiling Fast Ferry
- JIP: Green Hydrogen for Tacoma Maritime
- JIP: Early Covid-19 Detection for Maritime and Fisheries
- JIP: Quiet Sound Whale Report Alert System (WRAS)



Joshua Berger

Founder & Board Chair Governor's Maritime Sector Lead Joshua@maritimeblue.org

www.maritimeblue.org #WaMaritimeBlue, #BuildBackBlue So in



MDOT MPA Climate Resilience An Ongoing Dialogue



EESI Briefing: Navigating the Climate Future

November 17, 2020

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Jill Lemke, CPE, CC-P, Manager Strategic Planning Kristen Keene, Innovative Reuse Program Manager MDOT - Maryland Port Administration



The MDOT Maryland Port Administration

Mission:

To increase the flow of waterborne commerce through the State of Maryland in a manner that provides benefits to the citizens of the State.

Vision:

- Capitalize on Port <u>business</u> opportunities;
- Provide, manage, and promote competitive, secure, state-of-the-art <u>terminals</u> capable of efficiently handling diverse cargoes;
- Ensure the Port's navigational <u>channel</u> system is competitive and efficient;
- Leverage mutually supporting public and <u>private sectors</u>; and
- Act as a good steward of Maryland's natural environment.



Baltimore has a great maritime history due to its inland location





The Port of Baltimore is a complex mix of Private and Public Facilities

- **45 miles** of waterfront facilities and industries.
- **23 private facilities** handle nearly all of POB's bulk commodities.
- Six MPA public terminals handle over 90% of POB's general cargo.
- Active relationships by both public & private sector entities, on local, regional, state, national and international levels.





Cargo Summary – Port of Baltimore is a healthy diverse, and nationally significant port.







The Port generates over 37,000 jobs:

- 15,330 direct port jobs
- \$3.3 billion in wages and salaries,
- \$395 million in state and local tax revenues annually.
- The Port's average annual salary for direct job holders is 9.5% higher than the statewide average annual wage.
- #1 in Autos and Roll-on Roll-off Heavy Equipment.
- > #1 in imported Gypsum
- > #2 in exported Sugar and Coal.
- \rightarrow #9 in the U.S. in the <u>value</u> of foreign cargo.
- > #11 in the U.S. in foreign cargo tonnage.



Marine Terminals are water dependent. They must be located on the water to function and are therefore vulnerable to the impacts of Climate Change and Sea Level Rise.



~7.5 foot Storm Surge from Hurricane Isabel, 2003



To plan for future climate impacts we have looked at historical trends, climate change prediction models, and lessons learned from past events.







Recognizing that port operations may be threatened by changing climate conditions, the MPA conducted a vulnerability assessment in 2010, and in 2015 adopted a three-pronged approach to future projects, as follows:

- **MIGRATE:** Move terminal functions out of the flood plain, whenever feasible.
- **ELEVATE:** Design all new MPA facilities or structures that must remain on the terminals to be 2 feet above the 100-year flood elevation, if operationally feasible.
- **MITIGATE:** Reinforce and/or strengthen facilities to limit potential weather damage, whenever significant maintenance or major capital investments are being made.



Preparing for Resilience Policy Considerations and Actions

- Consider resiliency in all capital project designs and prioritize investments by level of risk and potential impact.
- Explore reuse of dredge material for resilience projects (i.e. terminal raising, wetland restoration, shoreline/island restoration).
- Identify potential resilience partnerships with Federal, State and local partners.
- Investigate electric/micro-grid improvements, redundancies, and emergency power generation options.



Marine Terminals are vulnerable to a variety of OTHER Climate Change risks:

- Extreme Rain Events
- Extreme Temperatures
- High Winds
- Snow, Ice and Hail Events
- Increased Sedimentation



Less is known about the potential severity and frequency of these risks as they relate to Climate Change and are therefore more difficult to plan for.



Examples of how this model is being or has been implemented

Storm Water Vault, **Dundalk Marine Terminal** – dual benefits helping to meet MD storm water management requirements, and reduces impacts of extreme rain events (mitigate)





Examples of how this model is being or has been implemented



FMT Wet Basin: Large Underground Storm Water Management System, Jan. 17, 2019, (before being buried).

When MPA filled its Fairfield Marine Terminal (FMT) Wet Basin (using Federal TIGER funds), a large underground storm water management system was installed to reduce severe rain event flooding. In addition, once redeveloped for cargo storage the former wet basin was also elevated (*elevate/mitigate*).



Examples of how this model is being or has been implemented include:





MPA Actions on Climate Resilience & Adaptation Examples of how this model is being or has been implemented



Examples of how this model is being or has been implemented include: DMT Buildout Years 1-5



Proposed Dundalk Marine Terminal Resiliency and Flood Mitigation

Improvements



Cargo Up 10% & Emissions Down 19% between 2012 and 2016



- Emissions per ton cargo handled comparing 2012 to 2016
- Decreases due to modernization of cargo handling equipment, replacement of older dray trucks and operational changes.



Preparing for Resilience Completed, Current and Planned Projects

Mitigation Projects also provide Climate adaptation benefits beyond our facilities.

This Shoreline Restoration At the Arlington Echo Outdoor Education Center created 400 feet of new living shoreline with over 5,000 shoreline grasses to help provide habitat and protect from erosion.





MDOT MPA Sustainability

Sediment to Solutions



Major shipping channels in the Chesapeake Bay and **Baltimore Harbor are** maintained at a 50-foot depth; other channels are maintained at a 35foot depth



Port of Baltimore Dredging Demand

- Port of Baltimore's shipping channel
 - Maintaining a 50'depth keeps channels safe and open and the Port competitive.
- Annual maintenance of the State's marine highway
 136 miles of dredged channels/yr
- 4.7mcy of material is dredged annually
 - Harbor channel material: 1mcy/yr
 - Bay channel material
 - C&D Canal approach channel material





New Solutions are Needed

Innovative Reuse & Beneficial Use



Innovative Reuse = Land applications for dredged sediment

Beneficial Use = In-water applications for dredged sediment



Dredged Material in ACTION!

Habitat Development



Remedial Capping Material



Engineered Fill



World Class Innovation

Poplar Island Ecosystem Restoration

Poplar Island is an international model for the beneficial use of dredged material located in the mid-Chesapeake Bay.

The expanded site includes 1,715 acres of restored habitat:

- 776 acres of tidal wetlands
- 829 acres of upland habitat
- 110- acre open water embayment





Future Beneficial Use

Mid-Chesapeake Bay Islands Project



- ✓ Provides 90-95 million cubic yards of dredged material placement capacity.
- ✓ Beneficial use of sediment dredged from the Port of Baltimore's 50' deep open Bay channels in Maryland.
- ✓ Restores important, scarce remote island habitat at James and Barren Islands.
- Provides shoreline protection and resiliency for Dorchester County and its property owners.



Barren Island 72 acres Sub-Aquatic Vegetation restoration/protection

James Island: 2072 acres 55% wetland, 45% upland habitat



Ports: Navigating the Climate Future

Discussion/Questions?



What did you think of the briefing?

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