The Maritime Industry Sector & Maritime Value Chain in Oregon

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Director, Columbia Region
Leidos Maritime Solutions

Chair, Industry Advisory Group,
Oregon Wave Energy Trust (OWET)

“It takes a village……”
Take Aways

1. “Maritime” is a **larger addressable market** than “Marine”

2. We are working at the intersection of **Policy-Technology-Education-Advocacy-Practicality**.

3. The engineering solution is the point of departure to reality.

4. The Supply Chain (Fabricators) need more than sketches.

5. The Value Chain encompasses the total system and the total project life cycle.

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Plan - Develop - Manufacture - Integrate - Commission - Operate! - Decommission
The Maritime Industry Sector & Maritime Value Chain in Oregon
What The Sector Is Doing

Private maritime industries in Oregon’s Blue Economy are vibrant, diverse… and stridently independent…

*and could be expanded with coordination and collaboration.*

“Marine” typically refers to the water-side.

In contrast “maritime” is a larger addressable market *encompassing a wide range of private, public, non-profit and academic activities.*
What The Sector Is Doing

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By one account, the Pacific Northwest Maritime Transportation System (an extensive value chain that stretches from sea to inland points of use) represents $66B annually.

- $46B through the Puget Sound Region.
- $20B through the Columbia Region.
What The Sector Is Doing

The maritime sector leverages our geography, history, and natural resources – and includes:

- Cargo handling and multi-modal logistics — port districts in the state
- Fishing, crabbing and seafood processing
- Ship and boat building, repair and maintenance
- Passenger vessel operations
- Recreational boating and sport fishing
- Federal activities through the U.S. Coast Guard, NOAA, Military Sealift Command, and U.S. Navy
- Academic cluster, Hatfield Marine Science Center and Research Fleet
- The emerging marine renewable energy cluster
- Support industries, including maritime education and training programs
What The Sector Is Doing

The maritime sector is doing “small things – and big things – and some in between (literally):

- Small Things: M3 Wave Energy deployment and recovery off Camp Rilea – first use of differential pressure wave energy conversion in the world.
- Regional Cabled Observatory
- OSU Maritime Studies Initiative
- Sustainable Fisheries
- Big Things: Drydock Vigorous arrived in Portland – the largest floating drydock in the United States
Direction The Sector Should be Going

Private maritime industries in Oregon’s Blue Economy are vibrant, diverse… and stridently independent.

- The Oregon Business Plan is centered on industry clusters and traded sector economy.
- The private sector should organize as a horizontal cluster – that encompasses the multiple vertical clusters.
- How?
In contrast to Oregon, Washington’s maritime sector is moving forward in a coordinated manner.

The Governor and Washington Department of Commerce has designated a Director of Economic Development for the Maritime Sector.

Governor Inslee’s top priority is to create an economic climate where innovation and entrepreneurship can continue to thrive and create good paying jobs in every corner of our state.
Washington State’s maritime sector comprises a robust and growing set of industries that contribute to achieving the Governor’s priority goal.

- Maritime activity has long been a pillar of the state’s economy, it continues to grow (an average of 6.4% a year), utilizes the latest technologies, includes leading global companies,

- Provides jobs with substantially better pay than the other industries.

- The average pay for a job in Washington is $52,000. Maritime workers are paid an average of $70,800—totaling over $4 billion in wages in 2012.

- Maritime generates $15 billion in gross business income, and directly employs 57,700 people. With indirect and induced impacts, maritime is responsible for 146,000 jobs and $30 billion in economic activity.
Eventual End State

Oregon can do better!

- Emphasize Oregon’s diverse maritime sector and our role in the US Maritime Transportation System throughout the Pacific Northwest.
- Our schools college and universities need to take a fresh look at maritime training, education… and jobs!
- We need to connect the Coastal Region with the Metro Region, Columbia Region, and Puget Region…. and the Eastern Oregon Region as well.

How?

- Leverage collaborative models that work -- here.
Vision

Oregon can do better!

- Oregon can coordinate and expand our maritime sector…and jobs!
- Designate a Director of Economic Development for the Maritime Sector
- Collaborate with Pacific Northwest Defense Coalition (PNDC).
- Collaborate with the Pacific Northwest Economic Region (PNWER).
- Improve access to maritime training, education…and jobs!
Vison

Oregon can do better!

Collaborate with Washington to work with industry stakeholders, and within government, to:

- Market and communicate the importance of the sector to both state’s economies
- Promote policies and actions that sustain the current health of the industry and set a strong base for future growth
- Work with existing training and education resources to develop a clear career pathway to jobs in the sector
Summary: Maritime Industry Sector

Do you want an interesting and rewarding career?

Do you know what maritime careers are?

- Fishing
- Crabbing
- Charter
- Engineering
- Ship Driving
- Skilled Services
- Science
- Technology
- Diving
- Facilities Management
- And the list goes on
The Maritime Value Chain
The Maritime Value Chain

( It’s The Jobs! )
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5. The Value Chain encompasses **the total system and the total project life cycle**.
The goals are:

*generate clean, renewable energy from the ocean in a responsible manner and create family-wage jobs*
Wave Energy Project Life Cycle
-- Maritime Industry Value Chain --

System Integration

Program Management: Planning, Coordination, Risk Management

Plan
- Engineering Analysis
  - Requirements
  - Collaboration
  - Scheduling
- Cable Route Survey
- Site Surveys
- Environmental Analysis & Demonstration
- Availability, Maintainability, Reliability Analysis

Design/Develop
- Hardware Development
- Software Development
- Ocean Engineering
- Design Reviews

Manufacture/Assemble
- Manufacturing
- Assembling
- Spare Parts
- Provisioning

Integrate/Install Test
- Functional Testing
- Installation & Testing
- Cable Lay & Burial
- Diving
- Plant Installation
- Post Lay Inspection

Commission/Operate/Decommission
- Security
- Commissioning
- Operations Support
- Training
- Repairs
- Technology Refresh
- Extension & Expansion
- Upgrade

Quality Control, Quality Assurance, Configuration Control

Systems Engineering

leidos
Wave Energy Project Life Cycle
--- Technical ---

Statement of Objectives

Site Analysis & Synthesis
- Site Analysis
- Site & Facility Synthesis

Facility Analysis & Synthesis
- Loads Analysis
- Structural Concepts & Dynamics
- Foundation & Mooring Concepts
- Installation Procedures

Evaluation of Design to Stated Objectives
- Evaluation of Design to Stated Constraints
- Final Design

Feasibility Study

Conceptual Design
- Candidate Preliminary Designs
- Specifications

Preliminary Design
- Specifications

Detailed Design
## Wave Energy Project Life Cycle

-- The Jobs! --

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Wave Energy Project Life Cycle -- The Jobs!
# Wave Energy Project Life Cycle

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# Wave Energy Project Life Cycle
--- The Jobs! ---

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<th>Integrate/Install</th>
<th>Commission/Test</th>
<th>Operate/Maintain/Decommission</th>
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Maritime Career Fields

Do you want an interesting and rewarding career?

Do you what maritime careers are?

- Fishing
- Crabbing
- Charter
- Engineering
- Ship Driving
- Skilled Services
- Science
- Technology
- Diving
- Facilities Management
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- Navy
- Coast Guard
- NOAA
- Merchant Mariner
- Commercial Shipping
- Tug & Tow
- Research Vessels
- Military Sealift Command
- Ferries
- Dredges
- Construction Platforms
Maritime Career Fields

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Construction Platforms

9,000 USCG licenses
2,500 Mariners
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- Wave Energy
Maritime Career Fields

Do you want an interesting and rewarding career?

Do you know about maritime academic alternatives?

- **High School Maritime Career Orientation Courses** (Concept)
- **High School Vocational-Technical Courses**
- **Job Corps Seamanship Program** (Deck & Engineering Licenses)
- **Community College Courses**
- **Community College Associates Degrees** (Maritime Science)
- **Oregon Maritime College** (Deck Licenses, Engineering in the future)
- **Community College-University Partnerships**: Marine Technology (ME & EE)
- **Bachelors Degrees**: Systems Engineering, Ocean Engineering, Naval Architecture
- **Masters Degrees**: Systems Engineering, Ocean Engineering, Naval Architecture
- **Doctoral Degrees**: Systems Engineering, Ocean Engineering, Naval Architecture
- **Maritime Licenses** (Deck & Engineering)
- **Continuous Learning**
- **“Oregon Maritime Academy”** (*Concept Under Development*)
The Maritime Value Chain

*Jobs!*
Take Aways

1. “Maritime” is **a larger addressable market** than “Marine”

2. We are working at the intersection of **Policy-Technology-Education-Advocacy-Practicality**.

3. The engineering solution is the point of departure to reality.

4. The Supply Chain (Fabricators) need more than sketches.

5. The Value Chain encompasses the total system and the total project life cycle.
The Maritime Industry Sector & Maritime Value Chain in Oregon

Captain Rick Williams, US Navy (Ret)
Director, Columbia Region
Leidos Maritime Solutions

Chair, Industry Advisory Group, Oregon Wave Energy Trust (OWET)

“It takes a village……”