



Promoting BlueTech
and Blue Jobs®

The Opportunity of BlueTech for California

Presentation to

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Premise: Maritime Technology innovation is critical

“The technology began with...an advertisement...Less than six months later, a shipyard launched a new kind of warship. The USS Monitor had no masts and no line of cannons...many experts doubted the ‘cheese box on a raft’The ship’s history is a case study in the difficulties of technological innovation.”

“A Brief Dry Spell for the U.S.S. Monitor” – article in The New York Times – Aug. 8, 2011

Hagel: US needs game-changing military innovation

Associated Press – Nov. 15, 2014

Our position:

- Understanding the size of US **Blue Economy** & **BlueTech** are critical
- Regional **BlueTech** clusters are critical to maritime innovation
- Creating a regional & national **Blue Voice** is critical for promoting sustainable, science-based ocean industries with good paying **Blue Jobs**



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Premise: “We should be developing solutions to the world’s problems and exporting them rather than importing problems from others”

Food: Aquaculture is critical to produce the protein needed by the world
Norway \$10 B fish industry / 70% aquaculture up from nothing in 1970
The southern CA Bight is probably the best spot in the world

Water: Clean water needed worldwide. CA is a powerhouse.

SD likely has the largest U.S. water tech cluster (EPA & “The Water Cluster”).

Energy: Current, tidal, wave, wind – SD can build / deploy elsewhere

Medicine: [BioMarine](#) incredible potential; Canada, NC, Norway, Portugal

Minerals: Deep sea mining for rare earth minerals just beginning

Real estate: Floating Infrastructure critical. Louisiana & Venice ports

The Coastal and Ocean Economies Compared to the U.S. Economy (NOAA info)

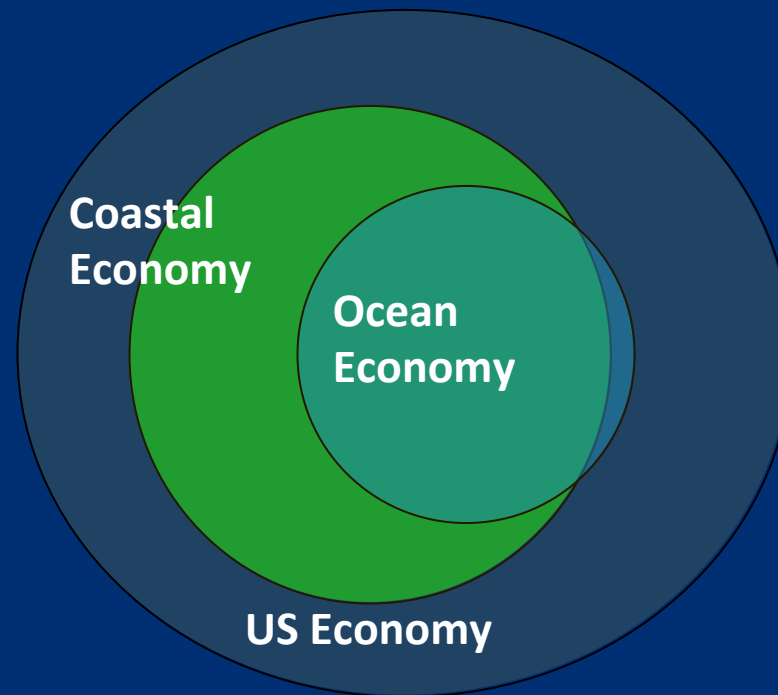
National GDP > \$14 trillion

Coastal GDP ~ \$6.6 trillion

Ocean GDP ~ \$300 billion

**Economic Activities
Using Ocean Resources
as an Input**

Based on 2011 data



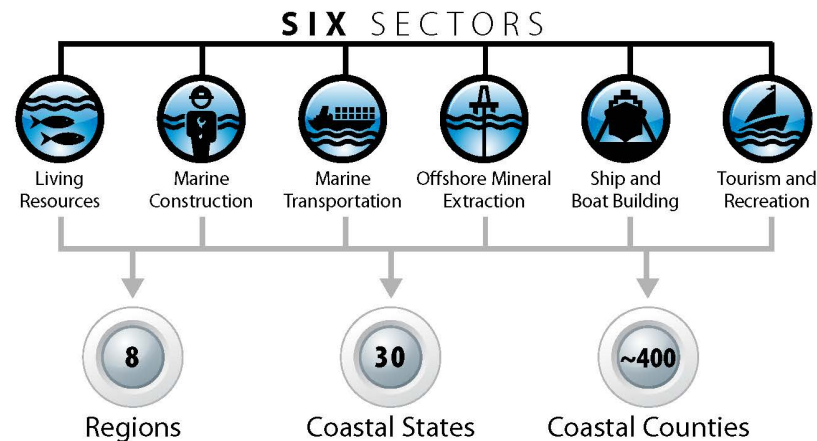
Courtesy of NOAA Coastal Service Center, Charleston, SC



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Economics: National Ocean Watch (ENOW)

What is the Ocean and Great Lakes Economy?



www.csc.noaa.gov/enow

2005 – 2011



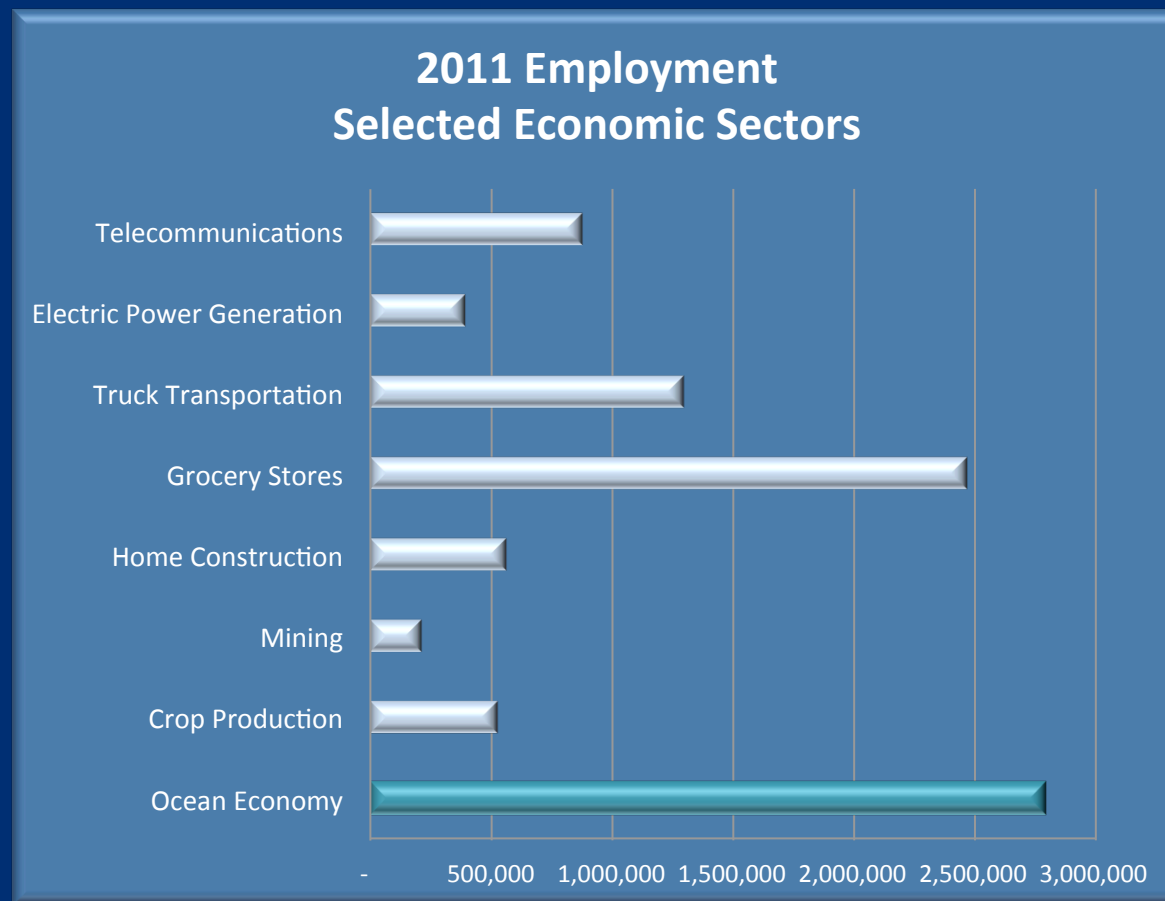
NOAA Coastal Services Center
LINKING PEOPLE, INFORMATION, AND TECHNOLOGY

Courtesy of NOAA Coastal Service Center, Charleston, SC



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Relative Size of the U.S. Ocean Economy

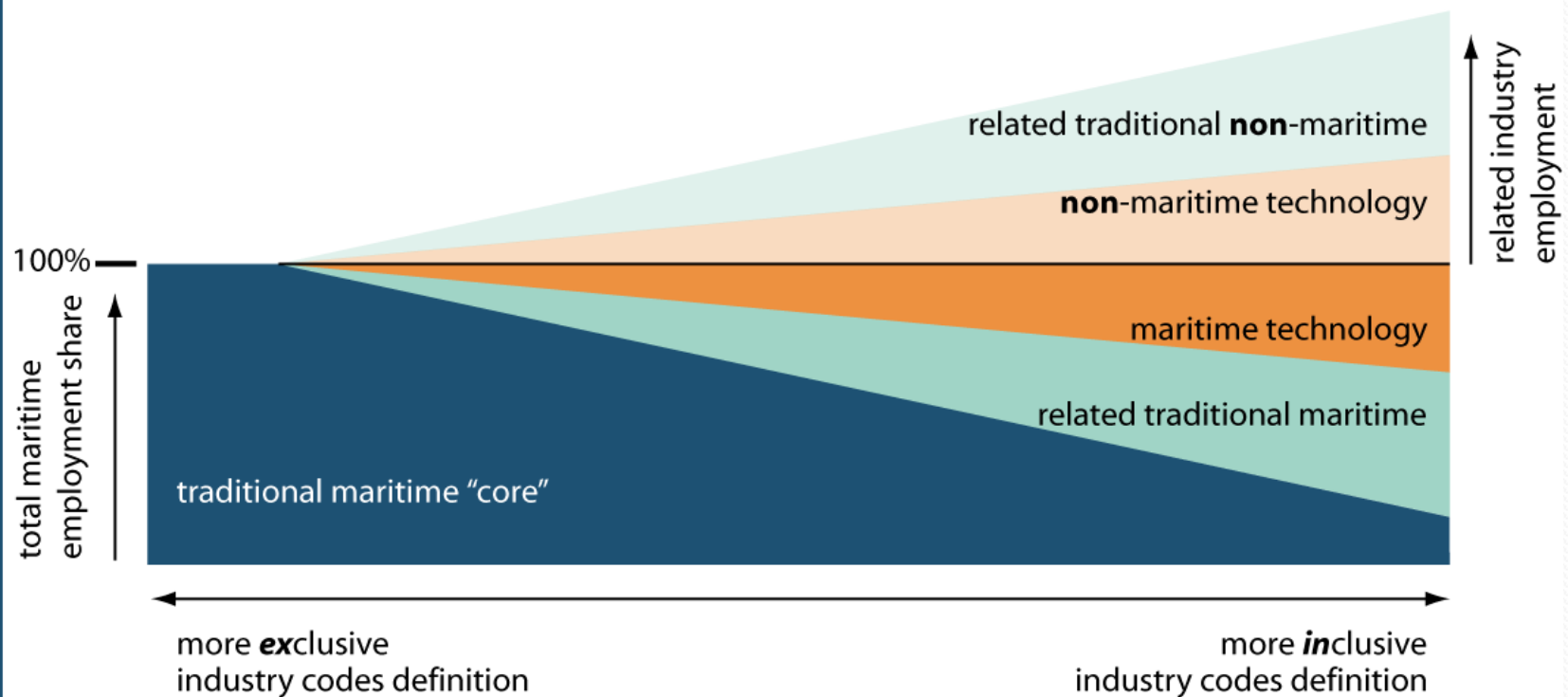


Courtesy of NOAA Coastal Service Center, Charleston, SC



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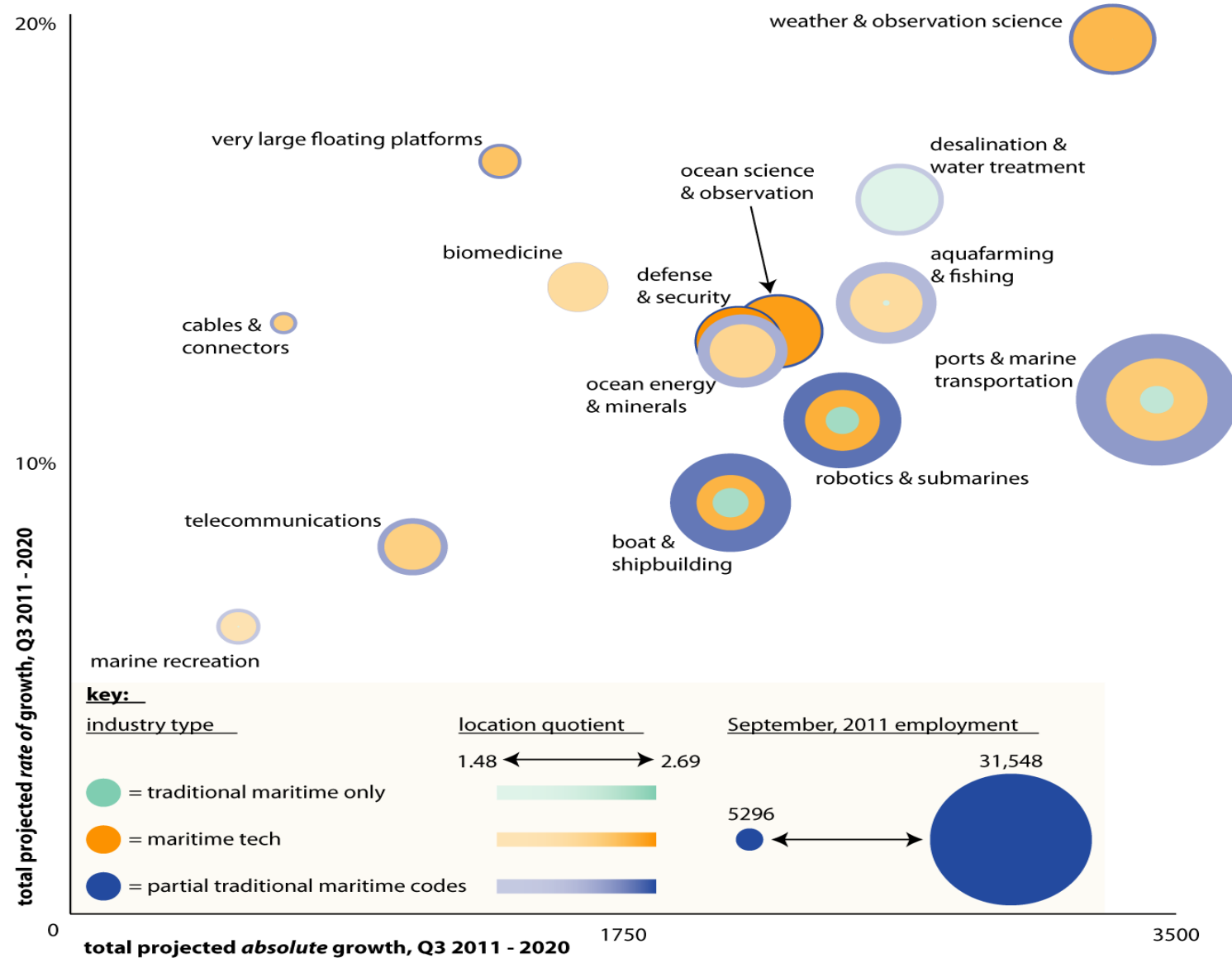
Graphic 1. Visualizing the San Diego Maritime Industry



note: Selected codes came from a variety of sources, described below. The assignment of industry codes as tech / non-tech, as well as to sub-clusters was conducted by ERISS, which bears sole responsibility for them.

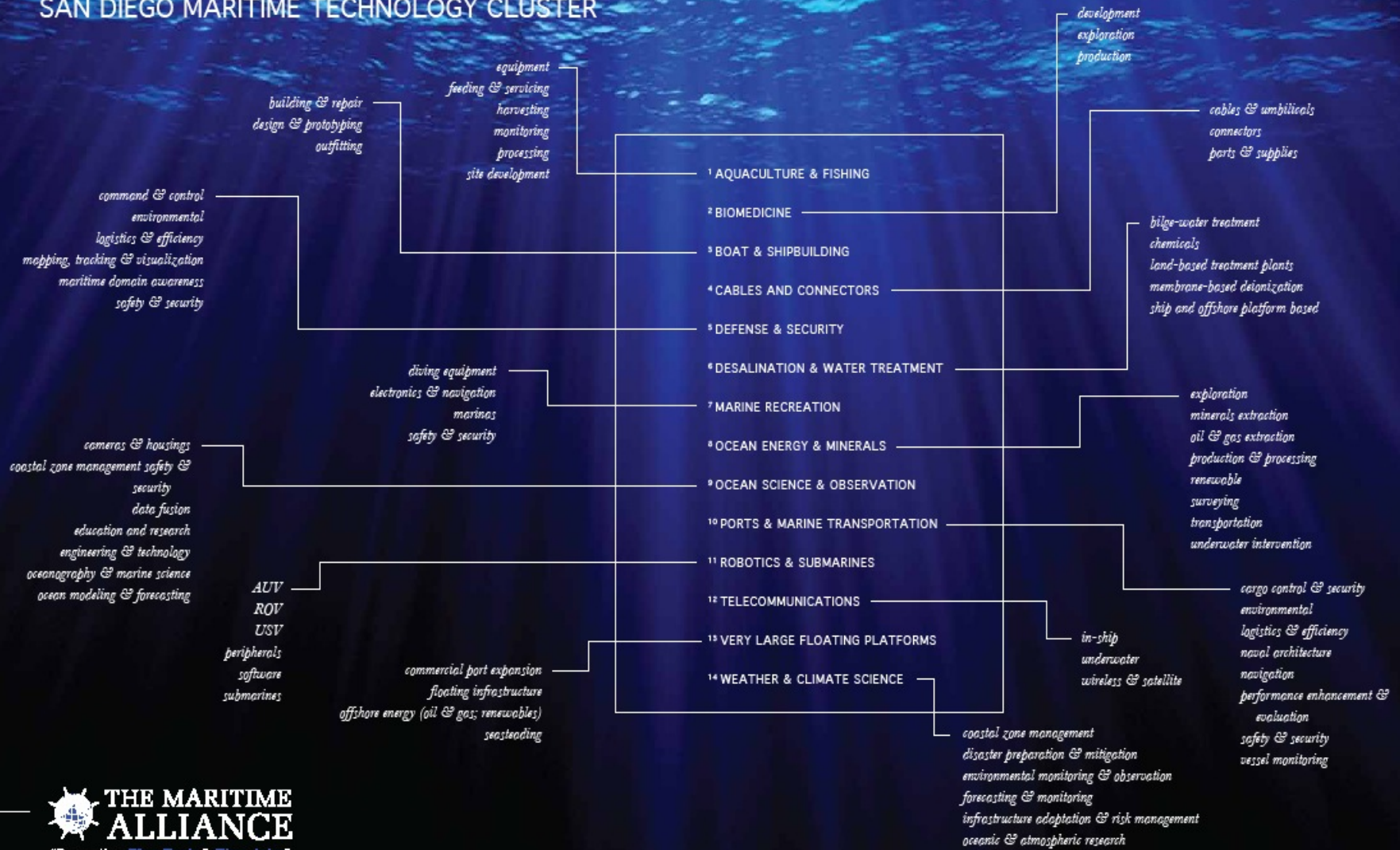
source: ERISS; World Trade Center San Diego, *Maritime Economic Impact and Cluster Analysis*; The Maritime Alliance; Info-USA; Dun and Bradstreet; CorporateWiki.

Graphic 2. Industry employment dynamics of the San Diego Maritime Industry



note: Total employment of individual subclusters will exceed total employment of the *entire* cluster, due to industries' inclusion in multiple sub-clusters.
source: U.S. Bureau of Labor Statistics, *Quarterly Census of Employment and Wages*; U.S. Bureau of Labor Statistics, Employment Projections Program; ERISS; The Maritime Alliance, World Trade Center San Diego, *Maritime Economic Impact and Cluster Analysis*, November 30, 2009.

SAN DIEGO MARITIME TECHNOLOGY CLUSTER



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The importance of **Blue Clusters – Blue Jobs in San Diego** (Sept. 2011)

- *San Diego Maritime Industry Report 2012* (**San Diego, July 2012**)*
 - 1,431 companies and organizations (200+ NAICS codes)
 - 700+ self-report maritime focus (350+ report over 75%)
 - 45,778 jobs and \$14 billion+ annual direct sales only
 - Maritime technology industries (as a sub-group):
 - Fastest growing segment with 18,948 jobs
 - \$6.2 billion annual revenue



“SD’s Maritime Industry Cluster, and its functional sub-set, the maritime technology or “**Blue Tech**” industry set, create one of the most unique regional economies in the world...Current industry codes and official occupational classifications are generally ill-suited to fully capturing the uniqueness of the SD maritime cluster and, especially, **Blue Tech**.” (p. 4).

* Sponsored by San Diego Workforce Partnership, San Diego Regional EDC and **The Maritime Alliance**



Understanding the Blue Economy is Critical to Promote Sustainable, Science-Based Ocean Industries

RESEARCH is one of three areas of focus for TMA Foundation. There is a dearth of economic data on the Blue Economy in the U.S. and worldwide. TMA Foundation is helping fill the gap by developing ground-breaking reports with partners. The following reports are available in part or in their entirety (depending on the report) on the website or to our members. *We are looking for partners for a series of additional studies.*



San Diego Maritime Industry Report 2012

This report was the first-of-its-kind for the U.S. and believed to be the only comprehensive survey on the entire Maritime Industry – including BlueTech – for any region in the nation. The survey found 46,000 direct jobs and more than \$14 billion revenue (2011). When studied, indirect and Induced jobs will add considerably to the job count and revenue.

San Diego Maritime Cluster Study 2012: Summary of Survey Results

This summary report details the findings of the San Diego maritime business survey conducted by ERISS Corp. for the subsequent industry report. The report provides an overview and description of the answers to the individual questions from both telephone and online surveys.

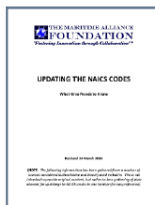


Marine Spatial Planning in San Diego & Stakeholder Overview

A March 2014 research project of the UCSD School of International Relations and Pacific Studies (IR/PS) commissioned by TMA Foundation. It showed broad regional support for Marine Spatial Planning (MSP) and the potential for billions of Dollars of positive economic benefit by developing a MSP program for the region.

Blue Tech Economic Impact on San Diego

A May 2014 research report from the SDSU School of Business that establishes the multiplier effect (and economic value) of the BlueTech supply chain in San Diego county and the State of California for two San Diego-based BlueTech companies with over \$40 MM in revenue.



Updating the NAICS Codes: What One Needs to Know

The North American Industry Classification System (NAICS) needs to be revised to capture economic data related to the oceans. Without this, the Blue Economy cannot be quantified for NAFTA countries. This primer is based on U.S. government documentation and discussions with relevant U.S. officials. Although it has been reviewed by the Economic Classification Policy Committee, it is no substitute for the actual NAICS documents available at census.gov or provided in [Federal Register Notices](#) and [preliminary notice advisories](#).

Please contact TMA Foundation if you want to help! To ensure consideration, proposals related to the potential revision of NAICS for 2017 must be submitted in writing no later than July 21, 2014. This document will remain available online until then.

Rev. 12 July 2014

Understanding the Blue Economy

1. TMA estimates there are 4,000 BlueTech companies in the U.S., but there has been no national study.
2. Year 1 of NOAA Ocean Observation three year study found 571 U.S. companies spread across the U.S. in 3 of 16 sectors.
3. NOAA estimates San Diego Blue Economy to be \$1.8 billion (net of tourism), but TMA study shows \$14 billion.
4. NAICS codes don't capture BlueTech & why it needs to change.
5. International focus and funding for the Blue Economy and BlueTech – China, Canada, Europe

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The importance of **Blue Clusters**: developing a regional **Blue Voice**

A critical role is developing a **Blue Voice** in a region (hard to do!)

The **TMA Foundation** (501c3) tag line is “Fostering Innovation through Collaboration”.

TMA (501c6) is the organizer of the SD **BlueTech** cluster. It’s tag line is “Promoting **BlueTech** & **Blue Jobs**”.

Common Mission to promote the creation of **sustainable, science-based ocean and water industries** representing a balance of conservation and economic development.



San Diego regional strengths

1. Three inherent attributes (USD Prof. David Shirk)
 - The ocean
 - The border
 - The weather
2. Additional important attributes
 - Largest **BlueTech** (and WaterTech cluster) in the U.S.
 - Regional focus
 - Economic development & elected officials that “get it”
 - OceanSTEM, **Blue Economy** workforce development
 - Southern California Bight
 - San Diego Bay (“donut hole legislation” a game changer)
 - Last major shipbuilding on the West Coast
 - Available land to develop (primarily in south county)

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San Diego **BlueTech Cluster** – Updates

1. **BlueTech Vision** resolution from City, County & Port of San Diego
2. Helping prepare 1st ever study of economic value of ocean observation for NOAA IOOS
3. 2nd one day **Blue Economy** session at Johns Hopkins SAIS last week
4. Co-hosted three sessions with NOAA IOOS at **Oceans'15** last week:
 - Ignite! **BlueTech**
 - **BlueTech & Blue Economy** Town Hall
 - **OceanSTEM and Blue Economy** Workforce Development Town Hall
5. Hosting 5 events from Nov. 9-12 including 7th annual **BlueTech & Blue Economy Summit** and **Blue Economy** Workforce Development Day
 - Clusters and companies coming from Canada, France, Ireland, UK & U.S.
 - CoE sessions on **WaterTech**, **BioMarine** and **Maritime Robotics**
6. Co-sponsoring Nov. 17-19 **SpaceCom** conference in Houston (and next 2 years)
7. **Oceanology Intl. North America** starts in SD on Feb. 14-16, 2017

The Importance of Regional & National Collaboration – Case Study Large Floating Harbors

Portunus Platform



Floating port design by LLNL:

- Estimated cost \$12 – 15 billion each
- Create shipping “hub-and-spoke” approach
- Revitalize small to medium size U.S. ports
- Positive implications including:
 - Arctic / Environmental
 - Economic & financial / Geo-political
 - Homeland Defense / MSP & Ocean Planning
- Create tens of thousands of new jobs
- Important potential role of UC System

Floating Infrastructure will shape our future (4 examples)

China:

“...the nation’s first deepwater drilling rig...with a \$1 billion price tag...parked...about 17 miles off a speck of an island claimed by both China and Vietnam.”

NYT, May 10, 2014

Oil & Gas (floating liquefied natural gas):

“...expected to displace 600,000 metric tons of water, or as much as six aircraft carriers. Shell executives refer to...Prelude FLNG...as the largest offshore floating facility every built.”

NYT, Oct. 31, 2014

Russia:

- “The ocean itself can be used as an infinite heat sink.”
- “...Russia is already at work building a floating nuclear plant...”

“Floating nuclear power plants could avoid disasters like Fukushima” April 16, 2014 in The Verge

Offshore Ports:

“American engineering contractor Bechtel has laid out plans to create a giant offshore “hub port” to rationalise the way the US deals with container traffic.” Global Construction Review, 9 Sept 2014

The importance of promoting sustainable, science-based ocean industries – Case Study Ocean Observation & MSP

UCSD School of International Relations and Pacific Studies

2014

Marine Spatial Planning in San Diego & Stakeholder Overview



March 2014



- “Effective [MSP] planning could increase the gross product of ocean and water-related industries in San Diego dramatically – billions of dollars annually – by establishing needed rules & regulations and pre-approving appropriate sites that would encourage investment and industry growth.” (p. 12)
- CA Ocean Protection Council is supportive of SD as MSP testbed.
- **We are organizing regional, state and Federal support as we organize a MSP process and raise the needed financing.**



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How can CA promote **Blue Economy** & **BlueTech**?

1. Recognition of opportunity. Even “silver lining” to sea level rise.
2. Fund **Blue Economy** and **BlueTech** + Supply Chain studies
3. Promote regional **Blue** clusters
4. Help promote creation of common testing facilities (deep ocean, etc.)
5. Need to affordably rent near the water & need ocean testing permits
6. City, County & State agencies as technology test beds
7. Promote Marine Spatial Planning (MSP)
8. Promote OceanSTEM / maritime workforce development
9. Develop marine engineering and maritime technical training
10. Develop National Centers of Excellence
11. Promote access to capital (VC, bank, government, etc.)



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