



CENTER FOR A COMPETITIVE WORKFORCE

# OCEAN ECONOMY 101: THE INDUSTRY PERSPECTIVE

---

Program Look Book

December 10, 2021 | 10:00 AM - 12:00 PM



---

In partnership with the Los Angeles County Economic Development Corporation



**LOS ANGELES COUNTY**  
ECONOMIC DEVELOPMENT CORPORATION  
*Collaboratively Advancing Growth and Prosperity for All*



# TABLE OF CONTENTS

<b>MEETING AGENDA</b> .....	<b>2</b>
<b>CENTER FOR A COMPETITIVE WORKFORCE</b> .....	<b>3</b>
Mission.....	3
Contact Information.....	4
<b>INDUSTRY REPRESENTATION</b> .....	<b>5</b>
<b>OCEAN ECONOMY DEMAND DATA</b> .....	<b>7</b>
Current Landscape .....	7
Employment Distribution.....	8
<b>Employment Forecast</b> .....	<b>8</b>
Emerging Industries in the Ocean Economy .....	9
Occupational Profiles .....	9
<b>OCEAN ECONOMY- EMERGING INDUSTRY FOR PROGRAM DEVELOPMENT</b> .....	<b>11</b>
Community College Program Analysis .....	11



# MEETING AGENDA

<b>Date and Time</b>	December 10, 2021 from 10am-12pm
<b>Occupation</b>	Ocean/Blue Economy Occupations
<b>Opening Remarks</b>	<ul style="list-style-type: none"><li>- Welcome and Introductions   Isabel Duran, LAEDC</li><li>- Center for a Competitive Workforce Overview   Richard Verches, CCW</li><li>- Ocean/Blue Economy Landscape Overview   Matt Horton, Milken Institute</li></ul>
<b>Discussion Topics Moderated by Jermaine Hampton</b>	<ul style="list-style-type: none"><li>- Industry &amp; Workforce Trends</li><li>- Technology</li><li>- Workforce Gaps</li><li>- Talent Pipeline</li></ul>
<b>Community College Perspective on Building a Program</b>	<ul style="list-style-type: none"><li>- Ferris Kwar   Santa Monica College</li></ul>
<b>Closing Remarks</b>	Next Steps and Adjournment   Jermaine Hampton, LAEDC



# CENTER FOR A COMPETITIVE WORKFORCE

## Mission

Center for a Competitive Workforce (CCW) was established in 2017 as a Strong Workforce Program regional project of the 19 community colleges in the Los Angeles region in collaboration with the LA/OC Center of Excellence for Labor Market Research (COE) hosted at Mt. San Antonio College and the Los Angeles County Economic Development Corporation (LAEDC).

In partnership with the COE and LAEDC Institute for Applied Economics, CCW has published multiple labor market reports that analyze labor supply and demand data for middle-skill occupations in high-growth industries to inform and influence the development of new or modified career education and workforce development programs and curricula. CCW supports quarterly convenings with education, workforce, nonprofit, government and industry leaders in three of the LA region's most highly concentrated and fastest growing industry sectors of advanced transportation, bioscience and digital media/entertainment, with the co-equal goals to strengthen industry engagement with community college faculty and to connect more community college students to meaningful work-based learning opportunities, as one of the best ways to constructively prepare them for the 21st century jobs and careers in the fast-emerging and rapidly-changing knowledge-intensive industries that will drive our regional economy today and tomorrow.

CCW, in partnership with the regional directors for employer engagement, is piloting seven regional advisory committees to further strengthen regional alignment of and ongoing connections between faculty and industry. CCW has developed two online platforms: a biosciences industry portal and a regional Workforce and Education Partner Portal that employs technology to increase the speed and richness of industry-college connections, to seamlessly access and deploy the economic intelligence gleaned through industry engagement, and to rapidly expand and scale the number of work-based learning and employment opportunities for career education students and graduates with certificates and degrees.

Learn more at [www.CompetitiveWorkforce.LA](http://www.CompetitiveWorkforce.LA).



Funded by the California Community Colleges Chancellor's Office under the Strong Workforce Program (SWP) as a Los Angeles Regional Project.

The Los Angeles County Economic Development Corporation (LAEDC) was founded in 1981 as a nonprofit, public-benefit organization to harness the power of private sector in collaboration with L.A. County, to guide economic development and create more widely shared prosperity. LAEDC collaborates with all stakeholders in the region including education, business, and government. Learn more at [www.LAEDC.org](http://www.LAEDC.org).



## Contact Information



**Richard Verches, Executive Director, Center for a Competitive Workforce**

[Verches@verizon.net](mailto:Verches@verizon.net)

(213) 326-4882



**Jermaine Hampton, Director of Workforce Development, LAEDC**

[Jermaine.Hampton@laedc.org](mailto:Jermaine.Hampton@laedc.org)

(213) 236-4828



**Isabel Duran, Administrative Program Manager**

[Isabel.duran@laedc.org](mailto:Isabel.duran@laedc.org)

(213) 236-4885



# INDUSTRY REPRESENTATION

## **Ann Carpenter, Chief Executive Officer at BraidTheory**



Ann Carpenter is dedicated to building and fostering the global Blue Economy. She serves as an advisor to deep tech entrepreneurs in industries including ocean/maritime, transportation and goods movement, energy, and biotech. She brings more than 30 years of experience in strategic planning, marketing, business development, and community outreach in private industry, nonprofit organizations, and as an entrepreneur. As co-founder and CEO of Braid Theory, Ann is responsible for strategic partnership building with public entities such as ports and utility agencies, and private industry. Ann is a member of the CSULB Operations and Supply Chain Management

Advisory Board and also serves on the boards of Ocean Exchange and Smart Freight Centre to further initiatives addressing global challenges and a more sustainable future. Her civic appointments include Chief Innovation Officer of the City of Los Angeles, Council District 15; and Commissioner of the County of Los Angeles Small Business Commission. Braid Theory is a vertically integrated venture advisory which provides end-to-end services to support science and engineering-led companies. The firm incorporates a hybrid model of services to assist startups and scaleups based on proven methodology and rigor in evidence-based entrepreneurship, focused on three key aspects of commercialization: capability, capacity and intellectual capital.

## **Nathan Churches, Co-Founder at Holdfast Aquaculture**



In my academic career I have focused on the genomics of bivalves and how this can be applied to breeding programs. In 2018 I co-founded Holdfast Aquaculture in order to put some of these concepts into real commercial practice. Today, Holdfast operates a full-scale commercial hatchery in San Pedro, capable of producing seeds for oysters, mussels, and kelps, among others. We are currently focusing on developing Ocean Acidification resistant strains and new California-native species for a more sustainable local aquaculture industry.

## **Nick Hajek, Aquaculture Engineer at Pacific Mariculture**



I am international contract aquaculture engineer. I predominantly base my work out of New Zealand but service every major continent from the America's to the United Kingdom and beyond. My focus is the installation of major offshore farms and providing all the tools and assets to bring a farm up to full production and compliance. We build boats, provide gear and materials, crews, expertise, and support. I've been involved in this industry for the last decade... I'm only 29. Cheers



### **Meredith Brooks, Grants and Special Projects Manager at AltaSea**



Lieutenant Meredith Brooks is the Strategic Grants and Special Projects Manager (Consultant) at AltaSea at the Port of Los Angeles. She is developing the AltaSea Marine Grants program to expand the portfolio of government grants, with a focus on STEM education, aquaculture and growing the Blue Economy in Los Angeles. Originally from Rancho Palos Verdes, Meredith now splits her time between the Olympic Peninsula, RPV, and Hawai'i, where she has spent the last decade helping manage one of the USDA Regional Aquaculture Centers. She has fifteen years of management and communication experience in the fields of sustainable aquaculture R&D and conservation and has authored two K-12 STEM curriculums for Hawai'i schools.

Meredith graduated from the University of Southern California with Bachelors Degrees in Political Science and Journalism, and is a member of the Lambda Pi Eta honor society of the National Communication Association.

### **Tom Grimm, Chief Executive Officer and President at Carlsbad Aquafarms**

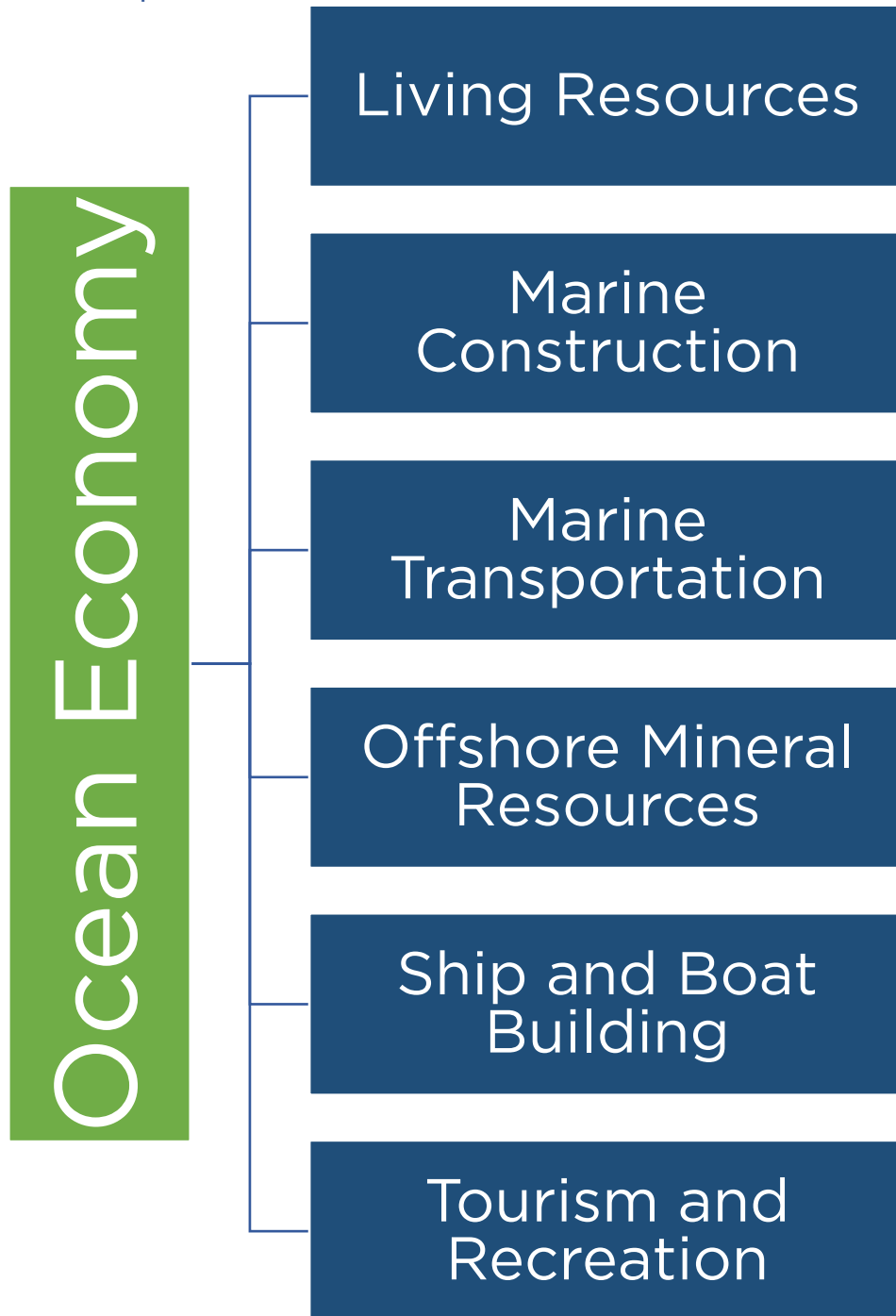


Thomas Grimm is CEO of Carlsbad Aquafarm, growing mussels, oysters, abalone and scallops. The farm uses suspended long-line cultivation methods which enhance the ecological health of the marine habitat, wild fish nurseries, and the coastal environment. Rigorous laboratory testing standards and purification systems help ensure product safety while proximity to the Southern California markets allow quick turn-around from harvest to delivery to clients. The farm is expanding its product line to include the Rock Scallops and various strains of seaweed.



# OCEAN ECONOMY DEMAND DATA

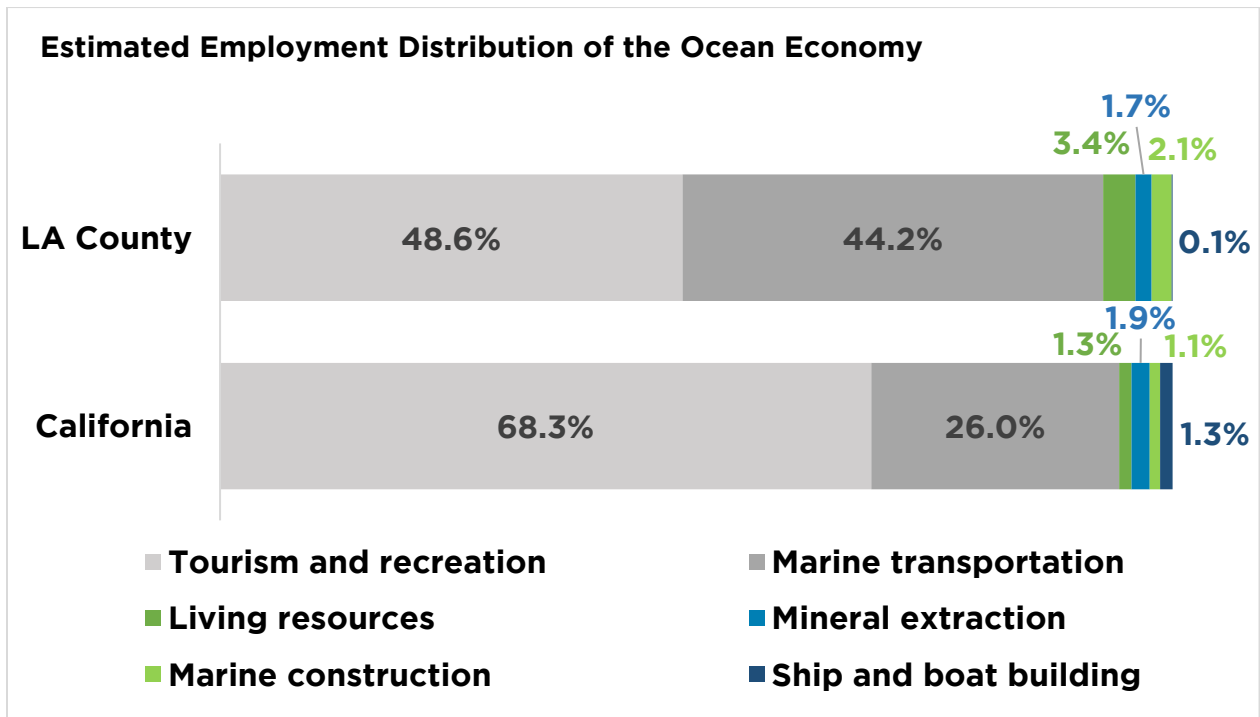
Current Landscape







## Employment Distribution



## Employment Forecast



Marine Construction  
Marine Transportation  
Tourism and Recreation  
Living Resources



Ship and Boat Building



## Emerging Industries in the Ocean Economy

- Deep-Water Oil and Gas
- Offshore Wind Energy
- Ocean Renewable Energy
- Marine and Seabed Mining
- Maritime Safety and Surveillance
- Marine Biotechnology
- High-Tech Marine Products and Services

## Occupational Profiles

Demographic		Water Transportation Workers (53-5000)	Petroleum Pump System Operators, Refinery Operators and Gaugers (51-8093)	Electricians (47-2111)	Industrial Machinery Mechanics (49-9041)
Sex	Male	91.9%	100.0%	99.6%	96.0%
	Female	8.1%	0.0%	0.4%	4.0%
Education	Less than High School	8.1%	3.4%	10.7%	11.6%
	High School (or equivalent)	32.8%	23.6%	34.8%	24.7%
	Some College/Associate	36.1%	73.0%	44.4%	45.4%
	Bachelor's	23.0%	0.0%	9.5%	12.6%
	Master's or Higher	0.0%	0.0%	0.6%	5.8%
Age	< 24	0.0%	20.2%	7.1%	3.5%
	25 - 39	36.2%	42.9%	41.4%	26.3%
	40 - 54	24.0%	21.9%	32.2%	45.5%
	54 +	39.8%	15.1%	19.3%	24.6%
Race/Ethnicity	Hispanic	0.0%	92.2%	70.6%	64.3%
	White	75.3%	7.8%	20.2%	24.7%
	Asian	16.6%	0.0%	6.0%	7.0%
	Black	8.1%	0.0%	1.7%	2.6%



Demographic		Farmworkers, Farm, Ranch and Aquacultural Animals (45-2093)	Geological and Petroleum Technicians (19-4041)	Electromechanical Technicians (17-3024)	Welders, Cutters, Solderers and Brazers (51-4121)
Sex	Male	68.9%	75.1%	77.9%	91.2%
	Female	31.1%	24.9%	22.1%	8.8%
Education	Less than High School	35.1%	0.0%	2.9%	37.3%
	High School (or equivalent)	46.4%	7.0%	8.1%	30.9%
	Some College/Associate	11.2%	61.8%	55.7%	30.6%
	Bachelor's	5.4%	17.4%	32.2%	0.0%
	Master's or Higher	1.9%	13.8%	1.1%	1.2%
Age	< 24	24.4%	0.0%	5.8%	7.5%
	25 - 39	35.7%	12.6%	16.9%	36.6%
	40 - 54	23.0%	47.5%	38.2%	29.6%
	54 +	16.8%	39.9%	39.1%	26.2%
Race/Ethnicity	Hispanic	86.9%	12.6%	39.6%	83.6%
	White	8.6%	47.7%	40.6%	10.0%
	Asian	1.5%	39.7%	19.8%	2.3%
	Black	3.0%	0.0%	0.0%	3.7%



# OCEAN ECONOMY- EMERGING INDUSTRY FOR PROGRAM DEVELOPMENT

## Community College Program Analysis

The ocean economy refers to “sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of the ocean ecosystem.” Based on this broad definition, programs focused on the ocean economy could fit in any of the existing program areas listed below, as well as other emerging areas not listed:

### **1920.00 – Ocean Technology**

Procedures and techniques used to measure and analyze ocean currents, seas, and other major bodies of water and ocean life, including the operation and/or maintenance and repair of related equipment and instruments. Includes aquarium technology and aquaculture.

### **0959.00 – Marine Technology**

Operation and maintenance of ships systems and marine equipment.

### **0959.10 – Diving and Underwater Safety**

Professional diving, diving instructors or diving support personnel.

### **1919.00 – Oceanography (non-CTE)**

The physical and chemical properties of water, the topography and composition of the ocean bottom, waves, currents, tides, the formation of islands, and related subjects.

### **0303.00 – Environmental Technology**

Environmental management, monitoring, assessment, and restoration, including environmental pollution control systems and the management of hazardous materials and hazardous waste, and related government regulations.

### **0935.00 – Electro-Mechanical Technology**

Design, development, testing, and maintenance of electro-mechanical and servo-mechanical devices and systems.

### **0506.40 – Small Business and Entrepreneurship**

Principles, practices, and strategies of small business wholesale, retail, or service operations for owners/managers, and marketing principles and methods applicable to developing businesses.



### 0956.50 – Welding Technology

Welding techniques, processes, and equipment applied in accordance with diagrams, blueprints, or other specifications.

### 0946.10 – Energy Systems Technology

Theory and methods of energy conservation applied to heating, cooling, and related systems, including the measurement and assessment of energy consumption, diagnosis and prescription. Includes alternative energy systems.

### 0948.40 – Alternative Fuels and Advanced Transportation Technology

Conversion to, installation of, and maintenance of electric vehicles, liquefied petroleum gas, compressed natural gas, hybrid fuel technologies, and related systems.

### 2206.10 – Geographic Information Systems

Computer-based tools for acquiring, editing, storing, analyzing, and visualizing geographically referenced information, with applications in research, education, management, and planning. Includes Global Positioning System (GPS).

Several regional community colleges already have programs targeting these areas, and some are in the process of finalizing new programs that provide students with generalized and specialized knowledge and skills related to the ocean economy. Colleges in this space appear below alongside a brief description of their programs related to the ocean economy:

College	Program Name	How does this program relate to the ocean economy?
Santa Monica	<ul style="list-style-type: none"> <li>• Aquaculture</li> </ul>	The Aquaculture Program is a new, interdisciplinary CTE program at Santa Monica College (Business, Earth Science, & Life Science Departments) that seeks to train students for employment in the emerging field of aquaculture.
LA Mission LA Valley LA Southwest Long Beach City	<ul style="list-style-type: none"> <li>• Robotics</li> <li>• Robotics and PLCs</li> <li>• Fundamentals of Robotics</li> <li>• Robotics Welding Automation</li> </ul>	Underwater robotics is a rapidly-growing field. These existing robotics programs provide the necessary knowledge, skills, and abilities for students pursuing careers as robotics technicians, electro-mechanical and mechatronics technologists. With additional experience and education, program completers set themselves on a path towards employment as a robotics engineer.
LA Pierce LA Trade-Tech Pasadena City Rio Hondo	<ul style="list-style-type: none"> <li>• Geographic Information Systems</li> </ul>	Mapping the ocean floor is critical to understanding ocean ecosystem as a whole. These GIS programs provide students with the skills necessary for ongoing ocean exploration and mapping.
Long Beach City LA Harbor East LA Mt. San Antonio	<ul style="list-style-type: none"> <li>• Oceanography</li> <li>• Earth Science</li> </ul>	Knowledge of plate tectonics, coastlines, tides, marine resources and the pollution sources that threaten these are essential to the ocean economy.



The driving force behind program development related to the ocean economy is the employers operating in this space. Based on their input, colleges may discover that their existing programs fit their hiring needs as-is, while other colleges may choose to develop more specialized programs to meet the demands of the labor market.