



Cape Cod Blue Economy Project

A Call to Action



- A Vibrant Maritime and Technology Economy
- A Healthy Environment = A Healthy Economy
- A Prepared and Educated Workforce for the Future



EXECUTIVE SUMMARY

This report was commissioned by the Cape Cod Blue Economy Project through the Massachusetts Seaport Economic Council, to examine and propose actions that will foster growth in the region's water-based economy.

The Cape Cod region is defined as southern Plymouth County including Plymouth and Wareham, all of the towns on Cape Cod, and the islands of Martha's Vineyard and Nantucket. Our efforts to define, characterize, engage and identify actions for the Blue Economy in the Cape region proved very fruitful and encouraging for the future growth of this sector. Our investigations and socialization of the Blue Economy concept resulted in a better understanding of the unique nature of the region and the role that water and healthy environments play in the economy.

Gliding across Cape Cod Bay on the Plymouth-to-Provincetown Fast Ferry, it is abundantly clear how our lives and work are connected to water. The Commonwealth of Massachusetts is known the world around as the "Bay State." It is more than a convenient motto describing our major landforms. We are a maritime commonwealth – a place formed and matured through our connection to the ocean. This is even more prevalent in the Cape Cod region, stretching from southern Plymouth county across Cape Cod and out to the islands of Martha's Vineyard and Nantucket.

While the Commonwealth derives 2.6% of direct employment and 1.3% of direct gross state product from the maritime economyⁱ, the Cape region is more connected, more dependent and more focused on the "blue" or water economy. In fact, the "dark blue" economy, that which is directly dependent on water, in the Cape region is worth 6% of the region's revenues and employs 4% of the workforce. The top five industries by number of jobs are shellfish fishing, marinas, environmental conservation organizations, finfish fishing and recreational businesses like yacht clubs and charter boats. The top five industries by earnings are manufacturers of instruments for search and navigation, research and development, environmental conservation organizations, environmental consulting services and boat dealers.

More broadly, the Cape region's overall blue economy is a significant economic driver for the region, representing 12% of jobs and 11% of gross revenues (the complete composition of the gross regional product for Barnstable, Dukes, Nantucket and Plymouth Counties respectively can be found in Appendix A1-A4.) There is predicted growth in dark blue industries through 2022: 2.6% in the region, 4.3% in Cape & Islands Workforce Investment Board (WIB), 16.3% for Dukes County and 12.7% for Nantucket Countyⁱⁱ.

The statistics on the growth of the Cape Cod region's Blue Economy from 2003 to 2014 are encouragingⁱⁱⁱ:

- The number of blue establishments increased 42% (from 2,180 to 3,104)
- The number of employees employed by blue business increased 50% (from 14,412 to 29,093)
- Annual payroll for blue businesses increased by 111% (from \$574M to \$1.21B)

Even more encouraging is that all this growth showed the largest portion in later years, between 2011-2014. Though we have not analyzed the cause of this growth, we believe there is significant room for growth in the Cape Region's overall Blue Economy.

Throughout this story, you will learn of the interconnectedness of the Cape region's economy as related to water. You will meet people at work and play here and understand the incredible innovations and worldwide respect generated through its institutions and organizations. You will appreciate its history, present and future. This story makes the case of why implementing the actions developed over a year of intensive research and public debate is the right path. Investing in our communities, our people, our innovations and our ideas will set the course for the future. Our children will understand that this is a great place to live, work, play and create, and that a healthy environment and a healthy economy are one and the same. That we are all in this together. The future of the Cape Region is "blue."

Join us. Help us realize our collective vision of the future:

The Cape Cod region is driven by the water that surrounds us, steeped in maritime tradition and dedicated to innovation. We are a modern water-based economy that connects people to their environment, inspires learning, and exports our knowledge to the world.

To achieve this vision, the Blue Economy Project will focus work in the following three areas:

1. A Vibrant Maritime and Technology Economy
2. A Healthy Environment = A Healthy Economy
3. A Prepared and Educated Workforce



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1. INTRODUCTION

By focusing on a range of key businesses and organizations that drive the water-dependent and water-based or “blue” economy, we have identified 10 actions to retain and attract economic growth while meeting the demanding needs of making the Cape Cod region environmentally sustainable and healthy. From our work, it is very clear that we are currently highly competitive globally in blue economy areas with a high degree of diversity, which is not typical. We are also arguably the global epicenter of marine science and technology. We firmly believe investing in the defined actions, increasing engagement and marketing, and supporting a healthy environment will allow us to better show the world our value and opportunities.

We are clear that the Blue Economy exists today in a working form. With proper investment and attention, we can make a better version of today by explicitly linking the environment and the economy in the Cape Cod region, expanding the maritime and technology sectors, and providing ample investment in the workforce need to support and catalyze the growth.

This report includes the following areas of investigation and development:

Characterizing the Cape Cod Region’s Blue Economy

What does it mean to be “blue”? What are the characteristics of the people, organizations and businesses that make up the different levels of the Blue Economy in the Cape Cod region? This section explores the data available to better understand the current level of dependency, identifies facts and trends, and summarizes our gaps in understanding.

Leveraging History to Engage the Future

The Cape Cod region is steeped in maritime history reaching as far back as the economy of the Native American tribes throughout the area. Since that time, the region’s economy shifted to a production economy and into a predominately tourist economy. To bring the concept of the current extent and opportunities of the Blue Economy to the stakeholders, extensive outreach has been and continues to be conducted.

Blue Economy Initiatives Worldwide

Many areas of the world are formally recognizing the role water, and specifically coastal and ocean areas, play in their economy. Usually, as is appropriate, these areas are labeling and preparing reports and workplans that explicitly recognize the role of a healthy environment in supporting the economy. We take a deeper look at many of these initiatives and detail their components for a comparison to our efforts.

A Common Vision for the Future

To rally around a pioneering, progressive and vivid vision of the future for the Cape Cod Blue Economy, using the data and input from stakeholders, we propose a future-oriented declaration of the Initiative's purpose and aspirations. Our vision is our guiding light, setting our sights for a desired outcome. It dictates all the other steps we must take and gives us substance and purpose.

Themes under Which to Organize

To define the essential components of our vision, using our outreach tools, we have narrowed our work areas or "themes." These themes are analogous to the load bearing walls in our house, providing structural support to the agreed upon vision. They also define the boundaries of the initiative, provide strategy and give discreteness to the action plan.

Actions for Implementation and Future Growth

All the previous work sets the stage for developing how, through our actions, we will work within our themes and toward our collective vision. By binning and systematically evaluating the effectiveness of ideas generated through our input tools, we detail the components requiring our time, attention and resources. The Action Plan reflects the main work areas for the future of the Cape Cod Blue Economy Project.

Leadership, Funding and Resources Needed to Support the Actions

Knowing the blocks with which we are hoping to build, we identify the resources and specific activities that need to be supported to bring the important work of the Action Plan to reality. It is clear that going forward, this project needs a captain at the helm and must continue to establish working relationships with essential partners in implementation. This section defines these roles.



Nancy Civetta, Shellfish Constable, Town of Wellfleet

As a Shellfish Constable responsible for the sustainable management of Wellfleet's shellfish resources, it is immediately apparent just how closely tied the town's year-round economy is to Cape Cod's Blue Economy. Wellfleet is one of the largest producers of shellfish in the Commonwealth. With a centuries-long tradition of harvesting oysters and clams for the public's enjoyment, our community identity is intimately woven together with the brand name recognition of Wellfleet oysters and littleneck clams. Wellfleet is the only town with a significant wild fishery as well as shellfish farming. Our farms drive the economic engine, while the wild fishermen represent our heart and soul. For us to continue to be successful into the future, we must be nimble and forward-thinking: maintaining clean and healthy waters is the cornerstone of our existence. Using the knowledge of local shellfishermen and the scientific resources of our partners at the Cape Cod Cooperative Extension and others, we will devise ways to mitigate the challenges and take advantage of the opportunities that Mother Nature presents us. In Wellfleet, we're in it for the long haul.

PROFILES IN BLUE



2. CHARACTERIZING THE CAPE COD REGIONAL BLUE ECONOMY

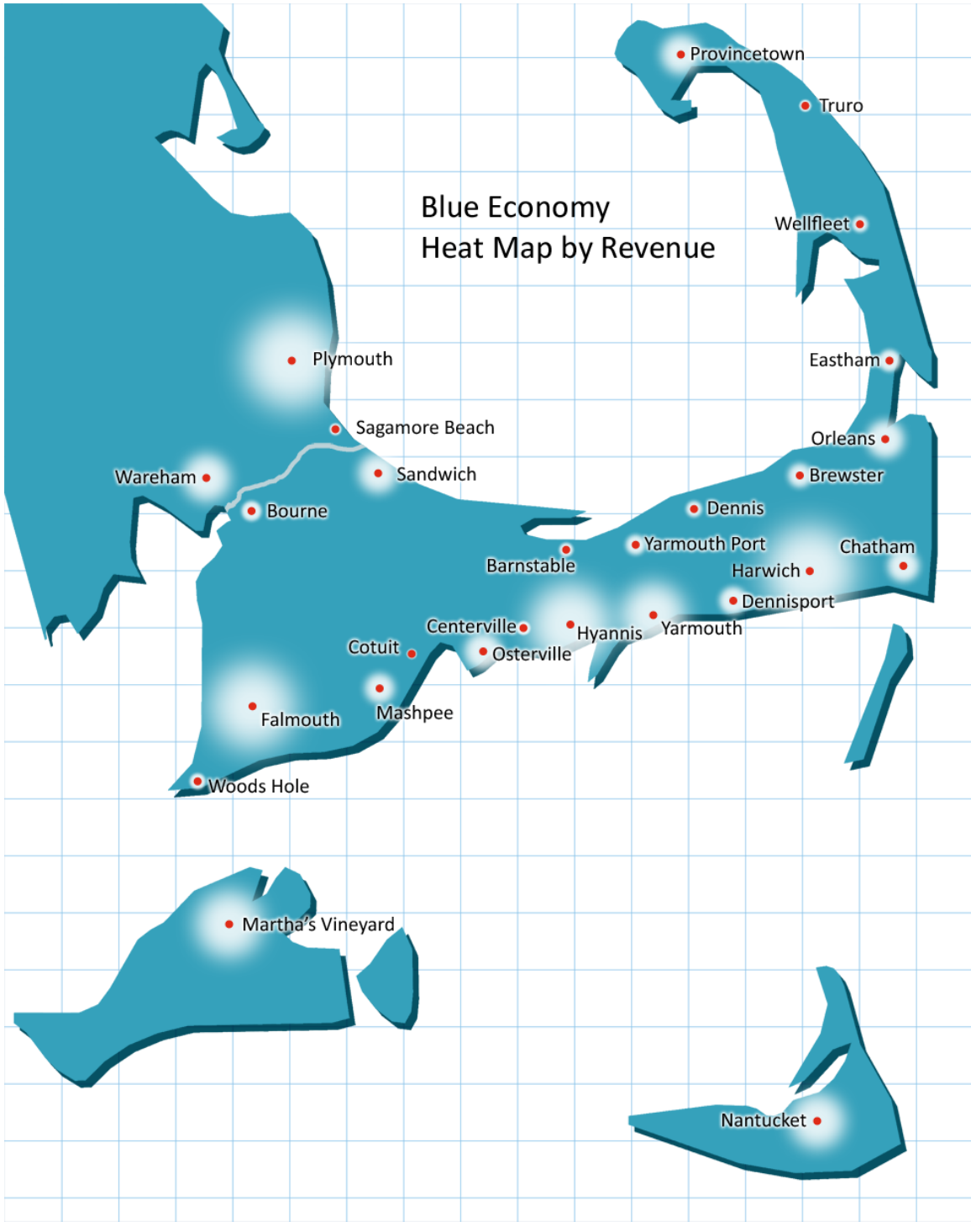
The Cape Cod region is defined as southern Plymouth County including Plymouth and Wareham, all towns over the Cape Cod Canal Bridges as well as towns on the region's two islands: Martha's Vineyard and Nantucket. This is a region with an interconnected economy, which comprises a distinct economic area within the Commonwealth of Massachusetts and is surrounded by coastal and ocean waters, crisscrossed by rivers, streams and marshes and pocked with ponds. While it makes sense that the Cape Cod region would be more blue than the rest of Massachusetts, there is room for growth in the Blue Economy to fully leverage the region's blue assets. With almost 1,000 miles of shoreline, a strong history of maritime industries and water-related tourism, and a strong education system, the region is poised for sustainable growth in overall economic revenue through the following impact quotient components:

- Number of Jobs
- Number of Businesses
- Increased Average Wage
- Higher Paying Jobs and Careers
- Increased Prospects for Exporting Ideas and Technologies
- Overall Economic Diversification

As a whole, in 2016 the Cape Cod regional Blue Economy was comprised of at least 1,872 businesses with 20,530 employees, accounting for \$1.4 billion in gross revenues. The Blue Economy is a significant economic driver for the region, representing 12% of jobs and 11% of gross revenues (the complete composition of the gross regional product for Barnstable, Dukes, Nantucket and Plymouth Counties respectively can be found in Appendix C). There is predicted growth in dark blue industries through 2022: 2.6% in the region, 4.3% in Cape & Islands Workforce Investment Board (WIB), 16.3% for Dukes

County and 12.7% for Nantucket County^{iv}. As a comparison, across the state the Massachusetts Maritime Economy represents 2.6 % of direct employment and 1.3% of direct gross state product^v.

Fig. 1: Heat Map of Blue Economy Revenues



2.1 DEFINING BLUE

The economy in the Cape region can be sorted into the relative dependency of the business, activity or organization on proximity or relationship to water. Another way to consider it is that there is a gradient of shades of blue in our economy. To understand the pieces of the blue economy, we have split blue businesses up into two categories: dark blue and medium blue. While the rest of the economy would be considered a shade of light blue, we have excluded them from analysis due to lack of real dependency on water, or businesses or organizations based on water.

Characterization Method:

Dark blue is assigned to businesses that are directly dependent on the water and medium blue is assigned to businesses that dark blue rely upon, or businesses that are likely located in the region because of the water (i.e., tourism), but are not directly dependent on the water. Businesses were coded as dark or medium blue based primarily upon their North American Industry Classification System (NAICS) code.

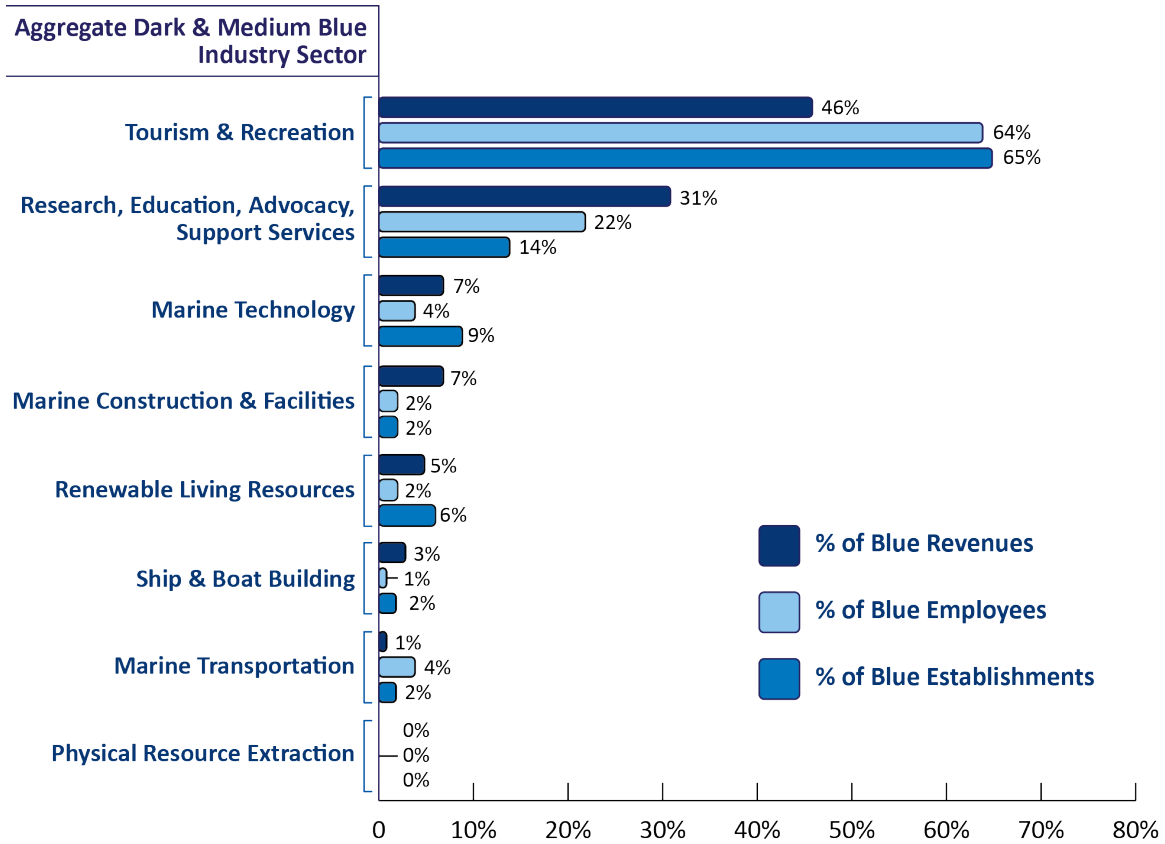
The project determined that 118 NAICS codes are part of blue economy.^{vi} A subjective review of known blue businesses was completed, to cross check NAICS lists and identify codes or businesses that may have been missed. First the NAICS codes, and later the individual business listings, were assigned as dark or medium blue, or removed if not blue, making the analysis as accurate as possible. Additionally, the NAICS codes and the associated businesses were further aggregated into eight (8) blue industry sectors (in no particular order):

1. Tourism & Recreation
2. Ship & Boat Building
3. Renewable Living Resources
4. Marine Transportation
5. Marine Construction & Facilities
6. Physical Resource Extraction
7. Marine Technology
8. Research, Education, Advocacy & Support Services

Due to the special nature of the Cape Cod Regional Blue Economy contributors and drivers, two additional sectors as compared to the State-Wide Maritime report were

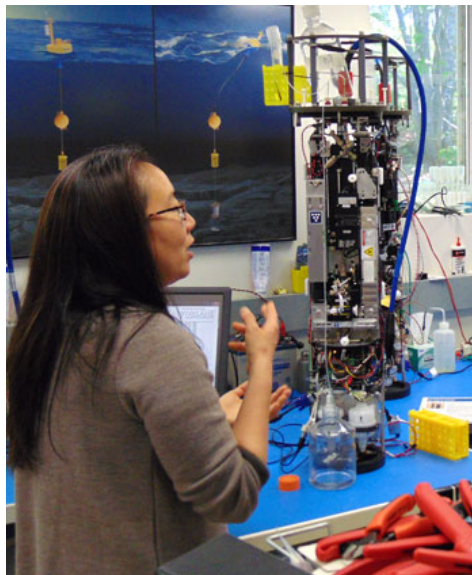
added: (1) Marine Technology and (2) Research, Education, Advocacy & Support Services. For a detailed look at the organizational characteristics of each sector, please see [Appendix C](#).

Fig. 2: Aggregate Dark & Medium Blue Industry by Sector



2.2 AVAILABLE DATA AND DESCRIPTION

The Cape Cod Region Blue Economy study was conducted with a bottom-up approach due to the smaller unit of analysis. We have built the industry sectors business/organization by business/organization out of necessity. There are very few apple-to-apple comparisons that can be made from a quantitative perspective. Data was analyzed from the following sources to identify trends and quantify current Blue Economy statistics: U.S. Census County Business Patterns (2003-2014), Naics.com business listings (Dun & Bradstreet data, 2016-17), Economicmodeling.com occupation data (2017), and IRS.gov exempt business listings (2016).^{vii} For a more detailed look at our methods, please refer to [Appendix C](#).



Yuki Honso, CEO, McLane Laboratories

As a native Cape Coder, born and educated on Cape Cod, I feel that small marine technology companies such as mine have important responsibilities and roles in our local economy. McLane Research Labs is an export-driven small manufacturing business on Cape Cod. Our core competency is manufacturing in-situ robots that function remotely in some of the most challenging environments on earth, often over long periods of time.

As a result, in what is stereotypically considered a tourist economy, we believe in investing in careers, and not just jobs. McLane remains committed to being a responsible employer that provides a place for local talent to flourish.

In turn, McLane is able to innovate and build such oceanographic instruments because McLane is fortunate to be a member of the Cape Cod/Massachusetts community, a global center of excellence in ocean science.

**PROFILES
IN BLUE**

2.3 BLUE ECONOMY FACTS AND TRENDS

The Blue Economy is a substantial and growing segment of the region’s overall economy. Within the project’s geographic scope, specific sub-regions are more heavily reliant on the Blue Economy than others, with the most reliant towns depending on the Blue Economy for **up to 38% of the town’s revenues, 30% of its employees and 17% of its establishments**. The data below presents a snapshot of the more detailed data that is available in [Appendix C](#).

AGGREGATE DARK & MEDIUM BLUE

There are 1,872 businesses in the overall Blue Economy, with annual revenues of \$1,431,266,456, with 20,530 employees. It is worth 11% of the region’s revenues and employs 12% of the workforce. (See fig. 3)



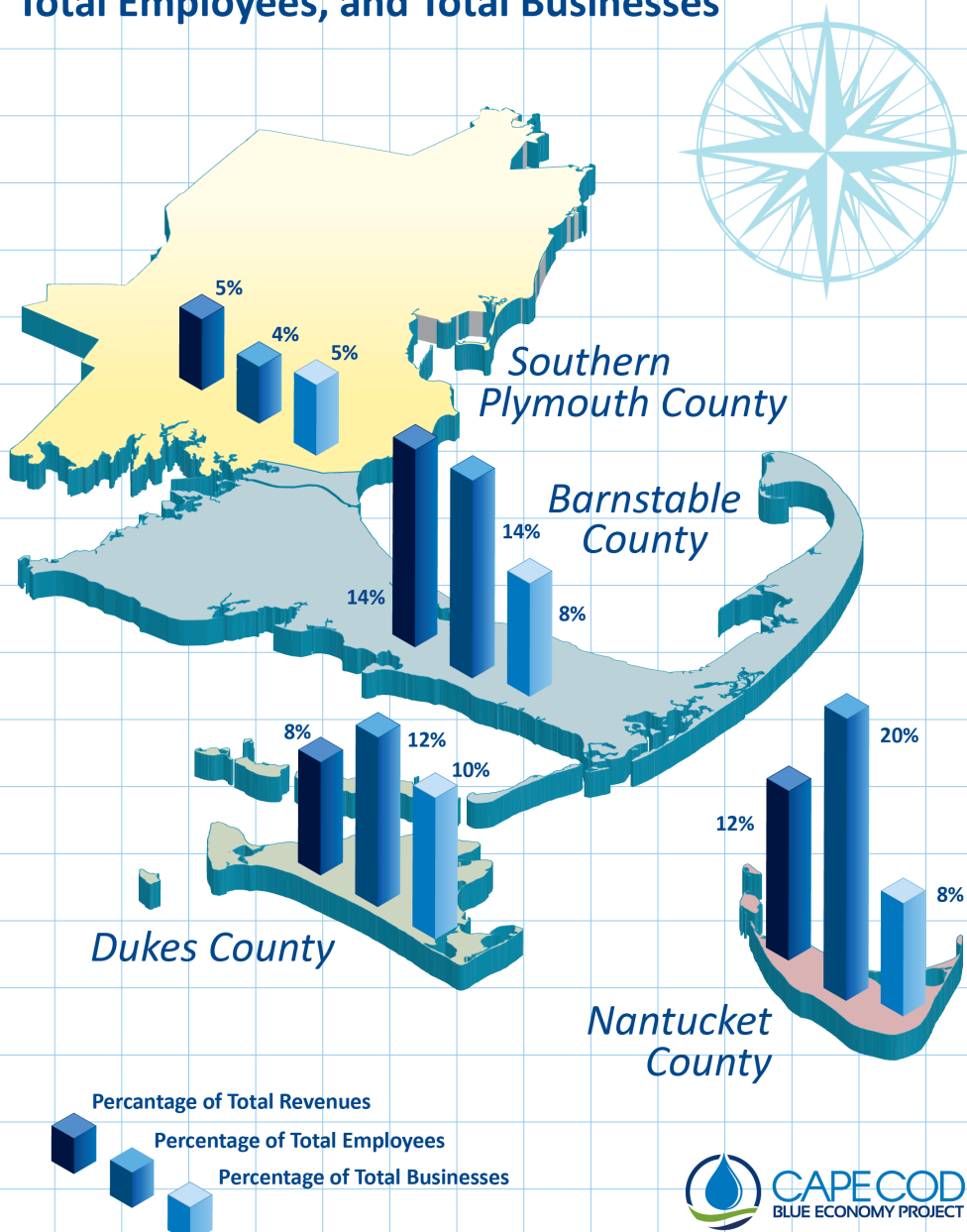
Nick Muto, f/v Miss Evelyn and f/v Dawn T Chairman of the Board, Cape Cod Commercial Fishermen’s Alliance.

“It’s hard to talk about the Blue Economy without talking about fishing. Fishing is the foundation of the Blue Economy. Fishermen have been feeding people for generations, and as the fishing industry has changed, Cape Cod has taken a place in the global marketplace, which has meant great returns for its local economy. Fishermen are taking responsibility for our evolving roles as the world’s seafood providers. Although we’re operating under the same basic procedures we used centuries ago, we have evolved to keep pace over time. Oceans change, technology advances, markets expand, and so we diversify our practices on the water to target different species, use new technologies and meet the demands the 21st century marketplace. This adaptability and flexibility means our small businesses will continue to succeed and lead Cape Cod’s Blue Economy, feeding both regional economic success and our participation in the global economy.”

PROFILES IN BLUE

Fig 3: Blue Economy as a Percentage of Total Revenues, Employees & Businesses

Blue Economy as a Percentage of Total Revenues, Total Employees, and Total Businesses



Industry Sector	Employee Count	Revenues	Business Count
Tourism & Recreation	13,193	\$657,216,979	1,221
Research, Education, Advocacy, Support Services	4,596	\$444,538,054	256
Marine Technology	807	\$97,056,498	162
Marine Construction & Facilities	379	\$94,541,675	43
Renewable Living Resources	486	\$75,925,736	118
Ship & Boat Building	144	\$44,048,115	30
Marine Transportation	890	\$15,492,920	34
Physical Resource Extraction	35	\$2,446,479	8
TOTAL	20,530	\$1,431,266,456	1,872

DARK BLUE- Direct Water Dependency

There are 576 businesses in the dark blue economy, with \$797,716,144 in gross revenues, and 6,955 employees. The dark blue economy in the Cape region is worth 6% of the region’s revenues, employing 4% of the workforce.^{viii}

Dark Blue as a Percent of:	Barnstable County	Dukes County	Nantucket County	Plymouth County (subset)
Total Revenues	8%	3%	6%	2%
Total Employees	5%	3%	2%	1%
Total Businesses	2%	3%	2%	2%

Dark blue job opportunities are concentrated in Falmouth, Wellfleet, Provincetown, Mashpee, and Bourne (measured as % of blue employees).^{ix} Truro, Brewster, Plymouth, Yarmouth, and Sandwich have the least concentration of blue jobs.

Dark blue industries have a 2016 average annual salary of \$50,127 per job, which is \$11,290 (18%) less than the national average for the same subset of industries. This could reflect cost of living as compared to other coastal towns and cities, or reflect room for growth in the blue economy. Because tourism is included in medium blue, it is not a reflection of temporary seasonal jobs in the tourism sector.

There is predicted growth in dark blue industries through 2022: 2.6% in the region, 4.3% in Cape & Islands WIB, 16.3% for Dukes County and 12.7% for Nantucket County^x. The top five industries by number of jobs are shellfish fishing, marinas, environmental conservation organizations, finfish fishing and recreational businesses like yacht clubs and charter boats. The top five industries by earnings are manufacturers of instruments for search and navigation, research and development, environmental conservation organizations, environmental consulting services and boat dealers.

There are several dark blue industries in the region that have very high concentrations of industry as compared to the average American community, including coastal passenger and sightseeing transportation, fishing and seafood markets, marinas and boat dealers.^{xi} This is quantified by location quotient (LQ), which measures the concentration of employment in dark blue sectors relative to employment in these sectors nationally. Massachusetts' maritime economy has an LQ of 1.14; the Cape Cod region's economy is significantly more dependent on the Blue Economy than the state as a whole (LQ of 3.53).

Location Quotient	
Industry Sector	Cape Cod Region
Renewable Living Resources	6.68
Marine Transportation	4.81
Tourism & Recreation	4.69
Research, Education, Advocacy, Support Services	1.66
Marine Technology	0.77
Physical Resource Extraction	0.30
Ship & Boat Building	0.26
Dark Blue Economy Total	3.53

MEDIUM BLUE – Indirect Water Dependency

There are 1,296 businesses in the medium blue economy, worth \$366,550,312 in gross revenues, with 13,575 employees. It is worth 5% of the region’s revenues and employs 8% of the workforce.

Blue as a Percent of:	Barnstable County	Dukes County	Nantucket County	Plymouth County (subset)
Total Revenues	6%	5%	6%	3%
Total Employees	8%	10%	18%	4%
Total Businesses	6%	6%	6%	3%

Medium blue job opportunities are concentrated in Provincetown, Nantucket, Wellfleet, Dennis and Orleans (measured as % of blue employees). Wareham, Bourne, Plymouth, Mashpee and Falmouth have the least concentration of blue jobs.

2.4 THE BLUE STORY

When aggregating dark and medium blue data, diving deeper into the data reveals details of the Blue Economy and the potential for growth.

Dominance of Tourism and Recreation

Tourism & Recreation accounts for 46% of the Blue Economy revenues, followed by Research, Education, Advocacy, Support Services at 31% (aggregate dark and medium blue). Other sectors fall far behind, including Marine Technology (7%), Marine Construction & Facilities (7%), Renewable Living Resources (5%), Ship & Boat Building (3%) and Marine Transportation (1%).

Amount of Businesses in Each Sector Skewed to Tourism

The largest number of establishments (56% of total) are dominated by industries tied to Tourism & Recreation: Full-Service Restaurants (468), Hotels (221), Bed-and-Breakfast Inns (159), Sporting Goods Stores (76), All Other Amusement and Recreation Industries (75) and Marinas (53). The largest industries by number of establishment outside of Tourism & Recreation are Engineering Services (107), All other Professional, Scientific and Technical Services (100), and Fish and Seafood Merchant Wholesalers (46).

Research and Development Post Highest Revenues

Research and Development In The Physical, Engineering, And Life Sciences (except Biotechnology) has the highest total revenue per NAICS code (\$310M), and the third highest number of employees at 2,415 (behind hotels and restaurants), despite only having 20 establishments. In 2008-2014, these businesses have seen substantial growth in payroll (282%) and employees (459%), but minimal growth in number of businesses (9%).

Beyond Tourism Employment Statistics

The largest numbers of employees (60% of total) are dominated by industries tied to Tourism & Recreation: Full-Service Restaurants (7,571), Hotels (2,837), Bed-and-Breakfast Inns (737), Marinas (448), All Other Amusement and Recreation Industries (400), and Sporting Goods Stores (318). The largest industries by number of establishments outside of Tourism & Recreation are Research and Development in the Physical, Engineering, And Life Sciences (except Biotechnology) (2,415), Inland Water Passenger Transportation (765), Executive Offices (751), Engineering Services (449), All

other Professional, Scientific and Technical Services (267) and Environmental Consulting Services (261).

Who Pays the Most Year-Round?

Research and Development in Biotechnology industry has the largest average payroll per employee (\$83,833).



Jim Sullivan, Engineer, Hydroid

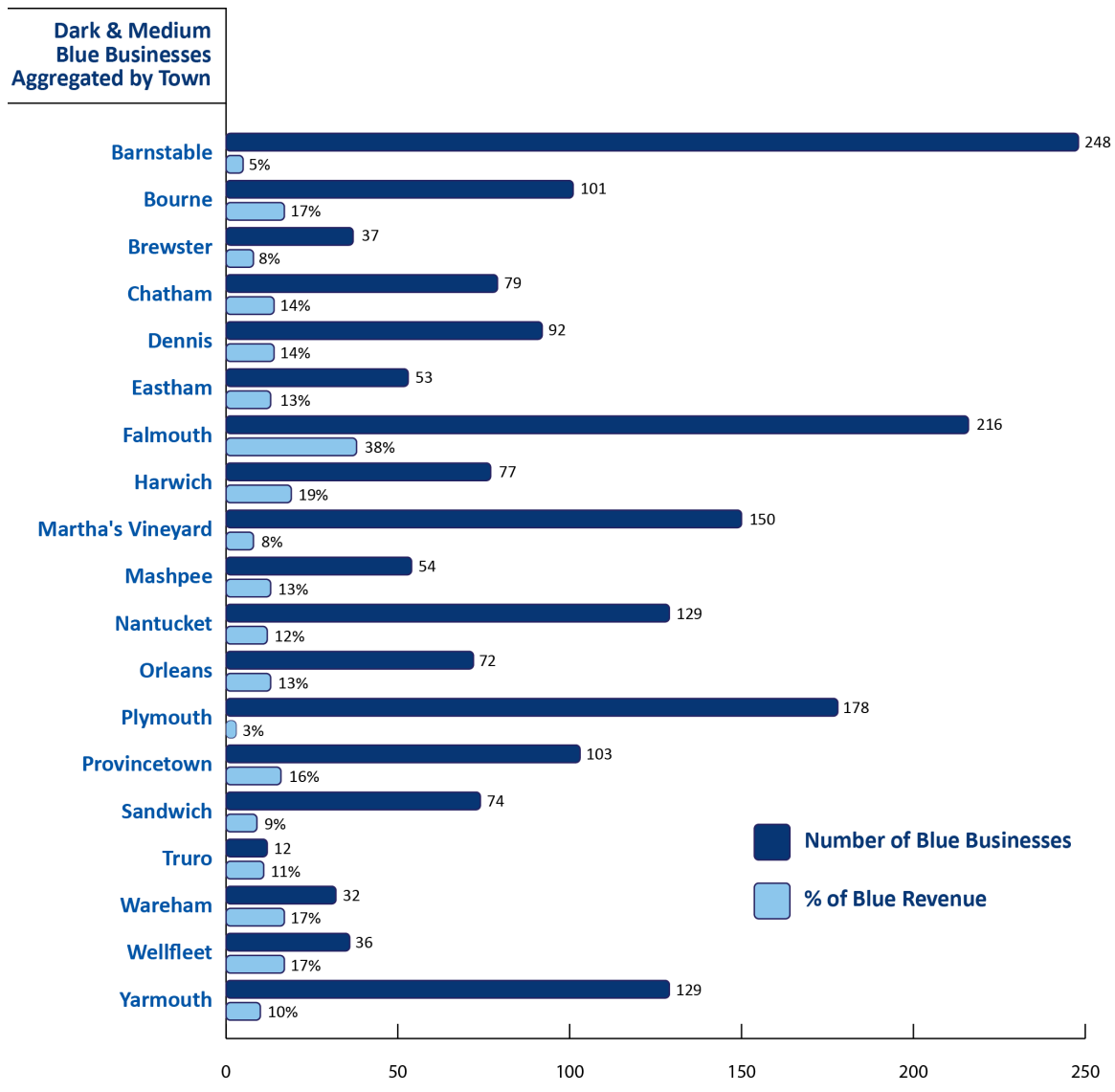
I work at Hydroid, a company in Pocasset on Cape Cod that designs and manufactures Autonomous Underwater Vehicles (AUVs). These vehicles are used worldwide for a variety of missions including mine detection, surveillance, environmental monitoring, oceanographic research, and search and recovery of lost aircraft and shipwrecks. As the Software Configuration Manager at Hydroid, my primary responsibility is to organize the configuration and release of software for the AUVs in order to meet the unique needs of each mission. From my vantage point, I see tremendous opportunity for innovations involving artificial intelligence and robotics in the Blue Economy.

**PROFILES
IN BLUE**

Geographic Focus Uncovered

Businesses and organizations in Falmouth and Bourne have generated the highest total dark blue revenues, and Barnstable and Falmouth have the highest total medium blue revenues. While Falmouth is the town most reliant on dark blue economy revenues, as a percentage of the town’s overall revenue and percentage of employees, at 33% and 18%, followed by Bourne revenues at 15% and Wellfleet employees at 10%, the Outer and Lower Cape is most reliant on medium blue economy revenues (tourism and recreation), with Harwich at 16% and Provincetown at 15% of the towns’ overall revenue. Provincetown (22%) and Nantucket (18%) are most reliant in terms of number of employees.

Fig. 4: Dark & Medium Blue Businesses Aggregated by Town



Coastal Passenger Transportation is more concentrated in our region than any other dark blue business, as compared to the average American community (highest LQ of 40.93), followed by Shellfishing (LQ of 19.19). The region is 262 times more dependent on the dark blue economy as a source of employment than the nation for the same industries.

Growth Areas

Industries with largest growth rates from 2012-2014 include Seafood Retailers with 971% increase in number of employees, All Other Miscellaneous Fabricated Metal Product Manufacturing with a 152% increase in annual payroll, and Research and Development In Biotechnology with a 133% in number of establishments.

Increase in Hiring, Increase in Pay

The number of blue establishments increased only 1% from 2012 to 2014 while number of employees increased 3% and annual payroll increased 10%, indicating existing establishments are hiring more employees and/or paying them more.

Blue Economy Growing Rapidly

Census data for Barnstable, Dukes, Nantucket and Plymouth Counties shows that the Blue Economy (medium and dark blue) has become a larger proportion of the economy in recent years. The 11-year averages for blue businesses between 2003-2014 were 28%, 24%, and 28% of the overall economy for annual payroll, number of employees and number of establishments (respectively). In 2014 blue businesses were 39%, 40%, and 37% of the overall economy for annual payroll, number of employees, and number establishments (respectively).

2.5 SUMMARY, DATA GAPS AND FUTURE NEEDS

Across the Cape region, we see strengths, dependencies and room for growth in its 22 towns. For instance, businesses and organizations in the Towns of Falmouth, Barnstable and Bourne contribute the most value to the Blue Economy (51% of all blue revenues), but the geographic outliers of Falmouth and Provincetown are most dependent on the Blue Economy as blue businesses represent more than 30% of the towns' revenues or employment. Additionally, only three regional areas rely on the Blue Economy for more than 15% of both their revenues and employees (Wellfleet, Falmouth, and Provincetown); whereas, three regional areas rely on the Blue Economy for less than 15% of their revenues and 11 regional areas rely on the Blue Economy for less than 15% of their employment. Tourism & recreation and research, education, advocacy, & support services make up 77% of the Blue Economy in the region. The remaining sectors likely have room for growth, especially marine technology and renewable living resources. And, the most obvious area for growth is in year-round professions, businesses and organizations.

It must be acknowledged that this is a snapshot of the Blue Economy in the region, and the available data sources are not perfect. Some businesses' data was not available and many businesses self-report inaccurate data (null revenue or employee fields, or incorrect NAICS codes).^{xii} As such, it is safe to say that the analysis reflects the minimum value of the Blue Economy, as there are three segments of data that were not included, but if able to be quantified, would increase the value of the Blue Economy. Future Blue Economy studies should look to quantify and include the following known data gaps:

- Town revenues from recreational shellfishing, beach parking, natural resources departments, mooring fees, etc.
- Artists that use water-dependent materials or inspiration and other creative place-making
- "Doing Business As" (DBA) businesses.

For an accurate and precise measure of the region's Blue Economy, future studies could attempt to identify actual listing of blue businesses based on ground-truthed business purpose, not NAICS codes. Alternatively, future projects should encourage businesses to revisit their NAICS codes and update to accurately reflect business purpose and report correct revenue figures. The Plymouth available data is not as robust, as the project only looked at a sub-section of Plymouth County (four zip codes); future analysis should

include the entire county in order to take advantage of county-level data sets. It would also be useful to find a way to quantify demographics (age, race, education) for Blue Economy businesses.



Kathy Zagzebski, National Marine Life Center

“I live, work, and play the Blue Economy every day! My organization, the National Marine Life Center exemplifies the three focus areas of Cape Cod’s Blue Economy Project. We are a small non-profit organization that rehabilitates and releases stranded marine mammals and sea turtles in order to advance science and education in marine wildlife health and conservation. Our rehabilitation activities and our science activities investigating marine wildlife health contribute to Cape Cod’s vibrant maritime and technology economy. Findings from our rehabilitation and science programs, as communicated through our education program, promote a healthy environment and economy. And with our education program and our internship program, we are preparing and educating students for the future by helping them to develop STEM skills and a conservation ethic.”

PROFILES IN BLUE



3. CAPE COD REGION BLUE ECONOMY

3.1 HISTORY AND ORIGINS

The Cape Cod region is a storied place in American culture and history. Its beauty has been passed down through song, prose and pictures for centuries. It has always been a destination, and its rich coastal resources - which have long driven its economy - are the primary reason.

Before European settlement, the coastal zone had a utilitarian purpose to its inhabitants driven by access to the sea, estuaries, marshes and their natural resources. Colonial settlers were also quick to learn about the abundance of fish, shellfish, marsh grass for hay, clay for brick and other resources. From these resources, the area thrived as shipbuilding, salt production, farming and milling industries produced goods and services for local use and export. In later years, access to the Atlantic trade routes, whaling and international shipping brought tremendous wealth to the region.

That prosperity continued into the 19th century with the Cape's population numbering nearly 34,000. Nantucket, Martha's Vineyard and coastal Plymouth County to the north (the Cape Cod Canal did not yet exist) were also sharing in the same economic boom, bolstered especially by Nantucket as the epicenter of the whaling industry and the tremendous wealth that followed it. Success, however, had its costs. The overuse of resources both on land and in water took its toll. By the time of Henry David Thoreau's visits during the 1850s, the land had been almost completely stripped of trees for use as fuel, building stock and ship construction. This, in part, led to the decline of the boatbuilding industry and its many associated trades. On the Cape, lack of cordwood for fuel was also a major factor in the closing of the Sandwich Glass factory in 1894, laying off hundreds of workers. The overgrazing of livestock on the sand dunes and marshes led to massive erosion. Blowing sands filled the harbors and further degraded soil that was already over-farmed. Salt drying and fishing all suffered serious declines.

Technological advancements impacted the region significantly as well. The whaling boom waned in the mid part of the century due to overfishing and the discovery of petroleum as a cheaper and more abundant fuel, and salt production tapered off as it became more efficient to mine salt than evaporate seawater. Before the railroads arrived, travelling by sea was preferred to roads. With the arrival of rail to the region between 1848 and 1887, residents and merchants began looking shoreward for transportation. This shift led to further declines in local harbors.

An 1898 state economic report which showed the region's population declined by 20% from 34,000 to 27,000 in the previous two decades, began to raise concern in government.^{xiii} By 1922, fears about the economic future of the region prompted commissioning of a study to address it. The results of this study^{xiv} formalized a purposeful movement toward the creation of a tourism economy and prompted the establishment of the Cape Cod Chamber of Commerce.



Jon Hagenstein, Co-Owner, Beacon Marine

“Beacon Marine Construction delivers the link from land to sea by building waterfront infrastructure. Our use of tugboats, barges, and work skiffs for the majority of our construction projects keep us on the water and at the core of the Cape’s Blue Economy. We employ 8 full time crew members who live locally, and work year round with competitive wages and benefits. The majority of our expenses are spent with local vendors who are both directly, and indirectly, linked to the Blue Economy. Simply put, if the water did not exist, our company would not exist.”

PROFILES
IN BLUE

At the same time, an opportunity began to emerge as the American Industrial Revolution and the decades that followed brought unprecedented growth and prosperity to America. With this higher standard of living came disposable income and leisure time. Focus on the coastlines began to shift from its utilitarian past to a future centered on their natural beauty, relaxation and recreational opportunities.

In true American entrepreneurial fashion, a few key business leaders, with successes elsewhere but with regional roots, brought back fresh ideas for the region's future, envisioning a vacation destination for the wealthy as well as the burgeoning middle class. A vision emerged of the Cape region as a vacation destination that sowed the seeds of a new economy for the next century. Rail introduced easy travel for affluent families, who established second homes and resorts from the late 1800s to early 1900s. It was the introduction of the automobile that democratized the Cape as a destination within reach of that burgeoning middle class. The income diversity of the part-time summer residents and tourists would serve the Cape economy well. Towns would emerge with a mix of large summer homes, small cottage colonies, grand hotels and affordable motels. Service related businesses, restaurants, retail shops and the arts would emerge to enhance the community economic base.

In addition to attracting vacationers, the ocean played another role in shaping the region's economy. An ocean sciences community emerged in the Woods Hole village of Falmouth with the founding of a field station for the U.S. Fish Commission (later became the Bureau of Commercial Fisheries, then N.O.A.A.) in 1871, followed by the establishment of the Marine Biological Laboratory in 1888 and Woods Hole Oceanographic Institute in 1930. These organizations formed the foundation of the current world-renowned marine science, technology, and education community.

The Cape Cod region grew to become an internationally-recognized vacation destination. Its beaches, harbors, coastal beauty and environment attract millions of visitors, many of whom purchase vacation homes or retire here. With this growth came unintended consequences. Overreliance on underground septic systems along with permeable soil and a sole-source aquifer resulted in excess nitrogen and phosphorus levels in our water. The attraction of second homeowners and retirees boosted home values and made the average home unaffordable for many middle-class residents working in the large service-based tourism and public service sectors. Rapid real estate growth from the 1950s to the '80s demanded new planning approaches, and the

county's Cape Cod Planning & Economic Development Commission was re-cast as the Cape Cod Commission in 1990, adding regulatory authority over land use decisions. Commercial and residential activity over established thresholds required additional regional review, but much of the individual homebuilding continued below these review thresholds. The market continued to demand, and local regulations encouraged, single-family homes, which led to the present lack of housing stock diversity, while compounding our wastewater issues. Today, many Cape residents commute off-Cape for work opportunities (12,770 daily) while others who have found homes more affordable on the mainland do the reverse (8,605 daily workers travel from off-Cape to Cape Cod.)

As the region's population grew, the desire for access to the waterfront for recreation increased, in competition with traditional maritime uses. Many residents find themselves unable to find or afford boat dockage for both commercial and recreational vessels, and many commercial wharfs have been replaced by private marinas (most towns hold decades-long wait lists for moorings and slips). These and other factors are putting a strain on our region, which not addressed will result in decline both economically and environmentally.

3.2 GOALS

The idea of a Blue Economy grew from a strategic planning discussion among Cape Cod Chamber of Commerce Board members while discussing the next big thing for our region – what can be done to move into a new economic era that will ensure success for the next 100 years and beyond. As the region's tenants and stewards, our vision is to develop a more sustainable plan for the region's future, one that balances environmental stewardship, economics, and an obtainable quality of life for all its residents and visitors. There are many indicators that our water-based economy is healthy and growing: growth in ocean research as it relates to climate change and resiliency, aquaculture not only as a food source but a means to restore estuaries, and the ecotourism movement that emphasized the beauty of our region and the importance of protecting it are some examples. We have an opportunity to nurture these trends and others.

We have an opportunity to embrace water resources as our greatest asset and work in a deliberate manner to foster the industries that exist in the blue sectors such as ocean research, aquaculture, energy, climate change and others, while looking ahead to capture emerging opportunities in the water-based spaces. This can be our greatest opportunity for prosperity if we proceed in a thoughtful and deliberate manner, and keep the needs of the economy and environment in balance.

3.3 APPROACH

The Cape Cod Blue Economy Project is scoped as a three-phase, five-year project:

PHASE 1 (year 1) - Take stock: Involves data gathering and analysis, community engagement to socialize the concept, establishment of a support coalition and drafting an implementation plan.

PHASE 2 (year 2-3) - Implement plan execution, establish measurements of progress towards outcomes, develop long-term funding strategy.

PHASE 3 (year 4-5) - Make the Blue Economy Project self-sustainable and financially independent, embed the concept in business vernacular and show progress on long-term outcomes.

3.4 OUTREACH ACTIVITIES AND COLLABORATIONS

One of the objectives for Phase 1 of the Project was to socialize the idea of a Blue Economy throughout the community.

This was accomplished through a series of targeted outreach efforts that included:

1. Listening sessions
2. Web site and social media platforms for public sharing of blue-related info
3. Public presentations at events and on radio and TV
4. Outreach to potential collaborators

Enabling a flow of information to the public in general, as well as specific outreach to targeted organizations, has built unity around the concept of the Blue Economy and the “Culture of Blue” that pervades our region.



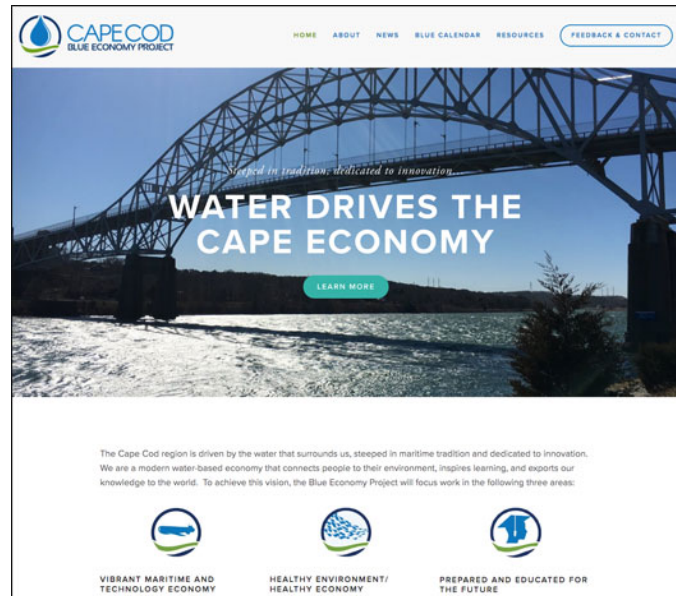
Listening Sessions

A series of nine facilitated listening sessions was held throughout the region, from Provincetown to Plymouth, including Nantucket and Martha’s Vineyard. Participants represented many interests in the Blue Economy, and shared their visions and challenges for growing the Blue Economy sector. Eight-six (86) individuals covering twenty (20) distinct attendee types participated in the sessions, resulting in 84 distinct input threads that fell into five overarching categories: Industry, Community, Environment, Education and Infrastructure. The sessions painted a clear picture of the diverse nature of the Blue Economy throughout the region. For example, Provincetown expressed concerns about commercial fishing and aquaculture and the challenges of the off-season economy. Woods Hole participants were more research-oriented in their

comments (as expected) and expressed concerns about marine infrastructure, education and data sharing. The data from sessions was a cornerstone in the development of our main core themes.

Online Platforms

A website (bluecapecod.org) was built to specifically address the Blue Economy Project. This has been the repository for information about the project, and a vehicle to post news and events both about the project itself and about those working in the Blue Economy in the region. Dynamic content on the site includes news items, upcoming events and Blue job postings.



We also launched Facebook and Twitter accounts specifically for the project, as well as a LinkedIn Group. These social platforms have had over 2,200 engagements on 700+ posts, with 350+ specific followers (September 2016 - June 2017). We are followed by organizations such as the Cape Cod Times, Mass High Tech, various Massachusetts State agencies, elected leaders, Blue Economy projects nationally and internationally, international enterprises in blue technologies, local Chambers of Commerce, research organizations, educational organizations and other local and non-local businesses.

Presentations & Meetings

Blue-specific presentations have been made to a variety of local groups and on local media. These groups include a cross section of businesses and organizations that represent our main project themes of a Vibrant Marine and Technology Economy; a Healthy Environment = A Healthy Economy; and A Prepared and Educated Workforce. Groups include various Chambers of Commerce, Rotaries and other businesses, town committees, non-profits and trade groups in the region, such as the Aquaculture Research Corporation, Cape Cod Marine Trades Association, Pleasant Bay Community Boating, Cape Cod Commercial Fisherman's Alliance, Cape Cod Museum of Natural History, Lower Cape Community Development Partnership, the Cape Cod Town

Counselors Association, the Cape Cod Town Managers Association, Massachusetts Shellfish Alliance, the Cape Cod Homebuilders and Remodelers Association, the Workforce Development Board, the Harbormasters Association, and the Falmouth Economic Development and Investment Council. The Project team presented at the Cape Coastal Conference in December. The Project co-organized the Water Innovation Expo at the recent One Cape Summit, as well as being represented in presentations by the Cape Cod Commission.

Presentations are interactive. Not only are components of the Project explained, but feedback is received and processed. We have also participated in dozens of networking events representing the Blue Economy. Project team members have been interviewed on a variety of media platforms, including the Cape Cod Times, Cape & Plymouth Business magazine, radio (CCB Media, WOMR and WXTK), local TV (Around Brewster, E-STEAMERS, Cape Media News), online blogs and traditional press outlets.

Collaborators

During the course of the Project we have met with a variety of business, research, economic development, non-profit and educational organizations who may act as potential collaborators in developing the Blue Economy. Though not an inclusive list, here are some examples: the UMass Dartmouth Public Policy Institute, Massachusetts Maritime Academy, Cape Cod Community College, Quincy College at Plymouth, Bridgewater State University, Wentworth Institute of Technology and the upcoming Blue Institute. Government entities include the Workforce Investment Board, the Town Managers Association, Cape Cod Selectmen and Councilors Association and various elected leaders at the local, county, state and federal level. See Appendix B for a full list of collaborators to date.

The Cape Cod Blue Economy Project created the Blue Advisory Panel, (See Appendix 2) - a team of community leaders with either direct involvement in the Blue Economy, or an interest in the resulting economic development. The Blue Advisory panel meets quarterly to serve as a sounding board, mentor and collaboration building entity for the Project. The members represent a diverse set of interests.

Success of the Outreach Efforts

The outreach efforts achieved several valuable results. First, sharing information about the Blue Economy helped build a consensus about a need for an initiative to take full advantage of the opportunities presented by the Blue Economy. Second, information obtained from participants in the listening sessions and presentations, from online and social media contacts, and from collaborators has been essential to developing the proposed Blue Economy Implementation Plan. We recognize that once a plan has been established and action items detailed, as we do later in this report, it will be used as a “living” document – open to review and adaptation frequently – and a roadmap for future work and collaborations. It is important to remember that any plan is not an endpoint but a beginning.



Rick Karney, Martha’s Vineyard Shellfish Group

Since 1976, I have been the Shellfish Biologist and Director of the Martha's Vineyard Shellfish Group, Inc., a nonprofit consortium of the shellfish departments of six towns on Martha's Vineyard. It has been personally rewarding to have played a supporting role in the development of the shellfish industry. In my tenure with the Shellfish Group, I have carried out a successful community-based resource development program for the commercially important shellfish species (quahogs, bay scallops, oysters and mussels) on Martha's Vineyard. Presently the hatchery operation produces over 40 million seed shellfish annually and, in 2016, Vineyard shellfish farmers were paid over \$3.8 million for their aquaculture products. Shellfish aquaculture is the quintessential component of the Cape and Islands’ blue economy. Providing employment and enjoyment for residents and visitors alike, the region’s renewable shellfish resources ideally support both year-round and seasonal economies. In addition, the production of filter-feeding shellfish improves the region’s marine environments that are the ultimate source of the region’s wealth.

PROFILES IN BLUE

4. BLUE ECONOMY INITIATIVES WORLDWIDE

Any good plan should be informed by like initiatives and historical lessons. To produce a robust Implementation Plan for the Cape Cod Blue Economy, we have documented and analyzed Blue Economy projects globally and have used the lessons learned and the aligned approaches in our development.

Initiatives on the Blue Economy are everywhere, from islands off the coast of Africa in the Indian Ocean to the Great Lakes of North America. Research shows global projects and organizations vary not only in location, but in scope and focus. There is a shared view of the emerging potential of water and the ocean as new frontiers with vast economic possibilities. Also, there is a recognition that if we do not protect, and in some cases restore, the ocean environment, economic potential becomes limited. Sustainability is the common thread. See [Appendix D](#) for a closer look.

Fig. 5: Blue Economy Initiatives Worldwide



Organizational Clusters

While the organizations sponsoring Blue Economy initiatives share a view on the potential of the Blue Economy, their purposes vary as much as their locations. In our research of Blue Economy projects globally, we found the organizations generally cluster in three areas:

1. Economic Development

These organizations view the Blue Economy as an economic engine connecting the potential for tourism/recreation, maritime technology/research and preservation to drive economic growth. These projects generally have specific, measurable outcomes (or are working toward them) and rely on an economic development project structure that either has multiple members, or partners with others for a comprehensive viewpoint. Several projects look at the engines needed to promote growth: workforce development, appropriate land use development, and preservation of the environment to promote the area for work and play. However, the focus may vary: Macomb County (Michigan) is focused on research/technology growth in exporting fresh water technology globally; The Maritime Alliance (San Diego, CA) is focused on networking and workforce development in the ocean technology space; the Ketchikan Marine Industry Council (Alaska) is focused on the shipping industry and developing the local workforce to support it. The Lombok (Indonesia) and Seychelles (Africa) projects promote investment in their countries by focusing on the growth potential of the Blue Economy.

2. Alliances/Advocacy

These organizations look to promote the Blue Economy, connect those integral to the effort and promote cooperation among organizations. They may do this through research, education or networking on ideas and innovation. Many of these organizations are sponsored by major government type groups such as the World Bank, the European Commission and the Asia Pacific Economic Cooperation.

3. Research/Education

These organizations focus on Blue Economy research and education. They provide ongoing research that can be useful to economic development groups or the alliance organizations. By doing so, they promote innovation and knowledge sharing. In fact, one of the organizations, Aquacelerator, selects and sponsors the 10 most innovative solutions to advance aquaculture in the Blue Economy, selected from more than 220 proposals developed in 40+ countries through the Blue Economy Challenge.

The Cape Cod Blue Economy Project

The Cape Cod Blue Economy Project is like the other economic development projects in that it takes a holistic view by incorporating the many economic factors that influence a water driven economy. These efforts respect and value the unique aspects of being a coastal community as they look to preserve and enhance it. There is also recognition of the value innovation and technology can play in the go-forward economy.

The closest comparison appears to be Macomb County, Michigan. Macomb County sees its recreational water environment as a big draw to the area for both vacationers and residents. It counts on a vibrant research and innovation sector to develop clean water technologies that can spread worldwide. In the Cape Cod region, there is a similar effort to preserve and develop the recreational aspects of the area combined with continued growth in the marine technology and research sector.

This project is unique, however, in that it focuses on water quality and infrastructure, existing issues that without solution will inhibit growth. An additional focus of the Cape Cod project is the clear acknowledgement that being prepared and educated for the future will greatly impact the region's ability to grow sustainably. From evaluating the various Blue Economy-themed initiatives globally, the Cape Cod region's project is well-organized and designed.



5. IMPLEMENTATION PLAN

5.1 VISION

Recognizing that the Cape Cod region's environment is its economy, the Blue Economy will be the fulcrum that balances our economic and environmental health, creates a new regional identity focused on pride in our water and coastal resources, and supports a more balanced and sustainable year-around economy for its residents.

Through the realization of our vision, driven by the water that surrounds us, steeped in maritime tradition and dedicated to innovation, the Cape Cod region will be a modern, water-based and highly diversified economy. This new focus on blue will connect people to their environment, inspire learning and export our knowledge to the world.

To achieve this vision, the Blue Economy Project will focus work in the following three areas:

1. A Vibrant Maritime and Technology Economy
2. A Healthy Environment = Healthy Economy
3. A Prepared and Educated Workforce for the Future

5.2 THEMES

A RESILIENT ECONOMIC DEVELOPMENT INITIATIVE:

A Vibrant Maritime and Technology Economy

The Cape Cod region has historically been a center of maritime industries and has played a significant role in our understanding of water ecosystems. This work area will grow the economic contribution of these sectors in the region through continued innovation and investment into existing, new and emerging sectors.

A Healthy Environment = A Healthy Economy

The entire economic well-being of our communities relies on healthy water resources. Strategic investments that support clean water, working waterfronts, and access to

water are vital to sustaining our Blue Economy. Recognition of the role that the environment plays in our regional economy is at the core of our growth plan.

A Prepared and Educated Workforce

Though a highly-educated workforce exists in certain areas of the region, the overall “all-ages” educational and workforce development resources must align to the needs of the growing economy. As a living laboratory for many of the world’s pressing challenges, the region is well suited to career preparation and exporting our knowledge in expanding blue economy fields.

5.3 ACTIONS

The outreach efforts described earlier served as a highly effective tool for sharing and socializing the concept of the Blue Economy but went further to gather formal and informal input on the issues facing the region and actions to address them. Additionally, the outreach we conducted provided a mechanism or a hub of connecting people, organizations and ideas in a more organized manner than ever before. These efforts led directly to the generation of the following actions of our Implementation Plan.

After the outreach component of work, the Blue Economy Project team vetted ideas normalized with others and ranked them based on an Impact Quotient which was established by assessing the relative ability (Low, Medium, High) of each major action and supporting action to positively affect the following criteria:

- Number of Jobs & Number of Establishments
- Increase Average Wage & Higher Paying Jobs and Provide for Careers
- Include Prospects for Exporting Ideas and Technologies
- Diversify the Economy
- Increase Overall Blue Economy Revenues

While remaining true to the vision of the overall initiative and the identified themes for the project, the actions listed below represent the priorities for the Cape region. The actions are listed in no particular order or relative priority. Additionally, this is a living plan and will need continuous review and adaptations to make it most useful. A six-month course evaluation will be imposed and full reviews each year of the implementation.

ACTION 1 - INNOVATION

GOAL: SUPPORT THE DEVELOPMENT, GROWTH AND RETENTION OF INNOVATIVE TECHNOLOGIES THAT CAN BE SHARED AND EXPORTED

- Develop and strengthen new innovative water-based technology companies. Establish a set of criteria to determine what we need to develop and strengthen.
- Continue and evolve the Woods Hole Oceanographic Institution's entrepreneurship and technology transfer program. Replicate and expand.
- Encourage new growth in untapped sectors. Use Blue Advisory Group and other panels to identify regional needs and subsequent entrepreneurial opportunities.
- Connect wastewater and other regional challenges and problems to entrepreneurs.

ACTION 2 – FINANCIAL SUPPORT

GOAL: PROVIDE FUNDING, SUBSIDIES AND ACCESS TO CAPITAL TO ENCOURAGE ECONOMIC GROWTH AND INNOVATION

- Encourage marine tech cluster development with favorable incentives like subsidies to locate in specific areas and determine what other than location will incentivize companies and implement.
- Provide low interest loans for business start-ups, and access to capital for targeted blue businesses.
- Encourage businesses to move to the region to create a job market by using tax incentives.
- Provide incentives for companies associated with the Section 208 Area-Wide Water Quality Management Plan to site in the region and grow responsibly.
- Establish and manage a regional innovation fund and establish a venture fund.
- Complete a Federal Economic Development Administration (EDA) Regional Innovation Strategy and apply for a National Science Foundation Center of Excellence designation with regional entities.
- Identify potential venture firms and investors.

ACTION 3 – ENVIRONMENTAL EDUCATION

GOAL: ESTABLISH BLUE TOURISM EDUCATION PROGRAM TO ENSURE THE LINKAGES BETWEEN A HEALTHY ENVIRONMENT AND A HEALTHY ECONOMY ARE UNDERSTOOD

- Develop a blue/green certification program that helps educate visitors about the importance of maintaining our fragile environment and water quality and how they can help.
- Create a new blue tourism Experience Trail that tells the story of the Cape Cod Region’s past, present and future with a focus on the Blue Economy. It can include learning labs, exhibits, touch tanks/aquariums, meeting/entertaining spaces, etc., and embarkation points for ecotourism experiences.
- Educate residents on how life is supported by water, and how to protect it.

ACTION 4 – WORKFORCE DEVELOPMENT

GOAL: OFFER ENHANCED TRAINING, JOBS AND EDUCATION SPECIFIC TO BLUE ECONOMY TARGETS

- Identify skill gaps in marine industries for workforce development and conversion from jobs to careers.
- Work with educational community and workforce development organizations to help them target curriculum.
- Introduce entrepreneurship early by providing local case studies into curriculum.
- Make K-12 more marine based education and add teaching entrepreneurship to education.
- Improving the ocean literacy and blue economy workforce interest and preparedness of our young people by building assessing interest, engagement, and awareness of opportunities and careers.
- Conduct an emerging professional tours in K-12 settings where blue business and organizations can share their area of work in the Cape Cod Region and provide a foundation for necessary steps to have a blue career locally.

ACTION 5 – PEER NETWORKS

GOAL: CREATE A BLUE NETWORK FOR BLUE BUSINESS COUNSELING AND CONVENING AND PROVIDE RESOURCE COMPILATION AND DISSEMINATION.

- Create a blue business counseling practice targeted to each specific industry.
- Network to transition Small Business Innovation Research (SBIR) and other government programs to have a focus or preference for Blue Economy industries in the Cape Cod region.
- Identify entrepreneurs within the region and hold a blue business entrepreneur’s weekend each year.
- Analyze and potentially implement a collaborative incubator space (likely in the Bourne/Falmouth area).
- Increase collision points with blue business/organizations and entrepreneurs. Every other year, convene an international conference on the Blue Economy. Become the hub for this discussion and action.
- Launch a global symposium and blog on blue topics hosted on the Cape, (experiential and educational).

ACTION 6 – REGULATIONS AND PERMITTING

GOAL: ESTABLISH BLUE ENTERPRISE ZONES WHERE PERMITTING CAN BE EXPEDITED AND RELATED ORGANIZATIONS CAN THRIVE ON PEER-TO-PEER RELATIONSHIPS

- Zone for blue business/organization enterprise zones and map shoreline access, region-wide.
- Zone to amplify development around working harbors (incent pier development if rezoned).
- Establish a regional strategy for towns to modify Chapter 91 regulations – create a site plan review process for Deep Blue – with a special group of subject matter experts (SMEs) to review projects.

ACTION 7 – ACCESS TO WATER AND INFRASTRUCTURE

GOAL: IMPROVE ACCESS TO WATER AND SUPPORT INFRASTRUCTURE NEEDS

- Provide more consistent and dependable access to water areas for the working, conservation and recreation communities.
- Provide incentives for private commercial waterfront owners to grant working water access.
- Create a program with Realtors and towns to educate waterfront homeowners on the value and character of working waterfronts
- Create a fund that could be used to purchase waterfront property for working use.
- Advocate for regulation reform regarding commercial waterfront usage.

ACTION 8 – MARKETING AND AWARENESS

GOAL: ESTABLISH A BLUE SCORE TO PROPERLY PROMOTE BLUE BUSINESSES AND ORGANIZATIONS

- Create a decision-making tool for business & government based on community consensus – for a desired definition of blue that creates balance and interconnectivity of the economy & the environment.
- Create a Blue Stamp marketing program that identifies a business or organization as part of a dark or medium blue sector.
- Establish and implement a standards-based approach to promoting blue business and activities.
- Support/catalyze the blue economy growth through the creation of a Blue Economy “Did You Know” marketing and awareness campaign through new assets. This campaign would serve to increase knowledge and opportunities in the Blue Economy (existing and emerging) to foster growth and innovation



Bert Talerman, Vice President, Cape Cod Five

“This is a unique economy in so many ways and with that come challenges and opportunities. The impact that the water and our beautiful natural surroundings have on our economy are indisputable. These precious assets present us with a world class destination and give us the possibility to be leaders in tourism, development techniques, water treatment, coastal management, and so much more. Having the opportunity to work with dedicated leaders, businesses, and organizations from the finance side of things gives us a unique view of how they are all interrelated. We must work together because it is all tied together and we all depend on each other.”

PROFILES IN BLUE

5.4 CHAMBER ROLE

Some of the actions identified were sorted out of the list above because of the direct ability of the Cape Cod Chamber, working with its partner organizations, to conduct the action or work. These actions are most associated with marketing and branding, organizing and advocacy. Today, directed by a 30-member board of directors elected by its 1,335 members, the strategic plan goals of growing and sustaining the region's economy is completed via committees, advisory boards and a full time professional staff of nine and part time staff of seven. The Chamber leverages grants with private funds from memberships and other revenue, has cash reserves, audited financials with no findings, and a strategic plan for the Cape's economy. It was the Chamber's strategic plan discussion about the ideal 21st century economy for region at which the concept of a Blue Economy was advanced.

The Chamber accomplishes its work with key strategic partners, some of which are co-located at the Chamber headquarters in Centerville, MA at 5 and 3 Patti Page Way, including The Cape Cod Economic Development Council, Inc. (CCEDC Inc.) and Coastal Community Capital. CCEDC Inc., was formed in 1997 with a mission to sustain, support and stimulate existing Cape & Island businesses, increase employment and attract desirable business to the Cape. It is funded, in part, from the Cape & Islands License Plate and grants. It is recognized by the Commonwealth of MA as a Regional Economic Development Organization, working closely with Mass. Office of Business Development. Furthermore, Coastal Community Capital, a division of Cape & Islands Community Development Inc., was created in 1995 to provide loan capital to Cape and Islanders who create businesses and jobs. This financial institution has successfully closed millions of dollars in socially responsible loans since its founding.

ORGANIZE

1. Investigate potential for a fundraising campaign to fund implementation of key elements of this plan.
2. Create a Blue Tier Membership at the Chamber and invest dues on related efforts.
3. Hold a Blue Economy Summit each year to report and measure progress across metrics and sectors.
4. Create a consortium in the blue science/tech sector to promote it.
5. Create an employer database (electronic) that identifies the universe of opportunities.

MARKETING/BRANDING

1. Design and implement a Blue brand focused on blue pride, blue assets and experiential travel.
2. Support/catalyze the existing marine/aquatic economy by building the Blue Economy into Chamber and other “over the bridge” branding efforts.
3. Work to encourage other government/NGOs to utilize the blue brand template.
4. Use resources we know are open to blue business and organizations and develop a campaign while also aligning with the State’s efforts.
5. Create a blue tourism campaign including elder hostels, symposia and hands on experiences.
6. Attract and promote water sports tournaments and events.

ADVOCACY

1. Advocate for a methodology and identify infrastructure needs with the prioritization based on greatest need/feasibility.
2. Combine advocacy efforts with other topics (e.g. last mile, transportation, housing, etc.).
3. Identify legislation and regulation modifications that will encourage Blue Economy.

5.5 ORGANIZATIONAL LEADERSHIP

The Cape Cod Chamber realizes that in order to properly implement the proposed actions, one organization needs to be at the helm, keeping the implementation on track, identifying and supporting the development of necessary resources and evaluating the success of each action against an overall metric system. The Chamber has developed the outline of the role this “At the Helm” organization, very likely the Chamber itself, will need to provide. This outline can be found after the other two described sections.

We analyzed what kind of human power would be required for ongoing execution of the project. The results are presented here. (See Figs. 6 & 7)

Fig. 6: Executive Director tasks for ongoing execution of the Project

BLUE ECONOMY EXECUTIVE DIRECTOR	
1. Blue Economy Portfolio Management	20% FTE*
<ul style="list-style-type: none"> • Overall Program Management • Benchmarking of Established Progress Metrics — Quarterly reporting with weekly updates • Establishment and maintenance of a 	<p>project dashboard (approximately 3-5 active projects)</p> <ul style="list-style-type: none"> • Pipeline development of 10–20 prospective BE projects
2. Blue Economy Ombudsman	20% FTE*
<ul style="list-style-type: none"> • Coordinate projects/initiatives. Many projects sitting on the state desk, need to expedite process, enhance lines of communication — Identify and smooth over “potholes” in BE projects and champion projects through a process • Provide facilitation support for non-Chamber BE projects 	<ul style="list-style-type: none"> • Understand regulatory and permitting process • Bring knowledge of landscape of state/federal regulations • Work as an “unsticker” of projects or low hanging fruit that could lead to progress.
3. Outreach	20% FTE*
<ul style="list-style-type: none"> • Building relationships • Influencers • Business development 	
4. Advocacy	10% FTE*
<ul style="list-style-type: none"> • To affect retention, expansion, growth and relocation of blue-themed businesses, non-profits and enterprises to Cape region 	
5. Funding Development	15% FTE*
<ul style="list-style-type: none"> • Develop a diverse funding pool for initiative including state and federal grants, members, private grants and pay-to-play programs. 	<ul style="list-style-type: none"> • Build Blue Business Tier of membership at Chamber. Actively recruit and manage. • Coordinate grant and other private and public proposals
6. Manage Outsourced Providers	15% FTE*
<ul style="list-style-type: none"> • To ensure proper execution of outsourced services and goals 	*FTE = Full Time Equivalent

Fig. 6: Contractor tasks for ongoing execution of the Project

BLUE ECONOMY SPECIALTY CONTRACTING	
1. Marketing and Branding Strategy	\$30,000/yr or 30% FTE*
<ul style="list-style-type: none"> • Create a consistent outreach and awareness branding campaign • Create a “Did You Know?” campaign about the Blue Economy (actual examples of it at work or growing) • Make Cape Cod region known as the epicenter for marine science and technology 	<ul style="list-style-type: none"> • Focus on business retention, attraction, growth and community engagement • Develop website content and sponsored content • Create and maintain an internet-based blue service database and promote widely
2. Employer Database Clearing House (electronic)	\$15,000/yr or 15% FTE*
<ul style="list-style-type: none"> • Identify employers in Blue Economy) • Electronic site with link to each employer or job site that identifies the universe of opportunities. 	<ul style="list-style-type: none"> • Track jobs filled and not filled • Track wage expansion
3. Metrics / Measurement	\$30,000/yr or 30% FTE*
<ul style="list-style-type: none"> • Identify employers in Blue Economy) • Electronic site with link to each employer or job site that identifies the universe of opportunities. 	<ul style="list-style-type: none"> • Track jobs filled and not filled • Track wage expansion
Total	\$75,000/yr or 75% FTE*
*FTE = Full Time Equivalent	



6. CONCLUSIONS & NEXT STEPS

The Cape Cod Blue Economy is on the rise. The recent trends in the sectors make our jobs at implementation easier and the potential for growth and future success is high. However, from our work, it is clear that though this economy is already hard at work, identifying what it is has never happened. As a result, the latent power of the Blue Economy is large and will only be successful at linking a healthy environment with a healthy economy by making it known explicitly to the general public, partner organizations and current and future contributors.

To date, the water economy or Blue Economy has benefitted from the focus on tourism activities and the support needed for this sector of the economy. While this has been a key factor in Blue Economy growth to date, the future potential of the underappreciated, underutilized blue portion of the Blue Economy is great. The region is over-dependent on tourism which is experiencing a rapidly-changing business model. With this new focus on blue paired with the targeted actions and proposed resources from the Implementation Plan, the Cape region can realize a more productive, more technologically advanced, more prepared, more sustainable and more prosperous future.

As a tool for implementation and collaboration the Cape Cod Chamber of Commerce has established the Cape Cod Blue Economy Foundation to develop resources and funding to ensure a sustainable focus on action.

To realize this Culture of Blue, we need to commit to the vision, adhere to the themes, collaboratively find resources and implement the actions, ensure there is one organization at the helm, collect information and measure progress regularly, as well as periodically celebrate the region's connection to water.

Find yourself, your organization or your business in our Action Plan. Get involved and benefit from the outcomes. Blue is here.



APPENDICES

[Appendix A: Gross Regional Product Composition by County](#)

[Plymouth, Barnstable, Dukes, Nantucket](#)

[Appendix B: Cape Cod Blue Economy Project Advisory Panel & Collaborators](#)

[Appendix C: Socioeconomic Data and Demographics Analysis](#)

[Appendix D: Blue Economy Initiatives Worldwide](#)

Appendices to follow

Endnotes

ⁱ UMass Dartmouth Public Policy Center. *Navigating the Global Economy: A Comprehensive Analysis of the Massachusetts Maritime Economy*.

ⁱⁱ See Report Appendix Section X, EMSI Occupational Data

ⁱⁱⁱ U.S. Census County Business Patterns 2003–2014

^{iv} See Report Appendix Section X, EMSI Occupational Data

^v UMass Dartmouth Public Policy Center. *Navigating the Global Economy: A Comprehensive Analysis of the Massachusetts Maritime Economy*.

^{vi} See Report Appendix Section IV for detailed information on NAICS codes and Section II for Defining Blue and Data Processing.

^{vii} See Report Appendix Section I for detailed information on data sources.

^{viii} See Report Appendix Section VII for County breakdowns and all aggregate numbers.

^{ix} See Report Appendix Section VII, Aggregated by Town

^x See Report Appendix Section X, EMSI Occupational Data

^{xi} See Report Appendix Section IX, EMSI Location Quotient Data

^{xii} See Report Appendix Section 1, Data Gaps and Future Needs

^{xiii} Commonwealth of Massachusetts Bureau of Statistics of Labor, 1897. *Twenty-Seventh Annual Report of the Bureau of Statistics of Labor*. Boston, MA: Wright & Potter

^{xiv} Commonwealth of Massachusetts Department of Labor and Industries, 1922. *Population and Resources of Cape Cod*. Boston, MA: Wright & Potter

APPENDIX A

GROSS REGIONAL PRODUCT COMPOSITION BY COUNTY:

PLYMOUTH
BARNSTABLE
DUKES
NANTUCKET

EMSI data provided by the Cape & Islands Workforce Development Board



Economy Overview

Plymouth County, MA

Emsi Q3 2017 Data Set

September 2017

Cape and Islands Workforce Development Board



426 North St. Ste. 9
Hyannis, Massachusetts 2601
508.775.5900

Parameters

Regions

Code	Description
25023	Plymouth County, MA

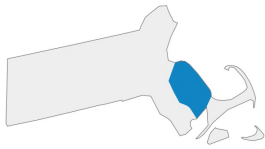
Timeframe

2001 - 2016

Datarun

2017.3 – QCEW Employees, Self-Employed, and Extended Proprietors

Economy Overview





















Population (2016)	513.6K
Jobs (2016)	258.7K
Average Earnings (2016)	\$52.3K
Unemployed (1/2017)	7.8K
Completions (2016)	4.1K
GRP (2016)	\$22.0B
Exports (2016)	\$23.7B
Imports (2016)	\$34.5B

Population

513.6K
2016 Population
7.5% of State

3.1%
Population Growth for the Last 5 Years
State Growth 3.0%

Age Group	2016 Population	% of Population	
Under 5 years	27,130	5.3%	
5 to 9 years	30,002	5.8%	
10 to 14 years	33,578	6.5%	
15 to 19 years	34,664	6.7%	
20 to 24 years	31,765	6.2%	
25 to 29 years	26,921	5.2%	
30 to 34 years	27,484	5.4%	
35 to 39 years	28,965	5.6%	
40 to 44 years	30,212	5.9%	
45 to 49 years	38,189	7.4%	
50 to 54 years	40,925	8.0%	
55 to 59 years	39,959	7.8%	
60 to 64 years	34,965	6.8%	
65 to 69 years	30,814	6.0%	
70 to 74 years	22,189	4.3%	
75 to 79 years	14,475	2.8%	
80 to 84 years	10,090	2.0%	
85 years and over	11,230	2.2%	

Jobs by Industry

258,716
Total Jobs (2016)

50.8%
Male
(National: 52.7%)

49.2%
Female
(National: 47.3%)

NAICS	Industry	2016 Jobs
11	Crop and Animal Production	1,944
21	Mining, Quarrying, and Oil and Gas Extraction	363
22	Utilities	1,402
23	Construction	20,459
31	Manufacturing	11,947
42	Wholesale Trade	8,195
44	Retail Trade	31,891
48	Transportation and Warehousing	6,882
51	Information	2,577
52	Finance and Insurance	14,720
53	Real Estate and Rental and Leasing	12,907
54	Professional, Scientific, and Technical Services	16,638
55	Management of Companies and Enterprises	4,155
56	Administrative and Support and Waste Management and Remediation Services	12,067
61	Educational Services	4,091
62	Health Care and Social Assistance	36,366
71	Arts, Entertainment, and Recreation	7,929
72	Accommodation and Food Services	20,725
81	Other Services (except Public Administration)	13,866
90	Government	29,593
99	Unclassified Industry	0

Average Earnings by Industry

\$52.3K


















Avg. Earnings (2016)

92% of Nation Avg.






NAICS	Industry	Avg. Earnings (2016)
11	Crop and Animal Production	\$36,705
21	Mining, Quarrying, and Oil and Gas Extraction	\$75,869
22	Utilities	\$152,603
23	Construction	\$60,259
31	Manufacturing	\$71,859
42	Wholesale Trade	\$89,040
44	Retail Trade	\$35,176
48	Transportation and Warehousing	\$38,204
51	Information	\$69,116
52	Finance and Insurance	\$60,302
53	Real Estate and Rental and Leasing	\$24,932
54	Professional, Scientific, and Technical Services	\$60,169
55	Management of Companies and Enterprises	\$107,485
56	Administrative and Support and Waste Management and Remediation Services	\$43,881
61	Educational Services	\$24,717
62	Health Care and Social Assistance	\$52,273
71	Arts, Entertainment, and Recreation	\$23,165
72	Accommodation and Food Services	\$22,637
81	Other Services (except Public Administration)	\$28,259
90	Government	\$88,258
99	Unclassified Industry	\$0

Unemployment by Industry

7,811
Total Unemployment (1/2017)

NAICS	Industry	Unemployed (1/2017)	% of Regional Unemployment
11	Crop and Animal Production	67	1% 
21	Mining, Quarrying, and Oil and Gas Extraction	19	0%
22	Utilities	43	1% 
23	Construction	1,676	21% 
31	Manufacturing	339	4% 
42	Wholesale Trade	173	2% 
44	Retail Trade	858	11% 
48	Transportation and Warehousing	169	2% 
51	Information	37	0%
52	Finance and Insurance	142	2% 
53	Real Estate and Rental and Leasing	74	1% 
54	Professional, Scientific, and Technical Services	240	3% 
55	Management of Companies and Enterprises	25	0%
56	Administrative and Support and Waste Management and Remediation Services	617	8% 
61	Educational Services	34	0%
62	Health Care and Social Assistance	452	6% 
71	Arts, Entertainment, and Recreation	373	5% 
72	Accommodation and Food Services	1,081	14% 
81	Other Services (except Public Administration)	346	4% 
90	Government	444	6% 
99	No Previous Work Experience/Unspecified	600	8% 

Top Program Completions

CIP	Program	Completions (2016)	
13	Education	755	
52	Business, management, marketing, and related support services	548	
51	Health professions and related programs	505	
43	Homeland security, law enforcement, firefighting and related protective services	362	
42	Psychology	283	
44	Public administration and social service professions	181	
24	Liberal arts and sciences, general studies and humanities	177	
45	Social sciences	166	
09	Communication, journalism, and related programs	155	
23	English language and literature/letters	138	

Gross Regional Product (GRP)

\$14.0B Earnings (2016)	\$6.6B Property Income (2016)	\$1.4B Taxes on Production (2016)	\$22.0B Total GRP (2016)
----------------------------	----------------------------------	--------------------------------------	-----------------------------

NAICS	Industry	GRP (2016)	% of Total
11	Crop and Animal Production	\$83,822,099.10	0%
21	Mining, Quarrying, and Oil and Gas Extraction	\$58,748,045.28	0%
22	Utilities	\$692,140,091.35	3%
23	Construction	\$1,710,640,957.66	8%
31	Manufacturing	\$1,340,481,119.07	6%
42	Wholesale Trade	\$1,524,404,035.87	7%
44	Retail Trade	\$1,581,006,952.70	7%
48	Transportation and Warehousing	\$395,144,577.56	2%
51	Information	\$428,072,647.36	2%
52	Finance and Insurance	\$1,488,610,220.79	7%
53	Real Estate and Rental and Leasing	\$633,186,016.25	3%
54	Professional, Scientific, and Technical Services	\$1,184,749,471.11	5%
55	Management of Companies and Enterprises	\$514,128,287.34	2%
56	Administrative and Support and Waste Management and Remediation Services	\$706,383,525.24	3%
61	Educational Services	\$154,315,603.15	1%
62	Health Care and Social Assistance	\$2,042,906,896.56	9%
71	Arts, Entertainment, and Recreation	\$238,957,189.66	1%
72	Accommodation and Food Services	\$610,374,361.15	3%
81	Other Services (except Public Administration)	\$464,157,203.57	2%
90	Government	\$2,998,178,436.82	14%
	Other Non-Industries	\$3,104,802,689.97	14%

Region Exports

\$23.7B

Exports (2016)
60% of Supply

NAICS	Industry	Exports (2016)
11	Crop and Animal Production	\$100,991,253
21	Mining, Quarrying, and Oil and Gas Extraction	\$17,402,088
22	Utilities	\$467,232,971
23	Construction	\$1,661,153,709
31	Manufacturing	\$2,643,194,970
42	Wholesale Trade	\$1,237,727,920
44	Retail Trade	\$1,649,226,638
48	Transportation and Warehousing	\$403,676,977
51	Information	\$426,381,756
52	Finance and Insurance	\$1,265,150,978
53	Real Estate and Rental and Leasing	\$890,923,212
54	Professional, Scientific, and Technical Services	\$763,815,851
55	Management of Companies and Enterprises	\$754,423,801
56	Administrative and Support and Waste Management and Remediation Services	\$763,290,174
61	Educational Services	\$38,025,352
62	Health Care and Social Assistance	\$1,317,444,178
71	Arts, Entertainment, and Recreation	\$174,635,342
72	Accommodation and Food Services	\$892,105,023
81	Other Services (except Public Administration)	\$253,883,472
90	Government	\$8,009,624,550

Region Imports

\$34.5B

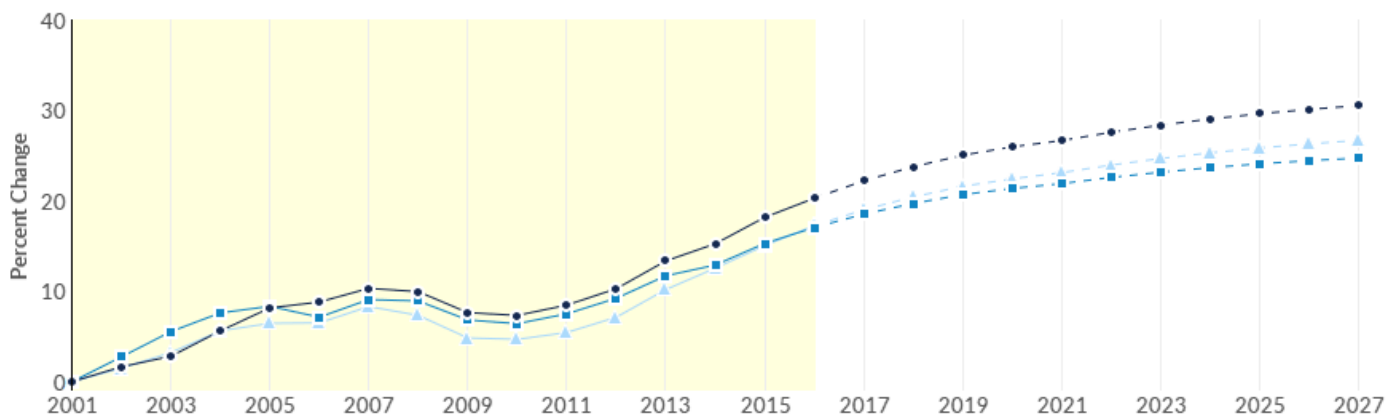
Imports (2016)
67% of Demand

\$17.0B

Locally Produced & Consumed (2016)
33% of Demand

NAICS	Industry	Imports (2016)
11	Crop and Animal Production	\$177,311,930
21	Mining, Quarrying, and Oil and Gas Extraction	\$203,349,928
22	Utilities	\$114,251,699
23	Construction	\$513,291,459
31	Manufacturing	\$5,834,738,570
42	Wholesale Trade	\$1,116,760,457
44	Retail Trade	\$2,184,495,064
48	Transportation and Warehousing	\$867,866,763
51	Information	\$1,651,436,496
52	Finance and Insurance	\$2,333,000,622
53	Real Estate and Rental and Leasing	\$1,424,515,133
54	Professional, Scientific, and Technical Services	\$1,198,325,924
55	Management of Companies and Enterprises	\$489,555,751
56	Administrative and Support and Waste Management and Remediation Services	\$640,656,131
61	Educational Services	\$455,539,167
62	Health Care and Social Assistance	\$2,486,420,433
71	Arts, Entertainment, and Recreation	\$296,356,241
72	Accommodation and Food Services	\$1,488,150,655
81	Other Services (except Public Administration)	\$532,407,883
90	Government	\$10,472,706,287

Regional Trends









Region	2001 Jobs	2016 Jobs	Change	% Change
● Region	215,060	258,716	43,656	20.3%
■ Town of Barnstable	37,550	43,958	6,408	17.1%
▲ Cape & Islands WIB	147,457	172,923	25,466	17.3%

Growing & Declining Occupations








Occupation	Change in Jobs (2001-2016)
Real Estate Sales Agents	2,695
Personal Care Aides	2,289
Personal Financial Advisors	1,755
Postal Service Mail Sorters, Processors, and Processing Machine Operators	-324
Childcare Workers	-371
Postal Service Mail Carriers	-803

Growing & Declining Industries

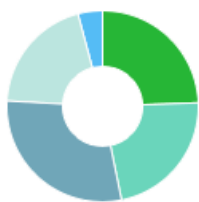
Industry	Change in Jobs (2001-2016)	
Services for the Elderly and Persons with Disabilities	3,391	
Full-Service Restaurants	2,730	
Portfolio Management	2,083	
Department Stores (except Discount Department Stores)	-1,125	
Corporate, Subsidiary, and Regional Managing Offices	-1,472	
US Postal Service	-1,645	

2016 Educational Attainment



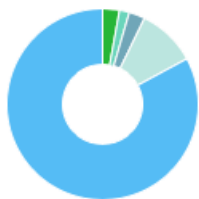
Education Level	2016 Population	2016 Percent	
Less Than 9th Grade	9,761	2.7%	
9th Grade to 12th Grade	17,782	5.0%	
High School Diploma	103,757	29.1%	
Some College	68,548	19.2%	
Associate's Degree	34,735	9.7%	
Bachelor's Degree	78,215	21.9%	
Graduate Degree and Higher	43,621	12.2%	

2016 Age Cohort Demographics



Age Cohort	2016 Population	2016 Percent
Under 20 years	125,373	24.4%
20 to 39 years	115,135	22.4%
40 to 59 years	149,285	29.1%
60 to 79 years	102,443	19.9%
80 years and over	21,320	4.2%

2016 Race/Ethnicity Demographics



Race/Ethnicity	2016 Population	2016 Percent
All Other Race/ethnicities	14,586	2.8%
Two or More Races, Non-Hispanic	8,550	1.7%
White, Hispanic	13,923	2.7%
Black, Non-Hispanic	50,835	9.9%
White, Non-Hispanic	425,663	82.9%

Top Regional Businesses

Business Name	Business Size
Good Samaritan Med Ctr	Large (250+)
Signature Health Care Brockton	Large (250+)
Massasoit Community College	Large (250+)
Nisource Inc	Large (250+)
Talbots Inc	Large (250+)

Source: Infogroup Business-Level Data

DISCLAIMER: Business Data by Infogroup is third-party data provided by Emsi to its customers as a convenience, and Emsi does not endorse or warrant its accuracy or consistency with other published Emsi data.

Business Name	Business Size
Good Samaritan Med Ctr	Large (250+)
Signature Health Care Brockton	Large (250+)
Massasoit Community College	Large (250+)
Nisource Inc	Large (250+)
Talbots Inc	Large (250+)

Source: Infogroup Business-Level Data

DISCLAIMER: Business Data by Infogroup is third-party data provided by Emsi to its customers as a convenience, and Emsi does not endorse or warrant its accuracy or consistency with other published Emsi data.

Appendix A - Data Sources and Calculations

Input-Output Data

The input-output model in this report is Emsi's gravitational flows multi-regional social account matrix model (MR-SAM). It is based on data from the Census Bureau's Current Population Survey and American Community Survey; as well as the Bureau of Economic Analysis' National Income and Product Accounts, Input-Output Make and Use Tables, and Gross State Product data. In addition, several Emsi in-house data sets are used, as well as data from Oak Ridge National Labs on the cost of transportation between counties.

Completers Data

The completers data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

Demographic Data

The demographic data in this report is compiled from several sources using a specialized process. Sources include annual population estimates and population projections from the US Census Bureau, birth and mortality rates from the US Health Department, and projected regional job growth.

Industry Data

Emsi industry data have various sources depending on the class of worker. (1) For QCEW Employees, Emsi primarily uses the QCEW (Quarterly Census of Employment and Wages), with supplemental estimates from County Business Patterns. (2) Non-QCEW employees data are based on a number of sources including QCEW, Current Employment Statistics, County Business Patterns, BEA State and Local Personal Income reports, the National Industry-Occupation Employment Matrix (NIOEM), the American Community Survey, and Railroad Retirement Board statistics. (3) Self-Employed and Extended Proprietor classes of worker data are primarily based on the American Community Survey, Nonemployer Statistics, and BEA State and Local Personal Income Reports. Projections for QCEW and Non-QCEW Employees are informed by NIOEM and long-term industry projections published by individual states.

Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

Unemployment Data

The unemployment data in this report comes from the Bureau of Labor Statistics' Local Area Unemployment Statistics and is updated every two months.

Occupation Data

Emsi occupation employment data are based on final Emsi industry data and final Emsi staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates also affected by county-level Emsi earnings by industry.

Educational Attainment Data

Emsi's educational attainment numbers are based on Emsi's demographic data and the American Community Survey. By combining these sources, Emsi interpolates for missing years and projects data at the county level. Educational attainment data cover only the population aged 25 years or more and indicate the highest level achieved.

Infogroup Business-Level Data

Economy Overview

Barnstable County, MA

Emsi Q3 2017 Data Set

September 2017

Cape and Islands Workforce Development Board



426 North St. Ste. 9
Hyannis, Massachusetts 2601
508.775.5900

Parameters

Regions

Code	Description
25001	Barnstable County, MA

Timeframe

2001 - 2016

Datarun

2017.3 – QCEW Employees, Self-Employed, and Extended Proprietors

Economy Overview



Population (2016)	214.3K
Jobs (2016)	144.6K
Average Earnings (2016)	\$46.7K
Unemployed (1/2017)	4.4K
Completions (2016)	1.2K
GRP (2016)	\$10.6B
Exports (2016)	\$12.6B
Imports (2016)	\$15.9B

Population

214.3K
2016 Population
3.1% of State

-0.5%
Population Growth for the Last 5 Years
State Growth 3.0%






















Age Group	2016 Population	% of Population
Under 5 years	7,780	3.6%
5 to 9 years	8,903	4.2%
10 to 14 years	9,862	4.6%
15 to 19 years	10,566	4.9%
20 to 24 years	11,340	5.3%
25 to 29 years	9,501	4.4%
30 to 34 years	9,454	4.4%
35 to 39 years	9,365	4.4%
40 to 44 years	9,111	4.3%
45 to 49 years	12,598	5.9%
50 to 54 years	15,747	7.3%
55 to 59 years	18,482	8.6%
60 to 64 years	18,946	8.8%
65 to 69 years	19,987	9.3%
70 to 74 years	15,296	7.1%
75 to 79 years	10,767	5.0%
80 to 84 years	7,862	3.7%
85 years and over	8,701	4.1%

Jobs by Industry

144,573
Total Jobs (2016)

51.5%
Male
(National: 52.7%)

48.5%
Female
(National: 47.3%)






















NAICS	Industry	2016 Jobs
11	Crop and Animal Production	1,666 
21	Mining, Quarrying, and Oil and Gas Extraction	185 
22	Utilities	374 
23	Construction	12,691 
31	Manufacturing	3,072 
42	Wholesale Trade	2,430 
44	Retail Trade	18,450 
48	Transportation and Warehousing	2,739 
51	Information	1,918 
52	Finance and Insurance	6,110 
53	Real Estate and Rental and Leasing	10,139 
54	Professional, Scientific, and Technical Services	9,917 
55	Management of Companies and Enterprises	324 
56	Administrative and Support and Waste Management and Remediation Services	8,169 
61	Educational Services	2,424 
62	Health Care and Social Assistance	19,124 
71	Arts, Entertainment, and Recreation	5,699 
72	Accommodation and Food Services	17,269 
81	Other Services (except Public Administration)	7,202 
90	Government	14,668 
99	Unclassified Industry	0 

Average Earnings by Industry

\$46.7K

Avg. Earnings (2016)


















82% of Nation Avg.

NAICS	Industry	Avg. Earnings (2016)	
11	Crop and Animal Production	\$37,372	
21	Mining, Quarrying, and Oil and Gas Extraction	\$86,097	
22	Utilities	\$126,854	
23	Construction	\$46,104	
31	Manufacturing	\$65,839	
42	Wholesale Trade	\$57,662	
44	Retail Trade	\$35,467	
48	Transportation and Warehousing	\$43,066	
51	Information	\$53,289	
52	Finance and Insurance	\$73,553	
53	Real Estate and Rental and Leasing	\$21,044	
54	Professional, Scientific, and Technical Services	\$53,095	
55	Management of Companies and Enterprises	\$68,141	
56	Administrative and Support and Waste Management and Remediation Services	\$33,008	
61	Educational Services	\$23,157	
62	Health Care and Social Assistance	\$60,521	
71	Arts, Entertainment, and Recreation	\$28,153	
72	Accommodation and Food Services	\$29,979	
81	Other Services (except Public Administration)	\$29,460	
90	Government	\$84,235	
99	Unclassified Industry	\$0	



Unemployment by Industry

4,445

Total Unemployment (1/2017)






















NAICS	Industry	Unemployed (1/2017)	% of Regional Unemployment
11	Crop and Animal Production	35	1% 
21	Mining, Quarrying, and Oil and Gas Extraction	16	0%
22	Utilities	11	0%
23	Construction	829	19% 
31	Manufacturing	75	2% 
42	Wholesale Trade	42	1% 
44	Retail Trade	510	11% 
48	Transportation and Warehousing	83	2% 
51	Information	32	1% 
52	Finance and Insurance	48	1% 
53	Real Estate and Rental and Leasing	60	1% 
54	Professional, Scientific, and Technical Services	136	3% 
55	Management of Companies and Enterprises	2	0%
56	Administrative and Support and Waste Management and Remediation Services	331	7% 
61	Educational Services	20	0%
62	Health Care and Social Assistance	240	5% 
71	Arts, Entertainment, and Recreation	264	6% 
72	Accommodation and Food Services	943	21% 
81	Other Services (except Public Administration)	159	4% 
90	Government	237	5% 
99	No Previous Work Experience/Unspecified	371	8% 

Top Program Completions

CIP	Program	Completions (2016)	
52	Business, management, marketing, and related support services	278	
51	Health professions and related programs	234	
14	Engineering	148	
24	Liberal arts and sciences, general studies and humanities	147	
43	Homeland security, law enforcement, firefighting and related protective services	84	
49	Transportation and materials moving	60	
15	Engineering technologies and engineering-related fields	36	
03	Natural resources and conservation	33	
44	Public administration and social service professions	31	
42	Psychology	26	

Gross Regional Product (GRP)

\$6,916.2M Earnings (2016)	\$3,110.8M Property Income (2016)	\$614.1M Taxes on Production (2016)	\$10,641.1M Total GRP (2016)
-------------------------------	--------------------------------------	--	---------------------------------

NAICS	Industry	GRP (2016)	% of Total
11	Crop and Animal Production	\$96,844,946.75	1% 
21	Mining, Quarrying, and Oil and Gas Extraction	\$32,306,145.49	0% 
22	Utilities	\$144,220,072.91	1% 
23	Construction	\$805,354,542.36	8% 
31	Manufacturing	\$358,168,417.48	3% 
42	Wholesale Trade	\$290,070,008.48	3% 
44	Retail Trade	\$914,063,864.70	9% 
48	Transportation and Warehousing	\$184,800,046.43	2% 
51	Information	\$228,708,862.77	2% 
52	Finance and Insurance	\$780,594,103.36	7% 
53	Real Estate and Rental and Leasing	\$381,173,892.78	4% 
54	Professional, Scientific, and Technical Services	\$611,069,046.16	6% 
55	Management of Companies and Enterprises	\$25,418,806.83	0% 
56	Administrative and Support and Waste Management and Remediation Services	\$354,900,752.13	3% 
61	Educational Services	\$73,660,789.82	1% 
62	Health Care and Social Assistance	\$1,237,459,513.75	12% 
71	Arts, Entertainment, and Recreation	\$205,691,701.81	2% 
72	Accommodation and Food Services	\$729,719,276.82	7% 
81	Other Services (except Public Administration)	\$252,860,365.21	2% 
90	Government	\$1,508,221,177.37	14% 
	Other Non-Industries	\$1,425,764,499.35	13% 

Region Exports

\$12.6B

Exports (2016)
64% of Supply

NAICS	Industry	Exports (2016)	
11	Crop and Animal Production	\$141,731,827	■
21	Mining, Quarrying, and Oil and Gas Extraction	\$17,858,796	
22	Utilities	\$39,072,086	
23	Construction	\$792,790,000	■
31	Manufacturing	\$559,944,791	■
42	Wholesale Trade	\$190,310,041	■
44	Retail Trade	\$1,112,726,869	■
48	Transportation and Warehousing	\$244,278,354	■
51	Information	\$247,499,845	■
52	Finance and Insurance	\$936,875,017	■
53	Real Estate and Rental and Leasing	\$582,533,700	■
54	Professional, Scientific, and Technical Services	\$511,507,034	■
55	Management of Companies and Enterprises	\$37,335,331	
56	Administrative and Support and Waste Management and Remediation Services	\$362,375,925	■
61	Educational Services	\$26,399,199	
62	Health Care and Social Assistance	\$989,920,794	■
71	Arts, Entertainment, and Recreation	\$246,723,037	■
72	Accommodation and Food Services	\$1,197,201,897	■
81	Other Services (except Public Administration)	\$150,128,041	■
90	Government	\$4,229,100,157	■

Region Imports

\$15.9B

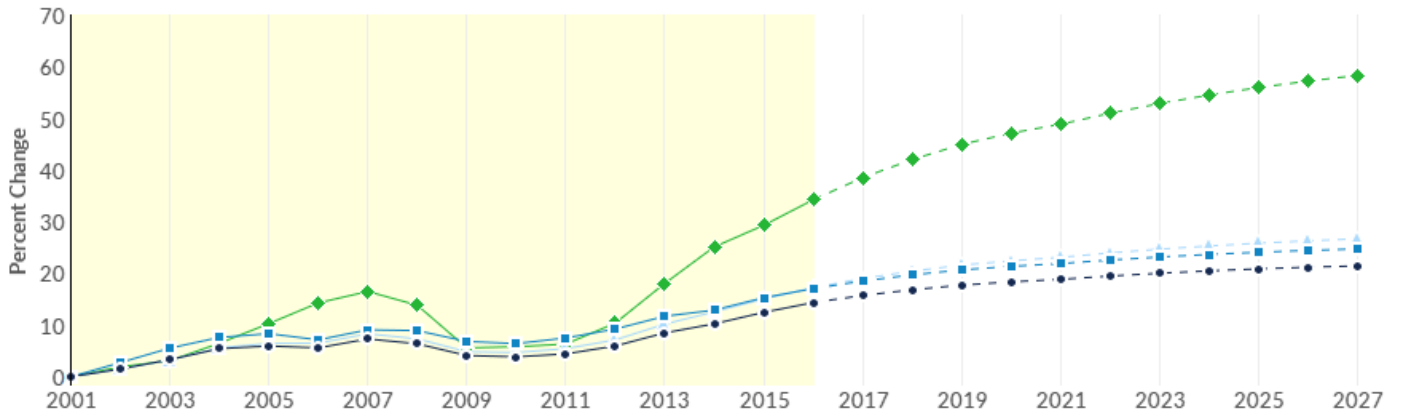
Imports (2016)
68% of Demand

\$7.5B

Locally Produced & Consumed (2016)
32% of Demand

NAICS	Industry	Imports (2016)
11	Crop and Animal Production	\$78,652,041
21	Mining, Quarrying, and Oil and Gas Extraction	\$95,694,573
22	Utilities	\$110,423,001
23	Construction	\$389,711,331
31	Manufacturing	\$2,687,726,755
42	Wholesale Trade	\$646,613,231
44	Retail Trade	\$856,407,511
48	Transportation and Warehousing	\$402,606,013
51	Information	\$731,015,387
52	Finance and Insurance	\$1,260,223,582
53	Real Estate and Rental and Leasing	\$729,196,877
54	Professional, Scientific, and Technical Services	\$645,722,229
55	Management of Companies and Enterprises	\$310,813,230
56	Administrative and Support and Waste Management and Remediation Services	\$332,649,015
61	Educational Services	\$173,122,927
62	Health Care and Social Assistance	\$683,424,874
71	Arts, Entertainment, and Recreation	\$94,004,825
72	Accommodation and Food Services	\$521,246,932
81	Other Services (except Public Administration)	\$157,987,480
90	Government	\$4,959,446,460

Regional Trends









Region	2001 Jobs	2016 Jobs	Change	% Change
● Region	126,408	144,573	18,165	14.4%
■ Town of Barnstable	37,550	43,958	6,408	17.1%
▲ Cape & Islands WIB	147,457	172,923	25,466	17.3%
◆ Nantucket County, MA	8,707	11,690	2,983	34.3%

Growing & Declining Occupations








Occupation	Change in Jobs (2001-2016)
Real Estate Sales Agents	1,776
Landscaping and Groundskeeping Workers	1,022
Managers, All Other	912
First-Line Supervisors of Construction Trades and Extraction Workers	-282
Construction Managers	-291
Retail Salespersons	-325

Growing & Declining Industries

Industry	Change in Jobs (2001-2016)	
Full-Service Restaurants	1,522	
General Medical and Surgical Hospitals	1,266	
Landscaping Services	1,158	
New Single-Family Housing Construction (except For-Sale Builders)	-544	
Gift, Novelty, and Souvenir Stores	-633	
Corporate, Subsidiary, and Regional Managing Offices	-709	

2016 Educational Attainment



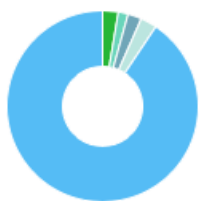
Education Level	2016 Population	2016 Percent	
Less Than 9th Grade	2,399	1.4%	
9th Grade to 12th Grade	5,946	3.6%	
High School Diploma	40,403	24.4%	
Some College	34,034	20.5%	
Associate's Degree	15,205	9.2%	
Bachelor's Degree	40,029	24.1%	
Graduate Degree and Higher	27,800	16.8%	

2016 Age Cohort Demographics



Age Cohort	2016 Population	2016 Percent
Under 20 years	37,111	17.3%
20 to 39 years	39,660	18.5%
40 to 59 years	55,938	26.1%
60 to 79 years	64,996	30.3%
80 years and over	16,563	7.7%

2016 Race/Ethnicity Demographics



Race/Ethnicity	2016 Population	2016 Percent
All Other Race/ethnicities	5,656	2.6%
Two or More Races, Non-Hispanic	3,561	1.7%
White, Hispanic	4,967	2.3%
Black, Non-Hispanic	5,933	2.8%
White, Non-Hispanic	194,151	90.6%

Top Regional Businesses

Business Name	Business Size
Jml Care Ctr	Large (250+)
Cape Cod Hospital	Large (250+)
Woods Hole Oceanographic Instn	Large (250+)
Steamship Authority	Large (250+)
Woods Hole Oceanographic Instn	Large (250+)

Source: Infogroup Business-Level Data

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Appendix A - Data Sources and Calculations

Input-Output Data

The input-output model in this report is Emsi's gravitational flows multi-regional social account matrix model (MR-SAM). It is based on data from the Census Bureau's Current Population Survey and American Community Survey; as well as the Bureau of Economic Analysis' National Income and Product Accounts, Input-Output Make and Use Tables, and Gross State Product data. In addition, several Emsi in-house data sets are used, as well as data from Oak Ridge National Labs on the cost of transportation between counties.

Completers Data

The completers data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

Demographic Data

The demographic data in this report is compiled from several sources using a specialized process. Sources include annual population estimates and population projections from the US Census Bureau, birth and mortality rates from the US Health Department, and projected regional job growth.

Industry Data

Emsi industry data have various sources depending on the class of worker. (1) For QCEW Employees, Emsi primarily uses the QCEW (Quarterly Census of Employment and Wages), with supplemental estimates from County Business Patterns. (2) Non-QCEW employees data are based on a number of sources including QCEW, Current Employment Statistics, County Business Patterns, BEA State and Local Personal Income reports, the National Industry-Occupation Employment Matrix (NIOEM), the American Community Survey, and Railroad Retirement Board statistics. (3) Self-Employed and Extended Proprietor classes of worker data are primarily based on the American Community Survey, Nonemployer Statistics, and BEA State and Local Personal Income Reports. Projections for QCEW and Non-QCEW Employees are informed by NIOEM and long-term industry projections published by individual states.

Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

Unemployment Data

The unemployment data in this report comes from the Bureau of Labor Statistics' Local Area Unemployment Statistics and is updated every two months.

Occupation Data

Emsi occupation employment data are based on final Emsi industry data and final Emsi staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates also affected by county-level Emsi earnings by industry.

Educational Attainment Data

Emsi's educational attainment numbers are based on Emsi's demographic data and the American Community Survey. By combining these sources, Emsi interpolates for missing years and projects data at the county level. Educational attainment data cover only the population aged 25 years or more and indicate the highest level achieved.

Infogroup Business-Level Data

Data for individual businesses is provided by Infogroup, which maintains a database of more than 16 million U.S. business entities. Note that in aggregate it will not be consistent with Emsi labor market data due to differences in definitions, methodology, coverage, and industry/geographic classification.

State Data Sources

This report uses state data from the following agencies: Massachusetts Executive Office of Labor and Workforce Development

Data for individual businesses is provided by Infogroup, which maintains a database of more than 16 million U.S. business entities. Note that in aggregate it will not be consistent with Emsi labor market data due to differences in definitions, methodology, coverage, and industry/geographic classification.

State Data Sources

This report uses state data from the following agencies: Massachusetts Executive Office of Labor and Workforce Development

Economy Overview

Dukes County, MA

Emsi Q3 2017 Data Set

September 2017

Cape and Islands Workforce Development Board



426 North St. Ste. 9
Hyannis, Massachusetts 2601
508.775.5900

Parameters

Regions

Code	Description
25007	Dukes County, MA

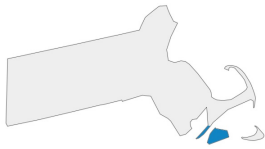
Timeframe

2001 - 2016

Datarun

2017.3 – QCEW Employees, Self-Employed, and Extended Proprietors

Economy Overview



Population (2016)	17,245
Jobs (2016)	16,660
Average Earnings (2016)	\$44.2K
Unemployed (1/2017)	423
Completions (2016)	0
GRP (2016)	\$1.1B
Exports (2016)	\$1.3B
Imports (2016)	\$1.8B



















Population

17.2K

2016 Population
0.3% of State

3.4%

Population Growth for the Last 5 Years
State Growth 3.0%

Age Group	2016 Population	% of Population	
Under 5 years	789	4.6%	
5 to 9 years	926	5.4%	
10 to 14 years	866	5.0%	
15 to 19 years	813	4.7%	
20 to 24 years	873	5.1%	
25 to 29 years	855	5.0%	
30 to 34 years	999	5.8%	
35 to 39 years	976	5.7%	
40 to 44 years	967	5.6%	
45 to 49 years	1,171	6.8%	
50 to 54 years	1,320	7.7%	
55 to 59 years	1,400	8.1%	
60 to 64 years	1,460	8.5%	
65 to 69 years	1,514	8.8%	
70 to 74 years	977	5.7%	
75 to 79 years	546	3.2%	
80 to 84 years	370	2.1%	
85 years and over	423	2.5%	

Jobs by Industry

16,660
Total Jobs (2016)

54.9%
Male
(National: 52.7%)

45.1%
Female
(National: 47.3%)






















NAICS	Industry	2016 Jobs
11	Crop and Animal Production	324
21	Mining, Quarrying, and Oil and Gas Extraction	38
22	Utilities	37
23	Construction	2,217
31	Manufacturing	165
42	Wholesale Trade	220
44	Retail Trade	1,786
48	Transportation and Warehousing	405
51	Information	276
52	Finance and Insurance	540
53	Real Estate and Rental and Leasing	1,400
54	Professional, Scientific, and Technical Services	934
55	Management of Companies and Enterprises	11
56	Administrative and Support and Waste Management and Remediation Services	1,553
61	Educational Services	159
62	Health Care and Social Assistance	1,257
71	Arts, Entertainment, and Recreation	967
72	Accommodation and Food Services	1,865
81	Other Services (except Public Administration)	959
90	Government	1,549
99	Unclassified Industry	0

Average Earnings by Industry

\$44.2K

Avg. Earnings (2016)


















78% of Nation Avg.

NAICS	Industry	Avg. Earnings (2016)	
11	Crop and Animal Production	\$35,833	
21	Mining, Quarrying, and Oil and Gas Extraction	\$92,407	
22	Utilities	\$123,268	
23	Construction	\$45,337	
31	Manufacturing	\$29,987	
42	Wholesale Trade	\$47,645	
44	Retail Trade	\$44,488	
48	Transportation and Warehousing	\$43,905	
51	Information	\$44,692	
52	Finance and Insurance	\$50,853	
53	Real Estate and Rental and Leasing	\$22,591	
54	Professional, Scientific, and Technical Services	\$44,430	
55	Management of Companies and Enterprises	\$119,682	
56	Administrative and Support and Waste Management and Remediation Services	\$34,846	
61	Educational Services	\$15,344	
62	Health Care and Social Assistance	\$64,869	
71	Arts, Entertainment, and Recreation	\$32,345	
72	Accommodation and Food Services	\$36,646	
81	Other Services (except Public Administration)	\$27,698	
90	Government	\$80,642	
99	Unclassified Industry	\$0	

Unemployment by Industry




















423

Total Unemployment (1/2017)

NAICS	Industry	Unemployed (1/2017)	% of Regional Unemployment
11	Crop and Animal Production	12	3% 
21	Mining, Quarrying, and Oil and Gas Extraction	0	0%
22	Utilities	1	0%
23	Construction	107	25% 
31	Manufacturing	3	1% 
42	Wholesale Trade	3	1% 
44	Retail Trade	42	10% 
48	Transportation and Warehousing	11	3% 
51	Information	3	1% 
52	Finance and Insurance	5	1% 
53	Real Estate and Rental and Leasing	5	1% 
54	Professional, Scientific, and Technical Services	7	2% 
55	Management of Companies and Enterprises	0	0%
56	Administrative and Support and Waste Management and Remediation Services	35	8% 
61	Educational Services	1	0%
62	Health Care and Social Assistance	12	3% 
71	Arts, Entertainment, and Recreation	38	9% 
72	Accommodation and Food Services	72	17% 
81	Other Services (except Public Administration)	17	4% 
90	Government	21	5% 
99	No Previous Work Experience/Unspecified	30	7% 

Gross Regional Product (GRP)

\$748.4M Earnings (2016)	\$313.5M Property Income (2016)	\$66.1M Taxes on Production (2016)	\$1,127.9M Total GRP (2016)
-----------------------------	------------------------------------	---------------------------------------	--------------------------------

NAICS	Industry	GRP (2016)	% of Total
11	Crop and Animal Production	\$19,958,862.68	2% 
21	Mining, Quarrying, and Oil and Gas Extraction	\$6,975,012.61	1% 
22	Utilities	\$13,613,417.47	1% 
23	Construction	\$137,179,336.65	12% 
31	Manufacturing	\$7,460,140.56	1% 
42	Wholesale Trade	\$20,686,764.72	2% 
44	Retail Trade	\$108,302,165.21	10% 
48	Transportation and Warehousing	\$23,929,189.58	2% 
51	Information	\$25,675,328.35	2% 
52	Finance and Insurance	\$51,317,653.53	5% 
53	Real Estate and Rental and Leasing	\$57,218,039.25	5% 
54	Professional, Scientific, and Technical Services	\$49,842,776.84	4% 
55	Management of Companies and Enterprises	\$1,471,298.24	0%
56	Administrative and Support and Waste Management and Remediation Services	\$70,563,377.39	6% 
61	Educational Services	\$2,838,805.72	0%
62	Health Care and Social Assistance	\$87,799,764.77	8% 
71	Arts, Entertainment, and Recreation	\$39,610,987.63	4% 
72	Accommodation and Food Services	\$94,132,696.63	8% 
81	Other Services (except Public Administration)	\$32,463,285.29	3% 
90	Government	\$136,614,633.83	12% 
	Other Non-Industries	\$140,254,326.33	12% 

Region Exports

\$1.3B

Exports (2016)
69% of Supply

NAICS	Industry	Exports (2016)	
11	Crop and Animal Production	\$34,640,274	■
21	Mining, Quarrying, and Oil and Gas Extraction	\$4,387,133	■
22	Utilities	\$5,539,830	■
23	Construction	\$180,804,167	■
31	Manufacturing	\$15,623,145	■
42	Wholesale Trade	\$16,085,425	■
44	Retail Trade	\$154,786,814	■
48	Transportation and Warehousing	\$37,181,190	■
51	Information	\$29,781,576	■
52	Finance and Insurance	\$67,252,165	■
53	Real Estate and Rental and Leasing	\$99,706,897	■
54	Professional, Scientific, and Technical Services	\$45,736,825	■
55	Management of Companies and Enterprises	\$2,330,035	■
56	Administrative and Support and Waste Management and Remediation Services	\$90,453,484	■
61	Educational Services	\$1,826,720	■
62	Health Care and Social Assistance	\$78,402,911	■
71	Arts, Entertainment, and Recreation	\$59,113,670	■
72	Accommodation and Food Services	\$164,959,180	■
81	Other Services (except Public Administration)	\$28,207,652	■
90	Government	\$207,922,831	■

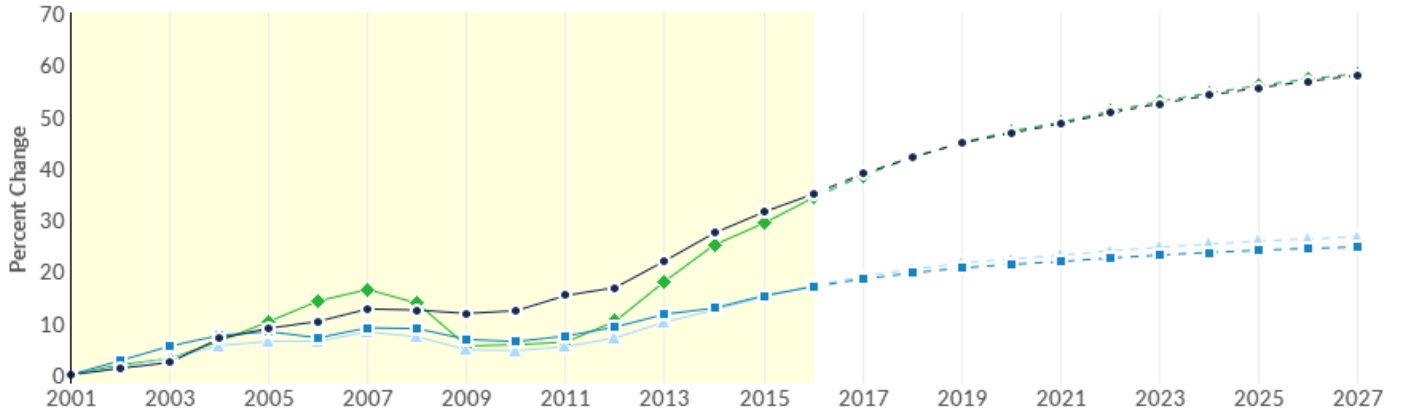
Region Imports

\$1.8B
Imports (2016)
75% of Demand

\$601.1M
Locally Produced & Consumed (2016)
25% of Demand

NAICS	Industry	Imports (2016)	
11	Crop and Animal Production	\$10,094,065	■
21	Mining, Quarrying, and Oil and Gas Extraction	\$9,665,466	■
22	Utilities	\$15,870,345	■
23	Construction	\$46,519,998	■
31	Manufacturing	\$297,296,319	■
42	Wholesale Trade	\$80,131,871	■
44	Retail Trade	\$99,595,027	■
48	Transportation and Warehousing	\$45,055,008	■
51	Information	\$75,372,468	■
52	Finance and Insurance	\$131,707,610	■
53	Real Estate and Rental and Leasing	\$86,720,387	■
54	Professional, Scientific, and Technical Services	\$84,226,592	■
55	Management of Companies and Enterprises	\$33,648,263	■
56	Administrative and Support and Waste Management and Remediation Services	\$40,048,990	■
61	Educational Services	\$22,731,946	■
62	Health Care and Social Assistance	\$90,816,892	■
71	Arts, Entertainment, and Recreation	\$10,329,583	■
72	Accommodation and Food Services	\$58,899,624	■
81	Other Services (except Public Administration)	\$20,853,682	■
90	Government	\$501,908,178	■

Regional Trends




Region	2001 Jobs	2016 Jobs	Change	% Change
● Region	12,342	16,660	4,318	35.0%
■ Town of Barnstable	37,550	43,958	6,408	17.1%
▲ Cape & Islands WIB	147,457	172,923	25,466	17.3%
◆ Nantucket County, MA	8,707	11,690	2,983	34.3%

Growing & Declining Occupations








Occupation	Change in Jobs (2001-2016)
Real Estate Sales Agents	327
Landscaping and Groundskeeping Workers	312
Managers, All Other	186
Bartenders	-36
First-Line Supervisors of Construction Trades and Extraction Workers	-54
Construction Managers	-55

Growing & Declining Industries

Industry	Change in Jobs (2001-2016)	
Landscaping Services	376	
Full-Service Restaurants	311	
General Medical and Surgical Hospitals	277	
Finish Carpentry Contractors	-67	
Gift, Novelty, and Souvenir Stores	-71	
Drinking Places (Alcoholic Beverages)	-160	

2016 Educational Attainment



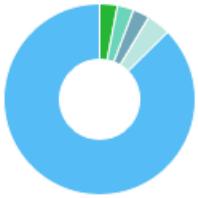
Education Level	2016 Population	2016 Percent	
Less Than 9th Grade	131	1.0%	
9th Grade to 12th Grade	754	5.8%	
High School Diploma	2,964	22.8%	
Some College	2,816	21.7%	
Associate's Degree	1,097	8.4%	
Bachelor's Degree	2,994	23.1%	
Graduate Degree and Higher	2,221	17.1%	

2016 Age Cohort Demographics



Age Cohort	2016 Population	2016 Percent
Under 20 years	3,394	19.7%
20 to 39 years	3,703	21.5%
40 to 59 years	4,858	28.2%
60 to 79 years	4,497	26.1%
80 years and over	793	4.6%

2016 Race/Ethnicity Demographics



Race/Ethnicity	2016 Population	2016 Percent
All Other Race/ethnicities	520	3.0%
White, Hispanic	480	2.8%
Two or More Races, Non-Hispanic	483	2.8%
Black, Non-Hispanic	690	4.0%
White, Non-Hispanic	15,072	87.4%

Top Regional Businesses

Business Name	Business Size
Martha's Vineyard Hospital	Large (250+)
Harborview & Hotel	Medium (50-249)
Mid-cape Home Ctr	Medium (50-249)
Martha's Vineyard Taxi Co	Medium (50-249)
Martha's Vineyard Cmnty Svc	Medium (50-249)

Source: Infogroup Business-Level Data

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Occupation Data

Emsi occupation employment data are based on final Emsi industry data and final Emsi staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates also affected by county-level Emsi earnings by industry.

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Emsi's educational attainment numbers are based on Emsi's demographic data and the American Community Survey. By combining these sources, Emsi interpolates for missing years and projects data at the county level. Educational attainment data cover only the population aged 25 years or more and indicate the highest level achieved.

Infogroup Business-Level Data

Data for individual businesses is provided by Infogroup, which maintains a database of more than 16 million U.S. business entities. Note that in aggregate it will not be consistent with Emsi labor market data due to differences in definitions, methodology, coverage, and industry/geographic classification.

State Data Sources

This report uses state data from the following agencies: Massachusetts Executive Office of Labor and Workforce Development

Economy Overview

Nantucket County, MA

Emsi Q3 2017 Data Set

September 2017

Cape and Islands Workforce Development Board



426 North St. Ste. 9
Hyannis, Massachusetts 2601
508.775.5900

Parameters

Regions

Code	Description
25019	Nantucket County, MA

Timeframe

2001 - 2016

Datarun

2017.3 – QCEW Employees, Self-Employed, and Extended Proprietors

Economy Overview



Population (2016)	11,008
Jobs (2016)	11,690
Average Earnings (2016)	\$55.1K
Unemployed (1/2017)	303
Completions (2016)	0
GRP (2016)	\$993.3M
Exports (2016)	\$1.3B
Imports (2016)	\$1.6B

Population

11.0K
2016 Population
0.2% of State

8.6%
Population Growth for the Last 5 Years
State Growth 3.0%

Age Group	2016 Population	% of Population	
Under 5 years	698	6.3%	
5 to 9 years	659	6.0%	
10 to 14 years	607	5.5%	
15 to 19 years	540	4.9%	
20 to 24 years	578	5.3%	
25 to 29 years	691	6.3%	
30 to 34 years	806	7.3%	
35 to 39 years	842	7.6%	
40 to 44 years	829	7.5%	
45 to 49 years	831	7.5%	
50 to 54 years	862	7.8%	
55 to 59 years	787	7.1%	
60 to 64 years	667	6.1%	
65 to 69 years	612	5.6%	
70 to 74 years	374	3.4%	
75 to 79 years	266	2.4%	
80 to 84 years	145	1.3%	
85 years and over	215	2.0%	

Jobs by Industry

11,690
Total Jobs (2016)

55.9%
Male
(National: 52.7%)

44.1%
Female
(National: 47.3%)

NAICS	Industry	2016 Jobs
11	Crop and Animal Production	176
21	Mining, Quarrying, and Oil and Gas Extraction	48
22	Utilities	<10
23	Construction	1,889
31	Manufacturing	197
42	Wholesale Trade	105
44	Retail Trade	1,266
48	Transportation and Warehousing	307
51	Information	145
52	Finance and Insurance	238
53	Real Estate and Rental and Leasing	1,098
54	Professional, Scientific, and Technical Services	506
55	Management of Companies and Enterprises	72
56	Administrative and Support and Waste Management and Remediation Services	1,041
61	Educational Services	157
62	Health Care and Social Assistance	624
71	Arts, Entertainment, and Recreation	716
72	Accommodation and Food Services	1,741
81	Other Services (except Public Administration)	585
90	Government	771
99	Unclassified Industry	0

Average Earnings by Industry

\$55.1K

Avg. Earnings (2016)

















97% of Nation Avg.

NAICS	Industry	Avg. Earnings (2016)	
11	Crop and Animal Production	\$163,930	
21	Mining, Quarrying, and Oil and Gas Extraction	\$113,193	
22	Utilities	\$353,609	
23	Construction	\$51,306	
31	Manufacturing	\$54,962	
42	Wholesale Trade	\$76,786	
44	Retail Trade	\$49,034	
48	Transportation and Warehousing	\$55,030	
51	Information	\$63,295	
52	Finance and Insurance	\$66,817	
53	Real Estate and Rental and Leasing	\$33,800	
54	Professional, Scientific, and Technical Services	\$54,163	
55	Management of Companies and Enterprises	\$94,526	
56	Administrative and Support and Waste Management and Remediation Services	\$49,799	
61	Educational Services	\$32,579	
62	Health Care and Social Assistance	\$70,876	
71	Arts, Entertainment, and Recreation	\$46,770	
72	Accommodation and Food Services	\$45,072	
81	Other Services (except Public Administration)	\$34,070	
90	Government	\$106,864	
99	Unclassified Industry	\$0	

Unemployment by Industry






















303

Total Unemployment (1/2017)

NAICS	Industry	Unemployed (1/2017)	% of Regional Unemployment
11	Crop and Animal Production	7	2% 
21	Mining, Quarrying, and Oil and Gas Extraction	0	0%
22	Utilities	0	0%
23	Construction	97	32% 
31	Manufacturing	3	1% 
42	Wholesale Trade	1	0%
44	Retail Trade	21	7% 
48	Transportation and Warehousing	6	2% 
51	Information	2	1% 
52	Finance and Insurance	2	1% 
53	Real Estate and Rental and Leasing	6	2% 
54	Professional, Scientific, and Technical Services	5	2% 
55	Management of Companies and Enterprises	0	0%
56	Administrative and Support and Waste Management and Remediation Services	45	15% 
61	Educational Services	1	0%
62	Health Care and Social Assistance	5	2% 
71	Arts, Entertainment, and Recreation	30	10% 
72	Accommodation and Food Services	51	17% 
81	Other Services (except Public Administration)	6	2% 
90	Government	5	2% 
99	No Previous Work Experience/Unspecified	9	3% 

Gross Regional Product (GRP)

\$652.2M Earnings (2016)	\$280.4M Property Income (2016)	\$60.7M Taxes on Production (2016)	\$993.3M Total GRP (2016)
-----------------------------	------------------------------------	---------------------------------------	------------------------------

NAICS	Industry	GRP (2016)	% of Total
11	Crop and Animal Production	\$26,930,101.58	3% 
21	Mining, Quarrying, and Oil and Gas Extraction	\$11,287,144.41	1% 
22	Utilities	\$10,034,941.10	1% 
23	Construction	\$132,932,520.40	13% 
31	Manufacturing	\$21,691,495.08	2% 
42	Wholesale Trade	\$15,301,663.25	2% 
44	Retail Trade	\$84,401,970.52	8% 
48	Transportation and Warehousing	\$23,324,061.71	2% 
51	Information	\$22,572,704.71	2% 
52	Finance and Insurance	\$27,007,190.72	3% 
53	Real Estate and Rental and Leasing	\$69,316,080.23	7% 
54	Professional, Scientific, and Technical Services	\$32,814,412.15	3% 
55	Management of Companies and Enterprises	\$7,807,974.46	1% 
56	Administrative and Support and Waste Management and Remediation Services	\$69,132,164.25	7% 
61	Educational Services	\$5,461,991.11	1% 
62	Health Care and Social Assistance	\$47,295,256.87	5% 
71	Arts, Entertainment, and Recreation	\$42,347,163.44	4% 
72	Accommodation and Food Services	\$106,117,728.70	11% 
81	Other Services (except Public Administration)	\$22,944,742.62	2% 
90	Government	\$93,822,374.22	9% 
	Other Non-Industries	\$120,773,570.86	12% 

Region Exports

\$1.3B
Exports (2016)
74% of Supply

NAICS	Industry	Exports (2016)	
11	Crop and Animal Production	\$86,364,499	
21	Mining, Quarrying, and Oil and Gas Extraction	\$11,110,428	
22	Utilities	\$2,266,066	
23	Construction	\$187,578,683	
31	Manufacturing	\$44,127,924	
42	Wholesale Trade	\$10,463,578	
44	Retail Trade	\$116,418,038	
48	Transportation and Warehousing	\$34,277,759	
51	Information	\$32,206,204	
52	Finance and Insurance	\$32,834,780	
53	Real Estate and Rental and Leasing	\$123,258,390	
54	Professional, Scientific, and Technical Services	\$33,793,669	
55	Management of Companies and Enterprises	\$11,930,046	
56	Administrative and Support and Waste Management and Remediation Services	\$95,730,337	
61	Educational Services	\$2,421,433	
62	Health Care and Social Assistance	\$28,230,891	
71	Arts, Entertainment, and Recreation	\$71,712,374	
72	Accommodation and Food Services	\$189,590,663	
81	Other Services (except Public Administration)	\$17,898,331	
90	Government	\$179,040,381	

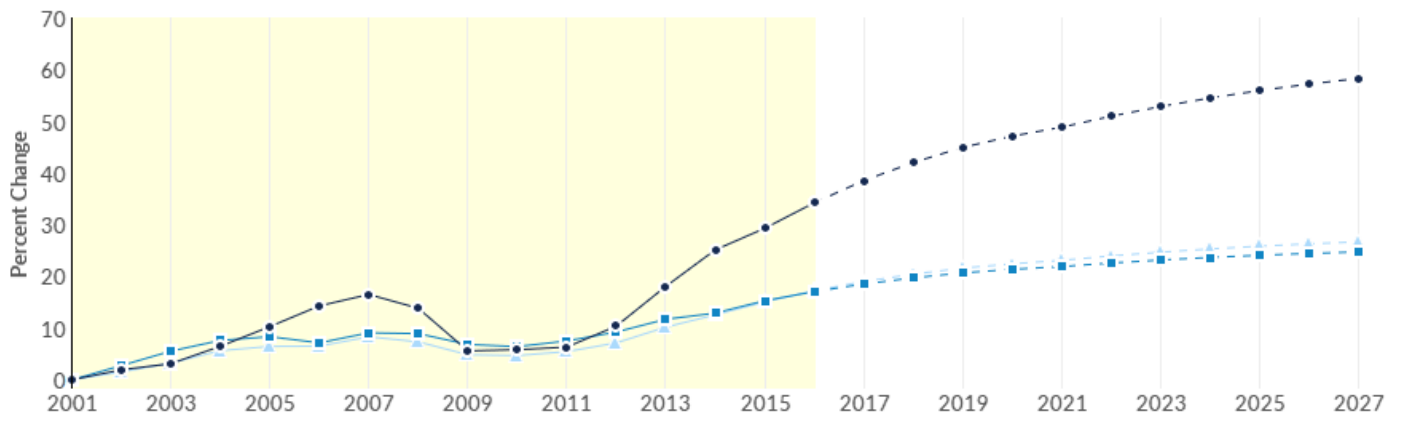
Region Imports

\$1.6B
Imports (2016)
77% of Demand

\$476.0M
Locally Produced & Consumed (2016)
23% of Demand

NAICS	Industry	Imports (2016)	
11	Crop and Animal Production	\$11,967,368	■
21	Mining, Quarrying, and Oil and Gas Extraction	\$9,222,419	■
22	Utilities	\$15,156,758	■
23	Construction	\$31,209,065	■
31	Manufacturing	\$265,158,089	■
42	Wholesale Trade	\$71,864,224	■
44	Retail Trade	\$77,191,464	■
48	Transportation and Warehousing	\$38,537,047	■
51	Information	\$67,870,909	■
52	Finance and Insurance	\$110,238,166	■
53	Real Estate and Rental and Leasing	\$78,831,710	■
54	Professional, Scientific, and Technical Services	\$76,853,237	■
55	Management of Companies and Enterprises	\$32,741,950	■
56	Administrative and Support and Waste Management and Remediation Services	\$40,634,756	■
61	Educational Services	\$15,487,325	■
62	Health Care and Social Assistance	\$74,024,187	■
71	Arts, Entertainment, and Recreation	\$9,553,663	■
72	Accommodation and Food Services	\$40,032,015	■
81	Other Services (except Public Administration)	\$18,532,674	■
90	Government	\$469,317,454	■

Regional Trends



Region	2001 Jobs	2016 Jobs	Change	% Change
● Region	8,707	11,690	2,983	34.3%
■ Town of Barnstable	37,550	43,958	6,408	17.1%
▲ Cape & Islands WIB	147,457	172,923	25,466	17.3%

Growing & Declining Occupations








Occupation	Change in Jobs (2001-2016)
Real Estate Sales Agents	249
Landscaping and Groundskeeping Workers	217
Construction Laborers	161
Lodging Managers	-11
First-Line Supervisors of Construction Trades and Extraction Workers	-20
Construction Managers	-23

Growing & Declining Industries

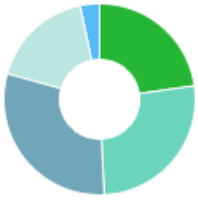
Industry	Change in Jobs (2001-2016)	
Landscaping Services	278	
Residential Remodelers	248	
Full-Service Restaurants	230	
Finish Carpentry Contractors	-57	
General Freight Trucking, Local	-71	
Hotels (except Casino Hotels) and Motels	-99	

2016 Educational Attainment



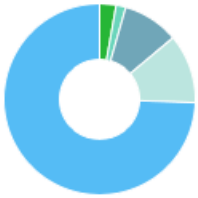
Education Level	2016 Population	2016 Percent	
Less Than 9th Grade	181	2.3%	
9th Grade to 12th Grade	283	3.6%	
High School Diploma	2,032	25.6%	
Some College	1,439	18.2%	
Associate's Degree	694	8.8%	
Bachelor's Degree	1,906	24.0%	
Graduate Degree and Higher	1,390	17.5%	

2016 Age Cohort Demographics



Age Cohort	2016 Population	2016 Percent
Under 20 years	2,503	22.7%
20 to 39 years	2,917	26.5%
40 to 59 years	3,309	30.1%
60 to 79 years	1,919	17.4%
80 years and over	360	3.3%

2016 Race/Ethnicity Demographics



Race/Ethnicity	2016 Population	2016 Percent
All Other Race/ethnicities	307	2.8%
Two or More Races, Non-Hispanic	180	1.6%
Black, Non-Hispanic	1,044	9.5%
White, Hispanic	1,283	11.7%
White, Non-Hispanic	8,194	74.4%

Top Regional Businesses

Business Name	Business Size
White Elephant Hotel Rsdncs	Large (250+)
Nantucket Cottage Hospital	Medium (50-249)
Jared Coffin House	Medium (50-249)
Nantucket Elementary School	Medium (50-249)
Wauwinet	Medium (50-249)

Source: Infogroup Business-Level Data

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Appendix A - Data Sources and Calculations

Input-Output Data

The input-output model in this report is Emsi's gravitational flows multi-regional social account matrix model (MR-SAM). It is based on data from the Census Bureau's Current Population Survey and American Community Survey; as well as the Bureau of Economic Analysis' National Income and Product Accounts, Input-Output Make and Use Tables, and Gross State Product data. In addition, several Emsi in-house data sets are used, as well as data from Oak Ridge National Labs on the cost of transportation between counties.

Demographic Data

The demographic data in this report is compiled from several sources using a specialized process. Sources include annual population estimates and population projections from the US Census Bureau, birth and mortality rates from the US Health Department, and projected regional job growth.

Industry Data

Emsi industry data have various sources depending on the class of worker. (1) For QCEW Employees, Emsi primarily uses the QCEW (Quarterly Census of Employment and Wages), with supplemental estimates from County Business Patterns. (2) Non-QCEW employees data are based on a number of sources including QCEW, Current Employment Statistics, County Business Patterns, BEA State and Local Personal Income reports, the National Industry-Occupation Employment Matrix (NIOEM), the American Community Survey, and Railroad Retirement Board statistics. (3) Self-Employed and Extended Proprietor classes of worker data are primarily based on the American Community Survey, Nonemployer Statistics, and BEA State and Local Personal Income Reports. Projections for QCEW and Non-QCEW Employees are informed by NIOEM and long-term industry projections published by individual states.

Unemployment Data

The unemployment data in this report comes from the Bureau of Labor Statistics' Local Area Unemployment Statistics and is updated every two months.

Occupation Data

Emsi occupation employment data are based on final Emsi industry data and final Emsi staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates also affected by county-level Emsi earnings by industry.

Educational Attainment Data

Emsi's educational attainment numbers are based on Emsi's demographic data and the American Community Survey. By combining these sources, Emsi interpolates for missing years and projects data at the county level. Educational attainment data cover only the population aged 25 years or more and indicate the highest level achieved.

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State Data Sources

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APPENDIX B

Cape Cod Blue Economy Project Advisory Panel & Collaborators



	FIRST NAME	LAST NAME	TITLE	ORGANIZATION
Advisory Panel	Mark	Abbott	President & Director	Woods Hole Oceanographic Institution
Advisory Panel	Elmore	Alexander	Dean	Bridgewater State University
Advisory Panel	John	Bologna	President/CEO	Coastal Engineering
Advisory Panel	Brian	Braginton-Smith	Executive Director	Lewis Bay Research Center
Advisory Panel	Jessica	Casey		Plymouth Regional Economic Development Foundation
Advisory Panel	Nancy	Civetta	Communications Director (former)	Cape Cod Commercial Fisherman's Alliance
Advisory Panel	Eliza	Cox	Attorney	Nutter, McLennan & Fish
Advisory Panel	Zenas	Crocker	Vice President	Barnstable Clean Water Coalition
Advisory Panel	Rich	Delaney	Executive Director	Center for Coastal Studies
Advisory Panel	Rob	Doane	Executive Director	Aquaculture Research Corp.
Advisory Panel	Harlan	Doliner	Counsel, Chair of Maritime Group	Verrill Dana LLP
Advisory Panel	Bob	Egan	Principal	Sepharim Group
Advisory Panel	Mark	Forest	Executive Director	The Delahunt Group
Advisory Panel	Daniel	Gaines	CEO	Sea Blue Companies
Advisory Panel	Chris	Galazzi	Executive Director	Cape Cod Maritime Museum
Advisory Panel	Steve	Gallien	Principal	Steve Gallien Consulting
Advisory Panel	Michael	Goodman	Executive Director	UMASS Dartmouth Public Policy Center
Advisory Panel	Jon	Hagenstein	Owner	Beacon Marine Contractors
Advisory Panel	James	Hobbs	Managing Director	Graylyn Associates
Advisory Panel	Bert	Jackson	President	Cape Cod Technology Council
Advisory Panel	Stephen	Johnston	Executive Director	OpenCape
Advisory Panel	Stanley	Kovall	Director of Operations	Blue Institute at Cape Cod
Advisory Panel	Joseph	Longo	Principal/Sen. Engineer	Horsley Witten Group
Advisory Panel	Maria	Marasco	Southeast Regional Director	Massachusetts Office of Business Development
Advisory Panel	Rex	McKinsey	Harbormaster	Town of Provincetown

	FIRST NAME	LAST NAME	TITLE	ORGANIZATION
Advisory Panel	Theresa	Mitchell Barbo	Author/Journalist	
Advisory Panel	Michael	Murphy	Director of Water Innovation	Massachusetts Clean Energy Center
Advisory Panel	Richard	Neitz	Principal	Neitz Realty
Advisory Panel	Rob	O'Leary	Professor	Massachusetts Maritime Academy
Advisory Panel	Kevin	O'Reilly	Executive Director	Plymouth Area Chamber of Commerce
Advisory Panel	David	Panagore	Town Manager	Town of Provincetown
Advisory Panel	John	Pappalardo	CEO	Cape Cod Commercial Fisherman's Alliance
Advisory Panel	James	Penn	VP Sales & Marketing	Puritan Clothing Co.
Advisory Panel	Charlie	Preus	Principal	Strategic Communications Group
Advisory Panel	George	Price	Superintendant	CC National Seashore
Advisory Panel	Mahesh	Ramachandra n	Environmental Economist	Cape Cod Commission
Advisory Panel	Caprio	Richard	Business Development Manager	Agera Energy
Advisory Panel	Sallie	Riggs	Executive Director	Bourne Financial Development Corp.
Advisory Panel	Rich	Riker	Founder/CEO	Oyster River Partners
Advisory Panel	Charlie	Ritch	CFO	National Graduate School
Advisory Panel	Warren	Rutherford	Owner/President	The Executive Suite
Advisory Panel	Melissa	Sanderson	COO	Commercial Fisherman's Alliance
Advisory Panel	Kristy	Senatori	Deputy Direcctor	Cape Cod Commission
Advisory Panel	Chris	Sherman	President	Massachusetts Aquaculture Association
Advisory Panel	Maura	Smith	CFO	Sea Blue Companies
Advisory Panel	Peter	Spalt	Owner	Monomoy Island Excursions
Advisory Panel	Tobias	Stapleton	Executive Director	UMASS-D Ctr. for Innovation & Entrepreneurship
Advisory Panel	Tonna-Marie	Surgeon-Rogers	Coastal Training Program Coordinator	Waquoit Bay National Estuarine Research Reserve
Advisory Panel	Bert	Talerman	Executive VP/Chief Lending Exec.	Cape Cod Five
Advisory Panel	Jill	Talladay	Founder	CARE for the Cape & Islands
Advisory Panel	Peter	Temple	Executive Director	Martha's Vineyard Donors Collaborative
Advisory Panel	Mike	Trovato	Economic Development Specialist	Town of Barnstable

	FIRST NAME	LAST NAME	TITLE	ORGANIZATION
Advisory Panel	Judith	Underwood	Founder	Blue Institute at Cape Cod
Advisory Panel	Scott	Vandersall	VP	Cape Cod Five
Advisory Panel	Anne	VanVleck	Executive Director	Cape Cod Young Professionals
Advisory Panel	Mark	Watson	CEO/CIO	Keel Asset Management
Advisory Panel	Dan	Wolf	Senator	Massachusetts General Court
Advisory Panel	Scott	Zeien	Owner	Kingman Yacht Center
Collaborator	Mark	Abbott	President	Woods Hole Oceanographic Institution
Collaborator	Jay	Ash	Secretary	MA Housing & Economic Development
Collaborator	David	Borges	Director of Research and Administration	UMASS Dartmouth Public Policy Center
Collaborator	Ryan	Castle	Executive Director	Cape & Islands Board of Realtors
Collaborator	Jay	Coburn	Executive Director	Lower Cape Community Development Partnership
Collaborator	John	Cox	President	Cape Cod Community College
Collaborator	Wil	Crocker	State Representative	Massachusetts General Court
Collaborator	Julian	Cyr	State Senator	Massachusetts General Court
Collaborator	Sean	Driscoll	Business Reporter	Cape Cod Times
Collaborator	Terry	Duenas	Executive Director	Cape Cod Community Media Center
Collaborator	Chris	Duren	Executive Director	Homebuilders & Remodelers Association of Cape Cod
Collaborator	Robert	Dwyer	Executive Director	Cape Cod Museum of Natural History
Collaborator	Alan	Feltham	Vice Chair	Barnstable Economic Development Council
Collaborator	Chris	Galazzi	Executive Director	Cape Cod Maritime Museum
Collaborator	David	Gardner	Asst. Town Manager	Town of Provincetown
Collaborator	Andrew	Gottlieb	Executive Director	Association to Preserve Cape Cod
Collaborator	Robyn	Hannigan	Dean	UMass Boston
Collaborator	Lara	Henry	Administrator	Wellfleet Chamber of Commerce
Collaborator	Kyle	Hinkle	Executive Director	Brewster Chamber of Commerce
Collaborator	Virginia	Jones	Harbormaster	Town of Chilmark
Collaborator	Bradley	Lima	Chief Academic Officer	Massachusetts Maritime Academy

	FIRST NAME	LAST NAME	TITLE	ORGANIZATION
Collaborator	Elysse	Magnotto	Chief of Staff	Cape Air
Collaborator	Leslie-Ann	McGee	Principal	Full Sail Consulting
Collaborator	Susan	Moran	Director	Falmouth Economic Development & Industrial Corporation
Collaborator	Robbin	Orbison	Owner	CapeSpace
Collaborator	Sarah	Peake	State Representative	Massachusetts General Court
Collaborator	Felicia	Penn	Chair	Barnstable County Economic Development Council
Collaborator	Noelle	Pina	Executive Director	Orleans Chamber of Commerce
Collaborator	Stuart	Smith	Chair	Harbormasters Association
Collaborator	Charlie	Sumner	Executive Director	Pleasant Bay Community Boating
Collaborator	Bob	Viamari	Publisher	Cape & Plymouth Business Magazine
Collaborator	Julie	Wake	Executive Director	The Arts Foundation of Cape Cod
Collaborator	Cyndi	Williams	Executive Director	Harwich Chamber of Commerce
Collaborator	Scott	Zeien	Owner	Kingman Yacht Center
Collaborator				Cape Cod Selectman's & Counselors Assoc.
Collaborator				Cape Cod Town Managers Assoc.
Collaborator				Martha's Vineyard Chamber of Commerce
Collaborator				Nantucket Island Chamber of Commerce
Collaborator				UMass Dartmouth – Center for Policy Analysis
Listening Session Attendee	Brendan	Adams		Nautilus Commercial Diving/Lobsterman
Listening Session Attendee	Helen	Addison		Addison Agency
Listening Session Attendee	Lois	Andre		Self-Employed
Listening Session Attendee	Susan	Avellar		Harbor Cove
Listening Session Attendee	Luther	Bates		Commercial Fisherman
Listening Session Attendee	Mark	Blake		Blue Institute of Cape Cod
Listening Session Attendee	Michael	Blanton		Town of Bourne Board of Selectmen
Listening Session Attendee	Whit	Bourne		Resident
Listening Session Attendee	Rob	Brennan		Cape Built Homes
Listening Session Attendee	Stephen	Buckley		OpenChatham.com

	FIRST NAME	LAST NAME	TITLE	ORGANIZATION
Listening Session Attendee	Rich	Caprio		Agera Energy
Listening Session Attendee	Missy	Clarke		Cape Cod Commercial Fisherman's Alliance
Listening Session Attendee	Robin	Clarke		Writer/Editor
Listening Session Attendee	Candis	Collins-Bowden		Provincetown Chamber of Commerce
Listening Session Attendee	Mary	Conklin		Center for Corporate and Professional Education
Listening Session Attendee	Michelle	Constantino		Center for Corporate and Professional Education
Listening Session Attendee	Mary Beth	Daniel		Aquaculture Research Corporation
Listening Session Attendee	Stephen	Daniel		AWSC/Cape Cod Five/Town of Chatham
Listening Session Attendee	Rose	DeGregorio		Auciello Assoc
Listening Session Attendee	Gretchen	Dietrich		National Marine Life Center Volunteer
Listening Session Attendee	Tom	Donegan		Town of Provincetown
Listening Session Attendee	Eleonore	Dumais		Resident
Listening Session Attendee	Andrea	Early		Woods Hole Oceanographic Institution
Listening Session Attendee	Shelley	Edmundson		Martha's Vineyard Fisherman's Preservation Trust
Listening Session Attendee	Doug	Feeney		Commercial Fisherman
Listening Session Attendee	Christine	Flynn		Martha's Vineyard Commission
Listening Session Attendee	Mark	Friery		Chestnut Innovation Center
Listening Session Attendee	Terry	Gallagher		Telecommuter
Listening Session Attendee	Nancy	Gardella		Martha's Vineyard Chamber of Commerce
Listening Session Attendee	Marc	Garrett		Self-Employed
Listening Session Attendee	Robbie	Haigh		Volunteer
Listening Session Attendee	David	Harmon		Arts Martha's Vineyard
Listening Session Attendee	Amy	Henderson		Americorps
Listening Session Attendee	Rachel	Hutchinson		Chatham Shellfish Propagation
Listening Session Attendee	Michele	Insley		Wellfleet SPAT
Listening Session Attendee	Tammi	Jacobsen		Center for Corporate and Professional Education
Listening Session Attendee	James	Joyce		Carrol and Vincent Real Estate/Martha's Vineyard Commission

	FIRST NAME	LAST NAME	TITLE	ORGANIZATION
Listening Session Attendee	Aaron	Kanzer		Self-Employed
Listening Session Attendee	Rick	Karney		Martha's Vineyard Shellfish Group
Listening Session Attendee	John	King		
Listening Session Attendee	David	Knaack		Woods Hole Oceanographic Institution
Listening Session Attendee	Ken	Kostel		Woods Hole Oceanographic Institution
Listening Session Attendee	Caroline	Lane		Resident
Listening Session Attendee	Scott	Lane		Resident
Listening Session Attendee	Rebecca	Lent		Marine Mammal Commission
Listening Session Attendee	Scott	Leonard		Nantucket Marine Mammal Conservation Program
Listening Session Attendee	Richard	Leonard		Cape Cod Five
Listening Session Attendee	Nick	Lowell		Lowell Instrumental LLC
Listening Session Attendee	Victoria and Fritz	Luft		Self-Interest
Listening Session Attendee	Sue	Machie		Aquaculture Research Corporation
Listening Session Attendee	Carl	Mancuso		Falmouth Scientific
Listening Session Attendee	Francis	McDonald		Massachusetts Maritime Academy
Listening Session Attendee	Peter	Meier		Bourne Board of Selectmen
Listening Session Attendee	Mellissa	Murphy		Town of Nantucket, Dept. of Culture and Tourism
Listening Session Attendee	Bob	O'Brien		Chestnut Innovation Center
Listening Session Attendee	Rachael	Perkins		Shearwater Excursions, Inc
Listening Session Attendee	Carl	Persson		Ocean
Listening Session Attendee	Tom	Pham		Massachusetts Maritime Academy
Listening Session Attendee	Ed	Pierce		Martha's Vineyard Commission
Listening Session Attendee	Colin	Reed		Woods Hole Oceanographic Institution
Listening Session Attendee	Deanna	Ruffer		Town of Chatham
Listening Session Attendee	Jim	Russo		Eastham Chamber of Commerce
Listening Session Attendee	Janet	Schultz		Nantucket Chamber of Commerce
Listening Session Attendee	Hersh	Schwartz		Provincetown Chamber of Commerce
Listening Session Attendee	Abe	Seiman		Town of Oak Bluffs Finance Commission

	FIRST NAME	LAST NAME	TITLE	ORGANIZATION
Listening Session Attendee	Roger	Stolte		Glyn's Marine
Listening Session Attendee	Elizabeth	Sull		
Listening Session Attendee	Kevin	Ulmer		Sequester
Listening Session Attendee	Dave	Vieira		Massachusetts General Court
Listening Session Attendee	Margie	Waitkus		Halls Bed and Breakfast
Listening Session Attendee	Kelly	Westerhouse		Woods Hole Oceanographic Institution
Listening Session Attendee	Rob	Wilson		Self-Employed
Listening Session Attendee	Steve	Wisbauer		Town of Provincetown Shellfish Department
Listening Session Attendee	Paul	Wittenstein		Aquaculture Research Corporation
Listening Session Attendee	Jon	Wood		Ocean Data Technologies
Listening Session Attendee	Stephen	Wright		Chatham Shellfish Co/Mass Agriculture
Listening Session Attendee	Kathy	Zagzebski		National Marine Life Center
Other Interested Parties				All 15 towns on Cape Cod
Other Interested Parties				All 6 towns on Martha's Vineyard
Other Interested Parties				All Banks in the Region
Other Interested Parties				Cape & Islands SCORE
Other Interested Parties				Cape Cod Healthcare
Other Interested Parties				The 15 Local Chambers of Commerce
Other Interested Parties				The Town of Nantucket
Other Interested Parties				The Town of Plymouth
Other Interested Parties				Massachusetts Cultural Council
Other Interested Parties				Mass. Highway
Other Interested Parties				Mass. Office of Business Development
Other Interested Parties				Mass. Office of International Trade & Investment
Other Interested Parties				Mass. Office of Travel & Tourism
Other Interested Parties				Mass. Registry of Motor Vehicles
Other Interested Parties				Mass. Small Business Development Center
Other Interested Parties				The Cultural Districts in Sandwich, Hyannis, Orleans & Provincetown

	FIRST NAME	LAST NAME	TITLE	ORGANIZATION
Other Interested Parties				The Hyannis BID
Other Interested Parties				UMass Dartmouth – Center for Business & Market Research

APPENDIX C

Cape Cod Blue Economy Project Socioeconomic Data and Demographics Analysis



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1. Data Sources & Metadata

1.1. Business Listing Data Sets

Business Listing data was purchased from Naics.com, a NAICS business list retailer that gathers current data from Dun & Bradstreet, for the entire zip code geography, for the dark and medium blue NAICS codes. The bulk of the data was purchased, and therefore up to date as of August 2016. A second round of data, including non-profits and zip code aggregate data, was purchased in March 2017. Naics.com could not pull the second round of data for August 2016 and made assurances that there would be little difference between the time periods.

The data points include current unsuppressed data for each business: number of employees, gross revenues (actual sales), and NAICS code.

The zip code aggregate data is the total number of employees and gross revenue in each zip code, regardless of NAICS code. This provides a zip code level comparison point for blue vs. all business.

1.2. U.S. Census County Data Set

U.S. Census County Business Patterns is an annual series that provides subnational economic data by industry (NAICS code) for each county. The data points for each year include the number of establishments, number of employees during the week of March 12, first quarter payroll, and annual payroll.

Data were downloaded from <https://www.census.gov/programs-surveys/cbp.html>

Data are available only at the County level, so the dataset includes all of Plymouth County, not just the 4 zip codes in the project's geographic scope.

1.3. Non-Profit Data Set

IRS.gov exempt business listings includes cumulative information on exempt organizations and was downloaded from <https://www.irs.gov/charities-non-profits/exempt-organizations-business-master-file-extract-eo-bmf>. The data points include EIN, assets, income, and revenue as of December 19, 2016.

1.4. EMSI Data Set

Economicmodeling.com occupation data (Q1 2017)

ESMI data was provided to the project through collaboration with the Cape and Islands Workforce Investment Board. Data was pulled for entire zip code geography, for the dark blue NAICS codes. Data included Quarterly Census of Employment and Wages, Self-employed, Sole Proprietors, and Extended Proprietors (working a second job). The data points include occupation data, average annual salary, number of jobs, and location quotients (concentration of industry as compared to average American community).

Emsi Q1 2017 Data Set

Industry Data

Emsi industry data have various sources depending on the class of worker. 1) For QCEW Employees, Emsi primarily uses the QCEW (Quarterly Census of Employment and Wages), with supplemental estimates from County Business Patterns. (2) Non-QCEW employees data are based on a number of sources including QCEW, Current Employment Statistics, County Business Patterns, BEA State and Local Personal Income reports, the National Industry-Occupation Employment Matrix (NIOEM), the American Community Survey, and Railroad Retirement Board statistics. (3) Self-Employed and Extended Proprietor classes of worker data are primarily based on the American Community Survey, Nonemployer Statistics, and BEA State and Local Personal Income

Reports. Projections for QCEW and Non-QCEW Employees are informed by NIOEM and long-term industry projections published by individual states.

Input-Output Data

The input-output model in this report is Emsi's gravitational flows multi-regional social account matrix model (MR-SAM). It is based on data from the

Bureau's Current Population Survey and American Community Survey; as well as the Bureau of Economic Analysis' National Income and Product Accounts, Input-Output Make and Use Tables, and Gross State Product data. In addition, several Emsi in-house data sets are used, as well as data from Oak Ridge National Labs on the cost of transportation between counties.

Staffing Patterns Data

The staffing pattern data in this report are compiled from several sources using a specialized process. For QCEW and Non-QCEW Employees classes of worker, sources include Occupational Employment Statistics, the National Industry-Occupation Employment Matrix, and the American Community Survey. For the Self-Employed and Extended Proprietors classes of worker, the primary source is the American Community Survey, with a small amount of information from Occupational Employment Statistics.

Infogroup Business-Level Data

Data for individual businesses is provided by Infogroup, which maintains a database of more than 16 million U.S. business entities. Note that in aggregate it will not be consistent with Emsi labor market data due to differences in definitions, methodology, coverage, and industry/geographic classification.

State Data Sources

This report uses state data from the following agencies: Massachusetts Executive Office of Labor and Workforce Development

1.5. NOAA Office for Coastal Management Digital Coast- ENOW Explorer

The project utilized the NOAA Office for Coastal Management Digital Coast ENOW Explorer as a reference. It is available online at: <https://coast.noaa.gov/digitalcoast/tools/enow.html>.

Their data was available at the county level, which did not align with the project's specific zip-code based geography. However, for Barnstable, Dukes, and Nantucket County, comparisons could be made between the project's blue numbers and ENOW's ocean data. ENOW was used to validate the project's dataset- the overall blue economy numbers were relatively similar to ENOW's statistics, increasing the confidence in the project's methodology.

ENOW totals for business establishments, employment, and wages are based on the Bureau of Labor Statistics' Quarterly Census of Employment and Wages (QCEW) data (also known as the ES-202 data). ENOW totals for gross domestic product (GDP) are based on the Bureau of Economic Analysis' GDP-by-state statistics. QCEW and GDP data are provided for industrial groups.

The ENOW tool streamlines the task of obtaining and comparing economic data, both county and national, for the six sectors dependent on the ocean and Great Lakes: living resources, marine construction, marine transportation, offshore mineral resources, ship and boat building, and tourism and recreation.

1.6. UMass Dartmouth Massachusetts Ocean Economy Study

The project utilized the UMass Dartmouth Public Policy Center's Massachusetts Ocean Economic Study as a reference: *Navigating the Global Economy: A Comprehensive Analysis of the Massachusetts Maritime Economy*.

The report and data appendix is available online at: <http://publicpolicycenter.org/portfolio-item/navigating-the-global-economy-a-comprehensive-analysis-of-the-massachusetts-maritime-economy/>

Their marine industry sectors served as an initial guide to define the sectors for this project.

1.7. Data Gaps and Future Needs

It must be acknowledged that the project is a snapshot of the blue economy in the region, and the available data sources are not perfect; some businesses' data was not available and many businesses self-report inaccurate data (null revenue or employee fields, or incorrect NAICS code selection). By relying on the NAICS codes, businesses that are not blue may have been inadvertently included in the analysis and counted as blue, or, businesses that are blue may not have been coded correctly and were not included in the analysis. Additionally, as noted in the Redacted Business Section (Section XII), not all business data was available to the project.

Known data gaps include:

- Town revenue from recreational shellfishing, beach parking, natural resources departments, mooring fees, etc.
- Artists that use water-dependent materials or inspiration, creative place-making
- "Doing Business As" (DBA) businesses are not included in the analysis and they are difficult to quantify. The state does not collect this information and data from the towns could not be secured for the entire region, so the partial data was excluded. DBA's have no employees besides the business owner, so its omission is unlikely to have a large impact on the final numbers.
- Demographics (age, race, education) for blue economy businesses.

Plymouth/South Shore available data from the Workforce Investment Board is not as robust as Barnstable, Dukes, and Nantucket Counties. This gap resulted in the report including some trends and salary data that was specific to just Barnstable County. A full analysis and comparison is difficult when the study region does not include the entire county.

Future blue economy analyses of the region should make a point to identify actual listing of blue businesses based on ground-truthed business purpose, not self-reported NAICS codes. Alternatively, the project should encourage businesses to revisit their NAICS codes and update to accurately reflect business purpose and report correct revenue figures. Future analysis should also include all of Plymouth County, as opposed to a subset of the County.

2. Defining Blue and Data Processing Details

2.1 Classification

The main goal was to explore and examine the blue economy on Cape Cod. The best way we found to classify businesses was through using NAICS codes. Each registered LLC must classify itself as one of the 1000+ NAICS 6-digit codes. According to the census.gov, “NAICS is a 2- through 6-digit hierarchical classification system, offering five levels of detail. Each digit in the code is part of a series of progressively narrower categories, and the more digits in the code signify greater classification detail”.

Additionally, the NTEE codes were used to classify the 2428 non-profits in the region, as many non-profits had misleading NAICS codes.

2.2 Defining Blue

The next step was deciding which of the 1000+ NAICS 6-digit codes would be part of the “blue economy”. We gathered and compiled multiple marine-industry NAICS code lists from several sources:

- UMASS Dartmouth Massachusetts Ocean Economy Study
- National Ocean Economic Program: Colgan, Charles S. *A Guide to the Measurement of the Market Data for the Ocean and Coastal Economy in the National Ocean Economics Program*. National Ocean Economics Program, January 2007; MIG Inc., IMPLAN Sector descriptions and NAICS bridge for the 440 IMPLAN sector scheme.
- <http://www.xmind.net/m/qdqe>
- <https://coast.noaa.gov/snapshots/faq/ocean-jobs.pdf> (pages 5 and 6)

After analyzing these sources and a manual cross check of known “blue businesses,” we generated a list of 168 6-digit NAICS codes. However, the codes differed in their proximity of relation to the blue economy. To address this, we split up the codes into three categories; Dark Blue, Medium Blue, and Low Blue. Dark Blue was for businesses that are directly dependent on the water while Low Blue was for businesses that may benefit from the water but could operate without water. Medium Blue were businesses that dark blue businesses depend upon or businesses that are likely located here because of the water (i.e., tourism) but do not depend directly upon the water. In the end, we decided upon 34 NAICS codes to make up the “Dark Blue Economy” and 84 NAICS codes to make up the supporting “Medium Blue Economy.” Low Blue was excluded from analysis.

A note about tourism: the region is attractive to tourists because of its beaches and water. The seasonal economy demonstrates that many businesses, especially hotels and restaurants are dependent on the tourists coming to the beaches. As such, we have left hotels/bed and breakfasts and full service restaurants as medium blue. Chain hotels and restaurants that would likely be in any populated area were removed. Other businesses that rely on tourism were included as medium blue: bike rentals, tour guides, etc. Some tourism businesses that occur on the water were classified as dark blue, despite having a medium blue NAICS code: watersports, charters/harbor cruises, and bait and tackle shops.

In order to capture blue non-profits whose NAICS codes did not match our blue definition process, we reviewed the non-profits (from the IRS.gov exempt business listings) and determined their level of blueness. This was done through sorting by NTEE classification codes, followed by a manual cross check for known blue non-profits. If warranted, their NAICS code was added to a blue category. For non-profits that were unknown, we looked up their website or their articles of incorporation on www.mass.gov to determine their purpose and make a determination regarding their level of blueness.

The list of blue non-profits and their employer identification numbers (EIN) was provided to NAICS.com to purchase the complete business listings for the non-profits. These data were added to the overall dataset.

2.3 Data Retrieval

With the 118 NAICS codes defined, we extracted data from three sources: the U.S. Census County Business Patterns, Naics.com and EMSI - Economicmodeling.com. The U.S. Census provided time-series data on the county level while Naics.com provided individual business listings. EMSI provided aggregated data summaries, by blue category (based on NAICS codes) for the region (118 zip codes).

2.4 Data Processing and Analysis

Each data source provided different avenues for analysis. Because each data source had different data points, it is impossible to fully integrate them. For instance, the Naics.com business listings do not include self-employed or sole proprietor data; EMSI has this missing data, but does not provide annual revenues or number of businesses, only average salary and number of jobs.

The U.S. Census data allowed for the analysis of Barnstable, Dukes, Nantucket and Plymouth County trends, by NAICS code from 2003 to 2012. Data was corrected for annual differences in field definitions (based on available metadata) and the data for blue NAICS codes were extracted. Year over year trends were calculated for entire geography and for all blue NAICS codes in the aggregate, with an emphasis on 2012 to 2014 data to correlate to years used for NAICS code analysis.

The data from Naics.org provided the current landscape of the “Blue Economy” and allowed for aggregating on a zip-code basis. Each business listing was coded dark blue or medium blue based on the definitions (by NAICS code or knowledge of the business). Using NAICS codes to define blue assumes that the businesses selected the appropriate NAICS code. Some businesses were blatantly not blue, despite being in a blue NAICS code. The SIC codes were used to further refine the blue classification, for instance, removing “design services.” These 458 businesses were removed from the dataset prior to analysis (a list of redacted businesses are listed in part XIII of the appendix). The business listings, were aggregated three ways- by industry (NAICS code), sector, and zip code to provide comparison data points; this was done for dark blue, medium blue, and all blue (dark + medium). The data was examined for trends and summarized in tables below.

To calculate each town’s dependence on the blue economy, the blue businesses were compared to the total businesses in each town (# blue employees/# total employees and blue revenues/total revenues). The EMSI data arrived as a report that needed no processing or further analysis. County specific data was summarized in tables below.

3. Geography

The project’s geography focused a specific region, comprised of all of Barnstable County, all of Dukes County, all of Nantucket County, and a subset of Plymouth County. As such, zip codes were used to characterize the region. The primary analysis included data for 74 zip codes; the following towns and zip codes comprise the project’s geographic region (including common mis-spellings):

COUNTY	TOWN	ZIP
PLYMOUTH	Plymouth	02361
	Plymouth	02362
	Plymouth	02360
	Wareham	02571
BARNSTABLE		
	Barnstable	02630
	Barnstable	02634
	Bass River	02664
	Bourne	02532
	Bourne	02559
	Brewster	02631
	Buzzards Bay	02532
	Buzzards Bay	02542
	Cataumet	02534
	Centerville	02632
	Centerville	02634
	Centerville	02636
	Chatham	02633
	Cotuit	02635
	Cummaquid	02637
	Dennis	02638
	Dennis Port	02639
	Dennisport	02639
	East Falmouth	02536
	East Dennis	02641
	East Falmouth	02536
	East Harwich	02645
	East Orleans	02643
	East Sandwich	02537
	Eastham	02642
Falmouth	02540	
Falmouth	02541	

COUNTY	TOWN	ZIP
	Falmouth	02543
	Forestdale	02644
	Hardwich	02645
	Harwich	02645
	Harwich Port	02646
	Harwichport	02646
	Hatchville	02536
	Hyannis	02601
	Hyannis Port	02647
	Marstons Mills	02648
	Marstons Mls	02648
	Mashpee	02649
	Monument Bch	02553
	Monument Beach	02533
	New Seabury	02649
	North Chatham	02650
	North Eastham	02651
	North Falmouth	02556
	North Falmouth	02565
	North Truro	02652
	Orleans	02653
	Osterville	02655
	Otis A F B	02542
	Otis Air National Guard	02542
	Otis ANG	02542
	Otis ANGB	02542
	Pocasset	02559
	Provincetown	02657
	Sagamore	02561
	Sagamore Bch	02562
	Sagamore Beach	02562
	Sandwich	02563
	Sandwich	02644
	Silver Beach	02565
	So Yarmouth	02664
	South Chatham	02659
	South Dennis	02660
	South Harwich	02661
	South Mashpee	02649

COUNTY	TOWN	ZIP
	South Orleans	02662
	South Wellfleet	02663
	South Yarmouth	02664
	South Yarmouth	02673
	Teaticket	02536
	Truro	02666
	Waquoit	02526
	Wellfleet	02667
	West Barnstable	02668
	West Barnstable	02668
	West Chatham	02669
	West Dennis	02670
	West Falmouth	02574
	West Harwich	02671
	West Hyannisport	02672
	West Hyannisprt	02672
	West Yarmouth	02673
	Woods Hole	02543
	Woodshole	02543
	Yarmouth	02664
	Yarmouth	02673
	Yarmouth	02675
	Yarmouth Port	02675
	Yarmouthport	02675
DUKES		
	Aquinnah	02535
	Chappaquiddick Island	02539
	Chilmark	02535
	Chilmark	02552
	Cuttyhunk	02713
	Edgartown	02539
	Gay Head	02535
	Gosnold	02713
	Menemsha	02552
	North Tisbury	02568
	Oak Bluffs	02557
	Tisbury	02568
	Tisbury	02573
	Tisbury	02575

COUNTY	TOWN	ZIP
	Vineyard Haven	02568
	Vineyard Haven	02573
	Vineyard Hvn	02568
	Vineyard Hvn	02573
	West Chop	02573
	West Tisbury	02568
	West Tisbury	02575
NANTUCKET		
	Nantucket	02554
	Nantucket	02564
	Nantucket	02584

4. Blue Economy NAICS Codes, Organized by Industry Sector

Dark Blue- Directly Related to the Water

Examples: fishing businesses; marinas; water sports; boat building

Medium Blue- Support for “High Blue” Businesses

Examples: steel production; metal fabrication; hotels, full service restaurants & sight-seeing for beach tourism industry

*Cannot account for portion of business that is not blue-related.

Note, in the final analysis, after coding individual businesses as dark or medium blue, many of the NAICS codes crossed between dark and medium blue. When adding in non-profits, there were many NAICS codes that are not listed below; these were assigned the appropriate industry sector, based on the majority of businesses using the code.

INDUSTRY SECTOR	DARK BLUE		MEDIUM BLUE	
		NAICS		NAICS
TOURISM & RECREATION				
	Recreational Boating	441210	Sporting and Athletic Goods Manufacturing	339920
	Boat Dealers	441222	Sporting and Recreational Goods and Supplies Merchant Wholesalers	423910
	Tours/Charters	487210	Sporting Goods Stores	451110
	Parks	712190	Scenic and Sightseeing Transportation, Other	487990
	Marinas	713930	Sports and Recreation Instruction	611620
	Other Amusement and Recreation, Yacht Clubs	713990	All Other Miscellaneous Schools and Instruction	611699
			Museums	712110
			Historical Sites	712120
			Zoos and Botanical Gardens	712130
			Hotels (except Casino Hotels) and Motels	721110
			Hotels-Motels-BnBs	721110.01
			Hotels-Motels-BnBs	721110.02
			Bed-and-Breakfast Inns	721191
			Hotels-Motels-BnBs	721191.01
			Hotels-Motels-BnBs	721191.02
			Hotels-Motels-BnBs	721199.02

			Hotels-Motels-BnBs	721199.03
			Hotels-Motels-BnBs	721199.04
			Hotels-Motels-BnBs	721199.06
			Hotels-Motels-BnBs	721199.09
			RV (Recreational Vehicle) Parks and Campgrounds	721211
			Full-Service Restaurants	722511
			Full Service Rest	722511.17
			Other Personal And Household Goods Repair And Maintenance	811490
SHIP & BOAT BUILDING	DARK BLUE		MEDIUM BLUE	
	Broadwoven canvas	313210		
	Textiles/Canvas	314910		
	Ship Building and Repair	336611		
	Boat Building and Repair	336612		
RENEWABLE LIVING RESOURCES	DARK BLUE		MEDIUM BLUE	
	Aquaculture	112510		
	Finfishing	114110		
	Shellfishing	114112		
	Other fishing	114119		
	Seafood Processors	311710		
	Seafood Wholesalers	424460		
	Seafood Retailers	445220		
MARINE TRANSPORTATION	DARK BLUE		MEDIUM BLUE	
	Coastal Freight	483113	Transportation Equipment and Supplies (except Motor Vehicle) Merchant Wholesalers	423860
	Coastal Passenger	483114	All Other Support Activities for Transportation	488999
	Inland Freight	483211		
	Port and Harbor Operations	488310		
	Other support for water transport	488390		
	Commercial transport equipment rental	532411		
MARINE TECHNOLOGY	DARK BLUE		MEDIUM BLUE	
	Search, Detection, Navigation, Guidance, System and Instrument	334511	Electrical Apparatus and Equipment, Wiring Supplies, and Related Equipment Merchant	423610

			Wholesalers	
	Navigational Services to Shipping	488330	Other Electronic Parts and Equipment Merchant Wholesalers	423690
	Geophysical Surveying and Mapping Services	541360	Engineering Services	541330
	Surveying and Mapping (except Geophysical) Services	541370	Communication Equipment Repair and Maintenance	811213
			Other Electronic and Precision Equipment Repair and Maintenance	811219
Marine Construction & Facilities	DARK BLUE		MEDIUM BLUE	
			Water And Sewer Line And Related Structures Construction	237110
			Oil and Gas Pipeline and Related Structures Construction	237120
			Other Heavy and Civil Engineering Construction	237990
			Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	331210
			Rolled Steel Shape Manufacturing	331221
			Aluminum Sheet, Plate, and Foil Manufacturing	331315
			Steel Investment Foundries	331512
			Fabricated Structural Metal Manufacturing	332312
			Plate Work Manufacturing	332313
			Sheet Metal Work Manufacturing	332322
			Power Boiler and Heat Exchanger Manufacturing	332410
			Metal Tank (Heavy Gauge)	332420

			Manufacturing	
			Hardware Manufacturing	332510
			Machine Shops	332710
			All Other Miscellaneous Fabricated Metal Product Manufacturing	332999
			Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing	333612
			Other Engine Equipment Manufacturing	333618
			Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	333923
			Welding and Soldering Equipment Manufacturing	333992
			Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	334220
			Other Communications Equipment Manufacturing	334290
			Other Measuring And Controlling Device Manufacturing	334519
			Relay and Industrial Control Manufacturing	335314
			Storage Battery Manufacturing	335911
			Metal Service Centers and Other Metal Merchant Wholesalers	423510
			Hardware Merchant Wholesalers	423710
			Construction and Mining (except Oil Well) Machinery and Equipment Merchant Wholesalers	423810

			Industrial Machinery and Equipment Merchant Wholesalers	423830
			Industrial Supplies Merchant Wholesalers	423840
			Recyclable Material Merchant Wholesalers	423930
			Other Building Material Dealers	444190
			Construction, Mining, and Forestry Machinery and Equipment Rental and Leasing	532412
PHYSICAL RESOURCE EXTRACTION	DARK BLUE		MEDIUM BLUE	
	Hydroelectric Power Generation	221111	Crude Petroleum and Natural Gas Extraction	211111
	Well drilling	235810	Construction Sand and Gravel Mining	212321
	Spices and Extracts	311942	Drilling Oil and Gas Wells	213111
			Support Activities for Oil and Gas Operations	213112
			Petroleum Refineries	324110
			Secondary Smelting and Alloying of Aluminum	331314
			Oil and Gas Field Machinery and Equipment Manufacturing	333132
			Petroleum Bulk Stations and Terminals	424710
			Petroleum and Petroleum Products Merchant Wholesalers (except Bulk Stations and Terminals)	424720
			Pipeline Transportation of Crude Oil	486110
			Pipeline Transportation of Natural Gas	486210
			Pipeline Transportation of Refined Petroleum	486910

			Products	
			All Other Pipeline Transportation	486990
RESEARCH, EDUCATION, ADVOCACY, SUPPORT SERVICES	DARK BLUE		MEDIUM BLUE	
	Environmental Consulting Services	541620	Other Miscellaneous Nondurable Goods Merchant Wholesalers	424990
	Other Scientific and Technical Consulting Services	541690	Other Commercial and Industrial Machinery and Equipment Rental and Leasing	532490
	Research and Development in the Physical, Engineering, and Life Sciences (except Biotechnology)	541712	Research And Development In Biotechnology	541711
	Environment, Conservation & Wildlife Orgs	813312	All Other Professional, Scientific, and Technical Services	541990
			Professional and Management Development Training	611430
			Apprenticeship Training	611513
			Other Technical and Trade Schools	611519
			Independent Artists, Writers, and Performers	711510

5. Blue Economy National Taxonomy of Exempt Entities (NTEE) Codes

Non-profit organizations often have NAICS codes that make it difficult to identify their relationship to the blue economy. The following National Taxonomy of Exempt Entities (NTEE) Codes were defined as potentially blue, to help identify non-profits to include in the analysis that would have otherwise been missing. All non-profits with these codes were pulled and their level of blue was individually assessed, based on knowledge of the group or reviewing their website or Articles of Incorporation.

A – Arts, Culture and Humanities

A56 – Natural History, Natural Science Museums

A57 – Science and Technology Museums

B – Education

B05 – Research Institutes and/or Public Policy Analysis

C – Environmental Quality, Protection and Beautification

All codes

D – Animal Related

All codes

K – Food, Agriculture and Nutrition

All codes

M – Public Safety, Disaster Preparedness and Relief

All codes

N – Recreation, Sports, Leisure and Athletics

All codes

6. Business Data - Aggregated by Industry & Industry Sector

6.1 Dark and Medium Blue Businesses - Aggregated by Industry Sector

	Industry Sector	Employee Count	Revenues	Business Count
Medium Blue				
	Tourism & Recreation	11,840	\$468,554,355	993
	Research, Education, Advocacy, Support Services	956	\$57,565,102	146
	Marine Technology	451	\$52,962,513	112
	Marine Construction & Facilities	230	\$42,856,315	33
	Marine Transportation	60	\$9,345,548	4
	Physical Resource Extraction	33	\$2,266,479	7
	Ship & Boat Building	5	\$0	1
Dark Blue				
	Research, Education, Advocacy, Support Services	3,640	\$386,972,952	110
	Tourism & Recreation	1,353	\$188,662,624	228
	Renewable Living Resources	486	\$75,925,736	118
	Marine Construction & Facilities	149	\$51,685,360	10
	Marine Technology	356	\$44,093,985	50
	Ship & Boat Building	139	\$44,048,115	29
	Marine Transportation	830	\$6,147,372	30
	Physical Resource Extraction	2	\$180,000	1
Aggregate – Dark & Medium				
	Tourism & Recreation	13,193	\$657,216,979	1221
	Research, Education, Advocacy, Support Services	4,596	\$444,538,054	256
	Marine Technology	807	\$97,056,498	162
	Marine Construction & Facilities		\$94,541,675	43

		379		
	Renewable Living Resources	486	\$75,925,736	118
	Ship & Boat Building	144	\$44,048,115	30
	Marine Transportation	890	\$15,492,920	34
	Physical Resource Extraction	35	\$2,446,479	8

Aggregate Dark & Medium Blue Industry Sector	% of Blue Revenues	% of Blue Employees	% of Blue Establishments
Tourism & Recreation	46%	64%	65%
Research, Education, Advocacy, Support Services	31%	22%	14%
Marine Technology	7%	4%	9%
Marine Construction & Facilities	7%	2%	2%
Renewable Living Resources	5%	2%	6%
Ship & Boat Building	3%	1%	2%
Marine Transportation	1%	4%	2%
Physical Resource Extraction	0%	0%	0%

6.2 Dark Blue Businesses - Aggregated by Industry (NAICS Code)

(items in parenthesis are authors' additions to NAISC description)

Industry Sector	NAICS	Employee Count	Revenues	Business Count
Research, Education, Advocacy, Support Services		3640	\$386,972,952	110
Grantmaking Foundations	813211	10	\$2,000	1
Environment, Conservation And Wildlife Organizations	813312	9	\$534,250	2
All Other Business Support Services	561499	5	\$566,211	3
Other Scientific And Technical Consulting Services	541690	48	\$6,015,235	19
Environmental Consulting Services	541620	234	\$28,163,687	34
Research And Development In The Physical, Engineering, And Life Sciences (except Biotechnology)	541712	2345	\$303,185,526	4
Religious Organizations (wrong self-report)	813110	0	\$0	1
National Security (Navy, Coast Guard)	928110	75	\$0	3

Administration Of Air And Water Resource And Solid Waste Management Programs	924110	146	\$0	2
Administration Of Conservation Programs	924120	219	\$0	13
Executive Offices	921110	251	\$0	1
Labor Unions and Similar Labor Organizations	813930	2	\$2	1
Janitorial Services	561720	1	\$10,962	1
Public Relations Agencies	541820	2	\$50,692	1
All Other Support Services	561990	2	\$65,045	2
All Other Outpatient Care Centers	621498	5	\$98,321	1
Electrical Contractors and Other Wiring Installation Contractors (wrong self-report)	238210	3	\$165,823	1
Unclassified Establishments	999990	12	\$353,552	7
Other Social Advocacy Organizations	813319	8	\$605,271	2
Research and Development in the Social Sciences and Humanities	541720	18	\$1,320,367	1
Civic and Social Organizations	813410	29	\$5,506,117	7
Professional Organizations	813920	6	\$8,100,580	2
Colleges, Universities, and Professional Schools	611310	210	\$32,229,311	1
Tourism & Recreation		1353	\$188,662,624	228
Bed-And-Breakfast Inns	721191	0	\$0	1
All Other Travel Arrangement And Reservation Services	561599	1	\$0	1
Grape Vineyards (incorrect self-reporting)	111332	2	\$63,000	1
Recreational and Vacation Camps (except Campgrounds)	721214	12	\$83,376	1
Nature Parks And Other Similar Institutions	712190	3	\$150,000	1
Recreational Goods Rental	532292	8	\$575,976	5
Sporting And Recreational Goods And Supplies Merchant Wholesalers	423910	11	\$2,275,279	4
Sporting And Athletic Goods Manufacturing	339920	32	\$3,113,563	5
Sports And Recreation Instruction	611620	17	\$3,247,963	6
Sporting Goods Stores	451110	72	\$6,463,361	25
Golf Courses and Country Clubs	713910	24	\$12,940,999	2
Scenic And Sightseeing Transportation, Water	487210	88	\$15,167,032	11
All Other Amusement And Recreation Industries	713990	287	\$31,874,455	50
Boat Dealers	441222	230	\$47,329,298	38
Marinas	713930	448	\$61,734,014	53
Other Spectator Sports	711219	1	\$28,604	1
Nonresidential Property Managers	531312	2	\$35,530	1
Other Similar Organizations (except Business, Professional, Labor, and Political Organizations)	813990	5	\$63,713	3
General Medical and Surgical Hospitals (wrong self-report)	622110	0	\$67,327	1
Other Personal And Household Goods Repair And Maintenance	811490	2	\$72,762	1
Motorcycle, ATV, And All Other Motor Vehicle	441228	1	\$110,000	1

Dealers				
Business Associations	813910	1	\$194,409	1
Fitness and Recreational Sports Centers	713940	50	\$1,351,201	7
Full-Service Restaurants	722511	56	\$1,720,762	8
Renewable Living Resources		486	\$75,925,736	118
Other Marine Fishing	114119	1	\$63,210	1
Other Aquaculture	112519	6	\$381,708	3
Shellfish Fishing	114112	11	\$583,380	9
Shellfish Farming	112512	16	\$638,252	6
Fish And Seafood Markets	445220	140	\$15,430,335	17
Fish And Seafood Merchant Wholesalers	424460	229	\$54,071,759	45
Finfish Farming And Fish Hatcheries	112511	28	\$1,429,491	12
All Other Professional, Scientific, And Technical Services	541990	24	\$1,611,027	11
Finfish Fishing	114111	31	\$1,716,574	14
Marine Construction & Facilities		149	\$51,685,360	10
Other Heavy And Civil Engineering Construction	237990	149	\$51,685,360	10
Marine Technology		356	\$44,093,985	50
Navigational Services To Shipping	488330	17	\$1,231,908	6
Surveying And Mapping (except Geophysical) Services	541370	145	\$10,112,018	29
Search, Detection, Navigation, Guidance, Aeronautical, And Nautical System And Instrument Manufacturing	334511	151	\$28,198,296	4
Engineering Services	541330	43	\$4,551,763	11
Ship & Boat Building		139	\$44,048,115	29
Broadwoven Fabric Mills	313210	14	\$1,560,120	4
Boat Building	336612	89	\$10,542,362	21
Ship Building And Repairing	336611	36	\$31,945,633	4
Marine Transportation		830	\$6,147,372	30
Commercial Air, Rail, And Water Transportation Equipment Rental And Leasing	532411	5	\$346,332	3
Inland Water Freight Transportation	483211	5	\$437,179	2
Port And Harbor Operations	488310	14	\$655,122	2
Other Support Activities For Water Transportation	488390	16	\$1,208,642	8
Inland Water Passenger Transportation	483212	765	\$1,464,688	8
Transportation Equipment And Supplies (except Motor Vehicle) Merchant Wholesalers	423860	25	\$2,035,409	7
Physical Resource Extraction		2	\$180,000	1
Drilling Oil And Gas Wells	213111	2	\$180,000	1

6.3 Medium Blue Businesses, Aggregated by Industry

(items in parenthesis are authors' additions to NAISC description)

Industry Sector	NAICS	Employee Count	Revenues	Business Count
Tourism & Recreation		11840	\$468,554,355	993
Home Centers (wrong self-report)	444110	0	\$0	1
All Other Travel Arrangement And Reservation Services	561599	2	\$100,000	1
All Other Miscellaneous Store Retailers (except Tobacco Stores)	453998	2	\$248,792	1
Other Personal And Household Goods Repair And Maintenance	811490	4	\$254,095	3
Motorcycle, ATV, And All Other Motor Vehicle Dealers	441228	3	\$285,140	2
Other Similar Organizations (except Business, Professional, Labor, and Political Organizations)	813990	17	\$687,240	8
Fitness and Recreational Sports Centers	713940	11	\$776,771	3
Museums	712110	10	\$807,577	1
Sporting And Athletic Goods Manufacturing	339920	17	\$1,316,358	6
Sports And Recreation Instruction	611620	33	\$1,963,134	11
Recreational Goods Rental	532292	58	\$2,747,318	9
All Other Amusement And Recreation Industries	713990	113	\$4,965,549	25
RV (recreational Vehicle) Parks And Campgrounds	721211	169	\$7,700,245	20
Zoos And Botanical Gardens	712130	13	\$11,588,738	3
Sporting Goods Stores	451110	246	\$15,794,661	51
Sporting And Recreational Goods And Supplies Merchant Wholesalers	423910	53	\$21,327,117	9
Bed-And-Breakfast Inns	721191	737	\$33,571,753	158
Hotels (except Casino Hotels) And Motels	721110	2837	\$140,356,427	221
Full-Service Restaurants	722511	7515	\$224,063,440	460
Research, Education, Advocacy, Support Services		956	\$57,565,102	146
Administration Of Conservation Programs	924120	7	\$0	1
Executive Offices	921110	500	\$0	1
Research And Development In Biotechnology	541711	1	\$21,565	1
Business Associations	813910	2	\$63,444	1
All Other Support Services	561990	5	\$64,909	2
Trust, Fiduciary, and Custody Activities	523991	4	\$76,783	2
Fish And Seafood Merchant Wholesalers (wrong self-report)	424460	14	\$110,701	1
Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	711410	1	\$117,713	1
Independent Artists, Writers, and Performers	711510	1	\$233,615	1
Unclassified Establishments	999990	9	\$243,898	6
Research and Development in the Social Sciences and Humanities	541720	8	\$574,262	2
Civic and Social Organizations	813410	37	\$2,084,105	9

Other Scientific And Technical Consulting Services	541690	27	\$2,403,393	7
Environmental Consulting Services	541620	27	\$3,008,664	6
Research And Development In The Physical, Engineering, And Life Sciences (except Biotechnology)	541712	70	\$7,075,668	16
All Other Professional, Scientific, And Technical Services	541990	243	\$41,486,382	89
Marine Technology		451	\$52,962,513	112
Other Measuring And Controlling Device Manufacturing	334519	16	\$1,485,000	3
Other Electronic And Precision Equipment Repair And Maintenance	811219	29	\$1,841,050	13
Engineering Services	541330	406	\$49,636,463	96
Marine Construction & Facilities		230	\$42,856,315	33
Oil And Gas Pipeline And Related Structures Construction	237120	4	\$323,709	2
Other Heavy And Civil Engineering Construction	237990	33	\$3,749,241	7
Water And Sewer Line And Related Structures Construction	237110	193	\$38,783,365	24
Marine Transportation		60	\$9,345,548	4
Transportation Equipment And Supplies (except Motor Vehicle) Merchant Wholesalers	423860	60	\$9,345,548	4
Physical Resource Extraction		33	\$2,266,479	7
Water Supply and Irrigation Systems	221310	2	\$96,310	2
Wind Electric Power Generation	221115	1	\$97,702	1
Construction Sand And Gravel Mining	212321	3	\$321,782	1
Support Activities For Oil And Gas Operations	213112	27	\$1,750,685	3
Ship & Boat Building		5	\$0	1
General Warehousing And Storage	493110	5	\$0	1

7. Blue Economy Data, Aggregated by Geography

7.1 Dark and Medium Blue Businesses, Aggregated by County

	Total Revenues	Total Employees	Total Businesses	All Blue Revenue	All Blue Employees	All Blue Businesses	% Blue Revenues	% Blue Employees	% Blue Businesses
Barnstable County	\$ 8,205,860,852	117,564	17,207	\$1,141,310,553	15,983	1,383	14%	14%	8%
Nantucket County	\$ 572,511,171	8,000	1,552	\$66,604,412	1,609	129	12%	20%	8%
Dukes County	\$ 911,673,462	9,482	1,569	\$68,708,702	1,160	150	8%	12%	10%
Plymouth County (portion)	\$ 3,168,546,980	40,853	4,092	\$154,642,789	1,778	210	5%	4%	5%
TOTAL	\$ 12,858,592,465	175,899	24,420	\$ 1,431,266,456	20,530	1,872	11%	12%	8%

7.2 Dark Blue Businesses, Aggregated by County

	Total Revenues	Total Employees	Total Businesses	Dark Blue Revenues	Dark Blue Employees	Dark Blue Businesses	% Dark Blue Revenues	% Dark Blue Employees	% Dark Blue Businesses
Barnstable County	\$8,205,860,852	117,564	17,207	\$675,754,137	6182	419	8%	5%	2%
Nantucket County	\$ 572,511,171	8,000	1,552	\$31,892,626	172	37	6%	2%	2%
Dukes County	\$ 911,673,462	9,482	1,569	\$26,275,636	255	49	3%	3%	3%
Plymouth County (portion)	\$3,168,546,980	40,853	4,092	\$63,793,745	346	71	2%	1%	2%

TOTAL	\$12,858,592,465	175,899	24,420	\$797,716,144	6,955	576	6%	4%	2%
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7.3 Medium Blue Businesses, Aggregated by County

	Total Revenues	Total Employees	Total Businesses	Medium Blue Revenues	Medium Blue Employees	Medium Blue Businesses	% Med. Blue Revenues	% Med. Blue Employees	% Med. Blue Businesses
Barnstable County	\$8,205,860,852	117,564	17,207	\$465,556,416	9,801	964	6%	8%	6%
Nantucket County	\$ 572,511,171	8,000	1,552	\$34,711,786	1,437	92	6%	18%	6%
Dukes County	\$ 911,673,462	9,482	1,569	\$42,433,066	905	101	5%	10%	6%
Plymouth County (portion)	\$3,168,546,980	40,853	4,092	\$90,849,044	1,432	139	3%	4%	3%
TOTAL	\$12,858,592,465	175,899	24,420	\$633,550,312	13,575	1,296	5%	8%	5%

7.4 Dark & Medium Blue Businesses, Aggregated by Town

Town	Sum of Total Revenues	Sum of Total Employees	Sum of Total Businesses	Sum of Blue Revenues	Sum of Blue Employees	Sum of Blue Businesses	% Blue Revenues	% Blue Employees	% Blue Businesses	Blue as a % of total revenue	Blue as a % of total employees	Blue as a % of total businesses
Barnstable	\$3,104,759,787	31,677	4,075	\$159,688,678	2,495	248	5%	8%	6%	1.24%	1.42%	1.02%
Bourne	\$602,570,112	10,724	1,259	\$104,855,018	932	101	17%	9%	8%	0.82%	0.53%	0.41%
Brewster	\$166,173,477	3,392	697	\$12,755,716	282	37	8%	8%	5%	0.10%	0.16%	0.15%
Chatham	\$257,107,874	3,742	721	\$35,726,479	667	79	14%	18%	11%	0.28%	0.38%	0.32%
Dennis	\$357,663,565	5,852	1,004	\$48,531,711	892	92	14%	15%	9%	0.38%	0.51%	0.38%

Town	Sum of Total Revenues	Sum of Total Employees	Sum of Total Businesses	Sum of Blue Revenues	Sum of Blue Employees	Sum of Blue Businesses	% Blue Revenues	% Blue Employees	% Blue Businesses	Blue as a % of total revenue	Blue as a % of total employees	Blue as a % of total businesses
Eastham	\$98,839,072	2,027	337	\$12,356,730	309	53	13%	15%	16%	0.10%	0.18%	0.22%
Falmouth	\$1,215,290,778	20,057	2,367	\$462,921,234	4,683	216	38%	23%	9%	3.60%	2.66%	0.88%
Harwich	\$381,887,905	6,220	1,038	\$72,233,077	792	77	19%	13%	7%	0.56%	0.45%	0.32%
Martha's Vineyard	\$911,673,462	9,482	1,569	\$68,708,702	1,160	150	8%	12%	10%	0.53%	0.66%	0.61%
Mashpee	\$291,656,106	6,057	960	\$37,105,090	673	54	13%	11%	6%	0.29%	0.38%	0.22%
Nantucket	\$572,511,171	8,000	1,552	\$66,604,412	1,609	129	12%	20%	8%	0.52%	0.91%	0.53%
Orleans	\$411,663,207	4,761	742	\$53,901,808	740	72	13%	16%	10%	0.42%	0.42%	0.29%
Plymouth	\$2,770,604,369	33,559	3,382	\$85,724,590	1,506	178	3%	4%	5%	0.67%	0.86%	0.73%
Provincetown	\$188,374,334	3,503	624	\$30,478,547	1,065	103	16%	30%	17%	0.24%	0.61%	0.42%
Sandwich	\$430,373,326	7,100	1,388	\$36,696,135	648	74	9%	9%	5%	0.29%	0.37%	0.30%
Truro	\$28,027,724	711	107	\$2,952,563	47	12	11%	7%	11%	0.02%	0.03%	0.05%
Wareham	\$397,942,611	7,294	710	\$68,918,199	272	32	17%	4%	5%	0.54%	0.15%	0.13%
Wellfleet	\$73,825,428	1,615	271	\$12,776,730	384	36	17%	24%	13%	0.10%	0.22%	0.15%
Yarmouth	\$597,648,157	10,126	1,617	\$58,331,037	1,374	129	10%	14%	8%	0.45%	0.78%	0.53%
TOTAL	\$12,858,592,465	\$175,899	\$24,420	\$1,431,266,456	\$20,530	\$1,872	11%	12%	8%	11.13%	11.67%	7.67%

7.5 Dark Blue Businesses, Aggregated by Town

Town	Sum of Total Revenues	Sum of Total Employees	Sum of Total Businesses	Sum of Dark Blue Revenues	Sum of Dark Blue Employees	Sum of Dark Blue Businesses	% Dark Blue Revenues	% Dark Blue Employees	% Dark Blue Businesses
Falmouth	\$1,215,290,778	20,057	2,367	\$399,694,065	3,520	81	33%	18%	3%
Bourne	\$602,570,112	10,724	1,259	\$91,706,409	590	47	15%	6%	4%
Barnstable	\$3,104,759,787	31,677	4,075	\$65,959,840	493	82	2%	2%	2%
Wareham	\$397,942,611	7,294	710	\$40,402,673	124	14	10%	2%	2%

Town	Sum of Total Revenues	Sum of Total Employees	Sum of Total Businesses	Sum of Dark Blue Revenues	Sum of Dark Blue Employees	Sum of Dark Blue Businesses	% Dark Blue Revenues	% Dark Blue Employees	% Dark Blue Businesses
Nantucket	\$572,511,171	8,000	1,552	\$31,892,626	172	37	6%	2%	2%
Orleans	\$411,663,207	4,761	742	\$27,677,105	130	22	7%	3%	3%
Martha's Vineyard	\$911,673,462	9,482	1,569	\$26,275,636	255	49	3%	3%	3%
Plymouth	\$2,770,604,369	33,559	3,382	\$23,391,072	222	57	1%	1%	2%
Mashpee	\$291,656,106	6,057	960	\$17,559,994	358	18	6%	6%	2%
Dennis	\$357,663,565	5,852	1,004	\$15,799,418	115	24	4%	2%	2%
Chatham	\$257,107,874	3,742	721	\$15,443,496	188	36	6%	5%	5%
Harwich	\$381,887,905	6,220	1,038	\$12,332,047	92	22	3%	1%	2%
Sandwich	\$430,373,326	7,100	1,388	\$11,445,753	75	17	3%	1%	1%
Yarmouth	\$597,648,157	10,126	1,617	\$7,058,103	77	22	1%	1%	1%
Wellfleet	\$73,825,428	1,615	271	\$6,635,615	167	18	9%	10%	7%
Provincetown	\$188,374,334	3,503	624	\$1,960,945	277	10	1%	8%	2%
Eastham	\$98,839,072	2,027	337	\$1,211,840	77	11	1%	4%	3%
Brewster	\$166,173,477	3,392	697	\$1,118,873	21	7	1%	1%	1%
Truro	\$28,027,724	711	107	\$150,634	2	2	1%	0%	2%

7.6 Medium Blue Businesses, Aggregated by Town

Town	Sum of Total Revenues	Sum of Total Employees	Sum of Total Businesses	Sum of Medium Blue Revenues	Sum of Medium Blue Employees	Sum of Medium Blue Businesses	% Med. Blue Revenues	% Med. Blue Employees	% Med. Blue Businesses
Barnstable	\$3,104,759,787	31,677	4,075	\$93,728,838	2,002	166	3%	6%	4%
Falmouth	\$1,215,290,778	20,057	2,367	\$63,227,169	1,163	135	5%	6%	6%
Plymouth	\$2,770,604,369	33,559	3,382	\$62,333,518	1,284	121	2%	4%	4%

Harwich	\$381,887,905	6,220	1,038	\$59,901,030	700	55	16%	11%	5%
Yarmouth	\$597,648,157	10,126	1,617	\$51,272,934	1,297	107	9%	13%	7%
Martha's Vineyard	\$911,673,462	9,482	1,569	\$42,433,066	905	101	5%	10%	6%
Nantucket	\$572,511,171	8,000	1,552	\$34,711,786	1,437	92	6%	18%	6%
Dennis	\$357,663,565	5,852	1,004	\$32,732,293	777	68	9%	13%	7%
Provincetown	\$188,374,334	3,503	624	\$28,517,602	788	93	15%	22%	15%
Wareham	\$397,942,611	7,294	710	\$28,515,526	148	18	7%	2%	3%
Orleans	\$411,663,207	4,761	742	\$26,224,703	610	50	6%	13%	7%
Sandwich	\$430,373,326	7,100	1,388	\$25,250,382	573	57	6%	8%	4%
Chatham	\$257,107,874	3,742	721	\$20,282,983	479	43	8%	13%	6%
Mashpee	\$291,656,106	6,057	960	\$19,545,096	315	36	7%	5%	4%
Bourne	\$602,570,112	10,724	1,259	\$13,148,609	342	54	2%	3%	4%
Brewster	\$166,173,477	3,392	697	\$11,636,843	261	30	7%	8%	4%
Eastham	\$98,839,072	2,027	337	\$11,144,890	232	42	11%	11%	12%
Wellfleet	\$73,825,428	1,615	271	\$6,141,115	217	18	8%	13%	7%
Truro	\$28,027,724	711	107	\$2,801,929	45	10	10%	6%	9%

7.7 Dark Blue Businesses, Aggregated by Zip Code

ZIP Codes	Town	Total Revenues	Total Employees	Total Businesses	Dark Blue Revenues	Dark Blue Employees	Dark Blue Businesses	% Dark Blue Revenues	% Dark Blue Employees	% Dark Blue Businesses
02360	Plymouth	\$ 2,769,644,662	33,516	3,376	\$23,196,663	221	56	1%	1%	2%
02361	Plymouth	\$ 71,301	1	1				0%	0%	0%
02362	Plymouth	\$ 888,406	42	5	\$ 194,409	1	1	22%	2%	20%
02532	Bourne/ Buzzards Bay	\$ 358,193,981	6,086	724	\$ 50,362,508	432	28	14%	7%	4%
02534	Cataumet	\$ 30,277,464	411	54	\$ 5,932,383	43	6	20%	10%	11%
02535	Aquinnah/Gay Head/Chilmark	\$ 27,069,783	731	132	\$ 747,688	29	5	3%	4%	4%
02536	East Falmouth /Hatchville/ Teaticket	\$ 345,534,527	4,739	990	\$ 5,677,613	539	23	2%	11%	2%
02537	East Sandwich	\$ 112,409,286	1,512	318	\$ 287,359	4	3	0%	0%	1%
02539	Chappaquiddick Island/Edgartown	\$ 208,541,552	3,078	452	\$ 15,298,280	72	18	7%	2%	4%
02540	Falmouth	\$ 578,385,044	9,171	1,005	\$ 76,017,721	307	34	13%	3%	3%
02541	Falmouth	\$ 521,076	10	5	\$ 235,530	5	2	45%	50%	40%
02542	Buzzards Bay/Otis AFB	\$ 672,105	1,137	36				0%	0%	0%
02543	Falmouth/Woods Hole	\$ 183,563,332	4,415	106	\$296,128,514	2479	10	161%	56%	9%
02552	Chilmark/Menemsha	\$ 898,869	11	3				0%	0%	0%
02553	Monument Beach	\$ 4,013,104	96	23				0%	0%	0%
02554	Nantucket	\$ 555,311,698	7,857	1,517	\$ 31,892,626	172	37	6%	2%	2%

ZIP Codes	Town	Total Revenues	Total Employees	Total Businesses	Dark Blue Revenues	Dark Blue Employees	Dark Blue Businesses	% Dark Blue Revenues	% Dark Blue Employees	% Dark Blue Businesses
02556	North Falmouth	\$ 91,715,780	1,537	231	\$ 21,340,881	176	10	23%	11%	4%
02557	Oaks Bluffs	\$ 174,774,518	1,791	214	\$ 989,201	29	5	1%	2%	2%
02559	Bourne/Pocasset	\$ 131,768,351	1,622	241	\$ 33,524,518	94	9	25%	6%	4%
02561	Sagamore	\$ 25,500,530	330	38	\$ 68,000	1	1	0%	0%	3%
02562	Sagamore Beach	\$ 52,144,577	1,042	143	\$ 1,819,000	20	3	3%	2%	2%
02563	Sandwich	\$ 272,938,657	4,852	893	\$ 10,411,355	58	10	4%	1%	1%
02564	Nantucket	\$ 15,770,254	93	21				0%	0%	0%
02568	North Tisbury /Tisbury/ West Tisbury/Vineyard Haven	\$ 438,831,863	3,212	653	\$ 9,240,467	125	20	2%	4%	3%
02571	Wareham	\$ 397,942,611	7,294	710	\$ 40,402,673	124	14	10%	2%	2%
02574	West Falmouth	\$ 15,571,019	185	30	\$ 293,806	14	2	2%	8%	7%
02575	Tisbury/West Tisbury	\$ 61,093,245	622	108				0%	0%	0%
02584	Nantucket	\$ 1,429,219	50	14				0%	0%	0%
02601	Hyannis	\$ 2,525,872,451	21,499	1,941	\$ 31,712,283	243	28	1%	1%	1%
02630	Barnstable	\$ 34,484,549	1,650	186	\$ 2,289,927	24	8	7%	1%	4%
02631	Brewster	\$ 166,173,477	3,392	697	\$ 1,118,873	21	7	1%	1%	1%
02632	Centerville	\$ 135,930,501			\$ 2,028,488	24	8	1%	1%	1%

ZIP Codes	Town	Total Revenues	Total Employees	Total Businesses	Dark Blue Revenues	Dark Blue Employees	Dark Blue Businesses	% Dark Blue Revenues	% Dark Blue Employees	% Dark Blue Businesses
			2,495	559						
02633	Chatham	\$ 183,144,192	2,857	546	\$ 10,291,321	141	24	6%	5%	4%
02634	Barnstable/Centerville	\$ 500,000	1	1				0%	0%	0%
02635	Cotuit	\$ 51,979,004	858	213	\$ 281,893	3	2	1%	0%	1%
02637	Cummaquid	\$ 5,831,331	108	18				0%	0%	0%
02638	Dennis	\$ 57,088,834	903	222	\$ 6,332,061	28	2	11%	3%	1%
02639	Dennisport	\$ 73,914,073	1,342	189	\$ 5,017,394	40	7	7%	3%	4%
02641	East Dennis	\$ 12,175,561	193	40	\$ 773,423	13	3	6%	7%	8%
02642	Eastham	\$ 69,625,592	1,591	284	\$ 960,393	74	8	1%	5%	3%
02643	East Orleans	\$ 4,785,616	89	28	\$ 285,380	6	2	6%	7%	7%
02644	Forestdale/Sandwich	\$ 45,025,383	736	177	\$ 747,039	13	4	2%	2%	2%
02645	Harwich/East Harwich	\$ 220,362,937	4,165	730	\$ 4,507,093	44	15	2%	1%	2%
02646	Harwichport	\$ 69,562,462	1,457	201	\$ 7,824,954	48	7	11%	3%	3%
02647	Hyannisport	\$ 6,983,738	67	14	\$ 169,637	20	2	2%	30%	14%
02648	Marstons Mills	\$ 94,830,876	1,613	470	\$ 684,037	17	10	1%	1%	2%
02649	Mashpee/New Seabury /South Mashpee	\$ 291,656,106	6,057	960	\$ 17,559,994	358	18	6%	6%	2%
02650	North Chatham	\$ 31,177,351			\$ 2,552,624	25	6	8%	7%	11%

ZIP Codes	Town	Total Revenues	Total Employees	Total Businesses	Dark Blue Revenues	Dark Blue Employees	Dark Blue Businesses	% Dark Blue Revenues	% Dark Blue Employees	% Dark Blue Businesses
			377	54						
02651	North Eastham	\$ 29,213,480	436	53	\$ 251,447	3	3	1%	1%	6%
02652	North Truro	\$ 13,069,721	194	50	\$ 150,634	2	2	1%	1%	4%
02653	Orleans	\$ 401,473,388	4,615	697	\$ 26,541,725	116	19	7%	3%	3%
02655	Osterville	\$ 198,119,100	2,083	405	\$ 27,115,882	136	13	14%	7%	3%
02657	Provincetown	\$ 188,374,334	3,503	624	\$ 1,960,945	277	10	1%	8%	2%
02659	South Chatham	\$ 26,598,489	307	86	\$ 1,829,263	17	5	7%	6%	6%
02660	South Dennis	\$ 181,798,486	2,783	428	\$ 2,454,399	20	7	1%	1%	2%
02661	South Harwich	\$ 73,893,158	212	15				0%	0%	0%
02662	South Orleans	\$ 5,404,203	57	17	\$ 850,000	8	1	16%	14%	6%
02663	South Wellfleet	\$ 8,096,028	203	25	\$ 100,000	2	1	1%	1%	4%
02664	Bass River/South Yarmouth/Yarmouth	\$ 285,319,075	5,121	682	\$ 3,492,986	31	9	1%	1%	1%
02666	Truro	\$ 14,958,003	517	57				0%	0%	0%
02667	Wellfleet	\$ 65,729,400	1,412	246	\$ 6,535,615	165	17	10%	12%	7%
02668	West Barnstable	\$ 49,286,069	1,284	259	\$ 1,677,693	26	11	3%	2%	4%
02669	West Chatham	\$ 16,187,842	201	35	\$ 770,288	5	1	5%	2%	3%
02670	West Dennis	\$ 32,686,611			\$ 1,222,141	14	5	4%	2%	4%

ZIP Codes	Town	Total Revenues	Total Employees	Total Businesses	Dark Blue Revenues	Dark Blue Employees	Dark Blue Businesses	% Dark Blue Revenues	% Dark Blue Employees	% Dark Blue Businesses
			631	125						
02671	West Harwich	\$ 18,069,348	386	92				0%	0%	0%
02672	West Hyannisport	\$ 942,168	19	9				0%	0%	0%
02673	Yarmouth/South Yarmouth/West Yarmouth	\$ 169,223,671	3,124	500	\$ 2,446,314	30	8	1%	1%	2%
02675	Yarmouth/Yarmouthport	\$ 143,105,411	1,881	435	\$ 1,118,803	16	5	1%	1%	1%
02713	Cuttyhunk/Gosnold	\$ 463,632	37	7	\$ -	0	1	0%	0%	14%

7.8 Medium Blue Businesses, Aggregated by Zip Code

ZIP Codes	Town	Total Revenues	Total Employees	Total Businesses	Medium Blue Revenues	Medium Blue Employees	Medium Blue Businesses	% Med. Blue Revenues	% Med. Blue Employees	% Med. Blue Businesses
02360	Plymouth	\$2,769,644,662	33,516	3,376	\$62,333,518	1284	121	2%	4%	4%
02361	Plymouth	\$ 71,301	1	1				0%	0%	0%
02362	Plymouth	\$ 888,406	42	5				0%	0%	0%
02532	Bourne/Buzzards Bay	\$ 358,193,981	6,086	724	\$ 6,305,465	188	23	2%	3%	3%
02534	Cataumet	\$ 30,277,464	411	54	\$ 885,865	29	4	3%	7%	7%
02535	Aquinnah/Gay Head/Chilmark	\$ 27,069,783	731	132	\$ 3,570,541	91	8	13%	12%	6%
02536	East Falmouth/Hatchville/Teaticket	\$ 345,534,527	4,739	990	\$30,785,505	268	44	9%	6%	4%
02537	East Sandwich	\$ 112,409,286	1,512	318	\$ 1,719,977	65		2%	4%	3%

ZIP Codes	Town	Total Revenues	Total Employees	Total Businesses	Medium Blue Revenues	Medium Blue Employees	Medium Blue Businesses	% Med. Blue Revenues	% Med. Blue Employees	% Med. Blue Businesses
							10			
02539	Chappaquiddick Island/Edgartown	\$ 208,541,552	3,078	452	\$12,569,573	494	41	6%	16%	9%
02540	Falmouth	\$ 578,385,044	9,171	1,005	\$24,613,241	694	64	4%	8%	6%
02541	Falmouth	\$ 521,076	10	5				0%	0%	0%
02542	Buzzards Bay/Otis AFB	\$ 672,105	1,137	36	\$ 102,305	2	1	15%	0%	3%
02543	Falmouth/Woods Hole	\$ 183,563,332	4,415	106	\$ 6,644,110	170	15	4%	4%	14%
02552	Chilmark/Menemsha	\$ 898,869	11	3				0%	0%	0%
02553	Monument Beach	\$ 4,013,104	96	23	\$ 248,792	2	1	6%	2%	4%
02554	Nantucket	\$ 555,311,698	7,857	1,517	\$ 3,430,129	1419	90	6%	18%	6%
02556	North Falmouth	\$ 91,715,780	1,537	231	\$ 1,120,869	29	10	1%	2%	4%
02557	Oaks Bluffs	\$ 174,774,518	1,791	214	\$ 2,314,950	65	8	1%	4%	4%
02559	Bourne/Pocasset	\$ 131,768,351	1,622	241	\$ 3,177,867	74	13	2%	5%	5%
02561	Sagamore	\$ 25,500,530	330	38	\$ 1,360,351	22	2	5%	7%	5%
02562	Sagamore Beach	\$ 52,144,577	1,042	143	\$ 1,067,964	25	10	2%	2%	7%
02563	Sandwich	\$ 272,938,657	4,852	893	\$20,913,088	480	41	8%	10%	5%
02564	Nantucket	\$ 15,770,254	93	21	\$ 1,281,657	18	2	8%	19%	10%
02568	North Tisbury/Tisbury/West Tisbury/Vineyard Haven	\$ 438,831,863	3,212	653	\$12,429,264	245	42	3%	8%	6%
02571	Wareham	\$ 397,942,611	7,294	710	\$28,515,526	148	18	7%	2%	3%
02574	West Falmouth	\$ 15,571,019	185	30	\$ 63,444	2	2	0%	1%	7%
02575	Tisbury/West Tisbury	\$ 61,093,245	622	108	\$11,548,738	10	2	19%	2%	2%
02584	Nantucket	\$ 1,429,219						0%	0%	0%

ZIP Codes	Town	Total Revenues	Total Employees	Total Businesses	Medium Blue Revenues	Medium Blue Employees	Medium Blue Businesses	% Med. Blue Revenues	% Med. Blue Employees	% Med. Blue Businesses
			50	14						
02601	Hyannis	\$2,525,872,451	21,499	1,941	\$52,843,550	1398	96	2%	7%	5%
02630	Barnstable	\$ 34,484,549	1,650	186	\$ 2,992,177	50	10	9%	3%	5%
02631	Brewster	\$ 166,173,477	3,392	697	\$11,636,843	261	30	7%	8%	4%
02632	Centerville	\$ 135,930,501	2,495	559	\$ 3,943,563	101	22	3%	4%	4%
02633	Chatham	\$ 183,144,192	2,857	546	\$18,319,433	425	34	10%	15%	6%
02634	Barnstable/Centerville	\$ 500,000	1	1				0%	0%	0%
02635	Cotuit	\$ 51,979,004	858	213	\$ 2,099,656	52	6	4%	6%	3%
02637	Cummaquid	\$ 5,831,331	108	18	\$ 560,000	20	1	10%	19%	6%
02638	Dennis	\$ 57,088,834	903	222	\$ 3,949,616	134	13	7%	15%	6%
02639	Dennisport	\$ 73,914,073	1,342	189	\$14,337,053	445	29	19%	33%	15%
02641	East Dennis	\$ 12,175,561	193	40	\$ 2,265,259	51	3	19%	26%	8%
02642	Eastham	\$ 69,625,592	1,591	284	\$ 9,894,002	202	37	14%	13%	13%
02643	East Orleans	\$ 4,785,616	89	28	\$ 687,000	19	4	14%	21%	14%
02644	Forestdale/Sandwich	\$ 45,025,383	736	177	\$ 2,617,317	28	6	6%	4%	3%
02645	Harwich/East Harwich	\$ 220,362,937	4,165	730	\$38,355,655	381	24	17%	9%	3%
02646	Harwichport	\$ 69,562,462			\$19,145,715	221	19	28%	15%	9%

ZIP Codes	Town	Total Revenues	Total Employees	Total Businesses	Medium Blue Revenues	Medium Blue Employees	Medium Blue Businesses	% Med. Blue Revenues	% Med. Blue Employees	% Med. Blue Businesses
			1,457	201						
02647	Hyannisport	\$ 6,983,738	67	14	\$ 390,000	8	1	6%	12%	7%
02648	Marstons Mills	\$ 94,830,876	1,613	470	\$ 3,351,473	71	13	4%	4%	3%
02649	Mashpee/New Seabury /South Mashpee	\$ 291,656,106	6,057	960	\$19,545,096	315	36	7%	5%	4%
02650	North Chatham	\$ 31,177,351	377	54	\$ 110,000	1	1	0%	0%	2%
02651	North Eastham	\$ 29,213,480	436	53	\$ 1,250,888	30	5	4%	7%	9%
02652	North Truro	\$ 13,069,721	194	50	\$ 2,648,817	43	8	20%	22%	16%
02653	Orleans	\$ 401,473,388	4,615	697	\$25,377,703	588	44	6%	13%	6%
02655	Osterville	\$ 198,119,100	2,083	405	\$26,767,054	284	11	14%	14%	3%
02657	Provincetown	\$ 188,374,334	3,503	624	\$28,517,602	788	93	15%	22%	15%
02659	South Chatham	\$ 26,598,489	307	86	\$ 1,353,550	45	7	5%	15%	8%
02660	South Dennis	\$ 181,798,486	2,783	428	\$ 8,997,766	75	14	5%	3%	3%
02661	South Harwich	\$ 73,893,158	212	15	\$ 260,000	20	1	0%	9%	7%
02662	South Orleans	\$ 5,404,203	57	17	\$ 160,000	3	2	3%	5%	12%
02663	South Wellfleet	\$ 8,096,028	203	25	\$ 1,304,466	77	5	16%	38%	20%
02664	Bass River/South Yarmouth/Yarmouth	\$ 285,319,075	5,121	682	\$21,334,732	470	41	7%	9%	6%
02666	Truro	\$ 14,958,003	517	57	\$ 153,112	2	2	1%	0%	4%

ZIP Codes	Town	Total Revenues	Total Employees	Total Businesses	Medium Blue Revenues	Medium Blue Employees	Medium Blue Businesses	% Med. Blue Revenues	% Med. Blue Employees	% Med. Blue Businesses
02667	Wellfleet	\$ 65,729,400	1,412	246	\$ 4,836,649	140	13	7%	10%	5%
02668	West Barnstable	\$ 49,286,069	1,284	259	\$ 781,365	18	6	2%	1%	2%
02669	West Chatham	\$ 16,187,842	201	35	\$ 500,000	8	1	3%	4%	3%
02670	West Dennis	\$ 32,686,611	631	125	\$ 3,182,599	72	9	10%	11%	7%
02671	West Harwich	\$ 18,069,348	386	92	\$ 2,139,660	78	11	12%	20%	12%
02672	West Hyannisport	\$ 942,168	19	9				0%	0%	0%
02673	Yarmouth/South Yarmouth /West Yarmouth	\$ 169,223,671	3,124	500	\$20,443,377	570	35	12%	18%	7%
02675	Yarmouth/Yarmouthport	\$ 143,105,411	1,881	435	\$ 9,494,825	257	31	7%	14%	7%
02713	Cuttyhunk/Gosnold	\$ 463,632	37	7				0%	0%	0%

8. County Gross Regional Product Reports

County-wide	Earnings (2016)	Property Income (2016)	Taxes on Production (2016)	Total GRP (2016)	Average Earnings (2016)
Barnstable	\$6,851,883,649	\$2,627,888,896	\$600,557,319	\$10,080,329,864	\$46,529
Dukes	\$745,193,949	\$263,206,795	\$64,415,174	\$1,072,815,918	\$43,998
Nantucket	\$624,011,691	\$227,423,762	\$58,713,787	\$910,149,240	\$53,390
Plymouth	\$13,833,085,805	\$5,509,862,475	\$1,366,662,718	\$20,709,610,998	n/a

Sourced from EMSI.com, Q1 2017 Data Set

Input-Output Data

The input-output model in this report is Emsi's gravitational flows multi-regional social account matrix model (MR-SAM). It is based on data from the Census Bureau's Current Population Survey and American Community Survey; as well as the Bureau of Economic Analysis' National Income and Product Accounts, Input-Output Make and Use Tables, and Gross State Product data. In addition, several Emsi in-house data sets are used, as well as data from Oak Ridge National Labs on the cost of transportation between counties.

State Data Sources

This report uses state data from the following agencies: Massachusetts Executive Office of Labor and Workforce Development

County	Total Businesses	Total Sales Volume	Total Employees
Barnstable	17,207	\$ 8,205,860,852	117,564
Dukes	1,569	\$ 911,673,462	9,482
Nantucket	1,552	\$ 572,511,171	8,000
Plymouth *4 zip codes	4,092	\$ 3,168,546,980	40,853
TOTAL	24,420	\$12,858,592,465	175,899

Sourced from NAICS.com March 2017; Dun & Bradstreet data, for the project geographic area, all NAICS codes (blue and non-blue)

9. EMSI Location Quotient Data

Data below are aggregated for the region, based on Dark Blue NAICS codes. The Location quotient represents the concentration of industry in the region, as compared to the average American community (1= same as the average American community). Current total earnings represents the average wage in the region for the NAICS code.

NAICS	Description	2017 Jobs	2022 Jobs	2017 - 2022 Change	2017 - 2022 % Change	Current Total Earnings	2022 Location Quotient
112000	Animal Production and Aquaculture	175	205	30	17%	\$50,089	0.22
114111	Finfish Fishing	287	232	(55)	(19%)	\$36,601	5.99
114112	Shellfish Fishing	587	637	50	9%	\$42,221	19.19
114119	Other Marine Fishing	43	56	13	30%	\$33,739	12.16
221111	Hydroelectric Power Generation	<10	<10	Insf. Data	Insf. Data	Insf. Data	0.52
311710	Seafood Product Preparation and Packaging	0	0	0	0%	\$0	0.00
311942	Spice and Extract Manufacturing	<10	<10	Insf. Data	Insf. Data	Insf. Data	0.08
313210	Broadwoven Fabric Mills	<10	<10	Insf. Data	Insf. Data	Insf. Data	0.02
314910	Textile Bag and Canvas Mills	16	15	(1)	(6%)	\$35,807	0.65
334511	Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing	118	112	(6)	(5%)	\$106,806	1.25
336611	Ship Building and Repairing	<10	<10	Insf. Data	Insf. Data	Insf. Data	0.10
336612	Boat Building	45	34	(11)	(24%)	\$43,149	1.00
424460	Fish and Seafood Merchant Wholesalers	76	81	5	7%	\$49,643	3.01
441210	Recreational Vehicle Dealers	<10	<10	Insf. Data	Insf. Data	Insf. Data	0.08
441222	Boat Dealers	276	267	(9)	(3%)	\$62,140	8.59
445220	Fish and Seafood Markets	119	104	(15)	(13%)	\$34,170	6.23
483111	Deep Sea Freight Transportation	<10	<10	Insf. Data	Insf. Data	Insf. Data	0.50
483112	Deep Sea Passenger Transportation	<10	<10	Insf. Data	Insf. Data	Insf. Data	0.08
483113	Coastal and Great Lakes Freight Transportation	<10	<10	Insf. Data	Insf. Data	Insf. Data	0.75
483114	Coastal and Great Lakes Passenger Transportation	240	243	3	1%	\$45,934	40.93
483211	Inland Water Freight Transportation	<10	<10	Insf. Data	Insf. Data	Insf. Data	0.07
487210	Scenic and Sightseeing Transportation, Water	146	151	5	3%	\$34,085	7.49
488310	Port and Harbor Operations	0	0	0	0%	\$0	0.00
488320	Marine Cargo Handling	0	0	0	0%	\$0	0.00

NAICS	Description	2017 Jobs	2022 Jobs	2017 - 2022 Change	2017 - 2022 % Change	Current Total Earnings	2022 Location Quotient
488330	Navigational Services to Shipping	<10	<10	Insf. Data	Insf. Data	Insf. Data	0.38
488390	Other Support Activities for Water Transportation	<10	<10	Insf. Data	Insf. Data	Insf. Data	0.88
532411	Commercial Air, Rail, and Water Transportation Equipment Rental and Leasing	<10	<10	Insf. Data	Insf. Data	Insf. Data	0.11
541360	Geophysical Surveying and Mapping Services	<10	<10	Insf. Data	Insf. Data	Insf. Data	0.35
541370	Surveying and Mapping (except Geophysical) Services	61	53	(8)	(13%)	\$50,095	1.11
541620	Environmental Consulting Services	106	109	3	3%	\$64,996	0.94
541690	Other Scientific and Technical Consulting Services	130	146	16	12%	\$54,635	0.47
541712	Research and Development in the Physical, Engineering, and Life Sciences (except Biotechnology)	60	59	(1)	(2%)	\$88,244	0.14
712190	Nature Parks and Other Similar Institutions	0	0	0	0%	\$0	0.00
713930	Marinas	519	557	38	7%	\$50,653	10.88
713990	All Other Amusement and Recreation Industries	287	308	21	7%	\$24,560	1.12
813312	Environment, Conservation and Wildlife Organizations	309	327	18	6%	\$76,101	5.11

Industry Data

Emsi industry data have various sources depending on the class of worker. (1) For QCEW Employees, Emsi primarily uses the QCEW (Quarterly Census of Employment and Wages), with supplemental estimates from County Business Patterns. (2) Non-QCEW employees data are based on a number of sources including QCEW, Current Employment Statistics, County Business Patterns, BEA State and Local Personal Income reports, the National Industry-Occupation Employment Matrix (NIOEM), the American Community Survey, and Railroad Retirement Board statistics. (3) Self-Employed and Extended Proprietor classes of worker data are primarily based on the American Community Survey, Nonemployer Statistics, and BEA State and Local Personal Income Reports. Projections for QCEW and Non-QCEW Employees are informed by NIOEM and long-term industry projections published by individual states.

State Data Sources

This report uses state data from the following agencies: Massachusetts Executive Office of Labor and Workforce Development

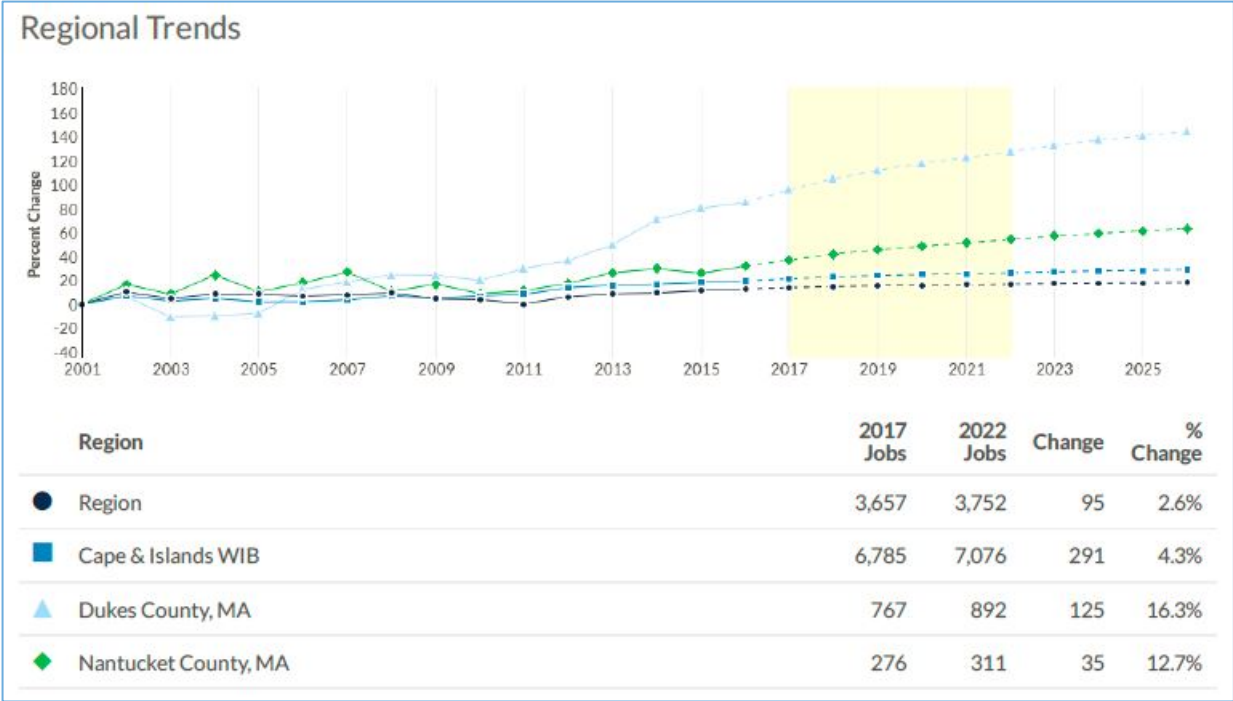
The above dark blue location quotients were aggregated by sector and averaged.

Location Quotient	
	Cape Cod Region
Marine Technology	0.77
Marine Transportation	4.81
Physical Resource Extraction	0.3

Renewable Living Resources	6.68
Research, Education, Advocacy, Support Services	1.66
Ship & Boat Building	0.26
Tourism & Recreation	4.69
Dark Blue Economy Total	3.53

10. EMSI Occupational Data

EMSI provided the following data for the dark blue NAICS codes in the region:
 3,622 Jobs (2016); 29% above the National average
 +2.6% Change (2017-2022); Nation: +5.0%
 \$50,127 Average Earnings Per Job (2016); Nation: \$61,417



11. U.S. Census Data Trends

Barnstable, Dukes, Nantucket and Plymouth County Census Data (for the project's selected zip codes), showing values for Blue NAICS codes (dark and medium blue aggregated) with % change year over year and % of total data for all NAICS codes (blue as a percent of the entire economy). Dollar values are not adjusted for inflation (i.e., 2003 value is in 2003 dollars). There were changes to the NAICS coding between 2011 and 2012 that resulted in more businesses falling under the blue classification. Evaluation from 2012 to 2014 is more accurate since there were no significant changes to NAICS coding during that period.

Year	Number of Mid-March Employees	% Annual Change	% of Total Economy	Annual Payroll (\$1,000)	% Annual Change	% of Total Economy	Number of Establishments	% Annual Change	% of Total Economy
2003	14,412		19%	\$573,751		24%	2,180		25%
2004	14,353	0%	19%	\$606,225	6%	24%	2,137	-2%	25%
2005	14,450	1%	19%	\$620,592	2%	24%	2,147	0%	25%
2006	15,171	5%	20%	\$631,840	2%	23%	2,138	0%	25%
2007	14,632	-4%	19%	\$691,790	9%	25%	2,180	2%	25%
2008	13,518	-8%	18%	\$692,090	0%	25%	2,162	-1%	25%
2009	13,518	0%	18%	\$692,090	0%	25%	2,162	0%	25%
2010	10,538	-22%	15%	\$552,067	-20%	20%	2,118	-2%	26%
2011	12,685	20%	19%	\$694,047	26%	25%	2,112	0%	26%
2012	28,260	123%	41%	\$1,097,489	58%	38%	3,060	45%	37%
2013	28,668	1%	40%	\$1,120,213	2%	37%	3,049	0%	37%
2014	29,093	1%	40%	\$1,209,502	8%	39%	3,104	2%	37%

Grand Total	209,298		24%	\$9,181,696		28%	28,549		28%
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Average Salary Per Employee, across all blue NAICS codes in region: \$41,573

2014 total annual payroll: \$1,209,502,000

2014 mid-march employees: 29,093

Average Salary Per Employee, across all NAICS codes in region: \$43,337

2014 total annual payroll: \$3,134,226,000

2014 mid-march employees: 72,254

Dark Blue Salary: \$50,127 (Cape and Islands Workforce Investment Board)

- From 2003 to 2014, the number of blue establishments increased 42% (from 2,180 to 3,104), with the largest increase occurring from 2011 to 2012. From 2012 to 2014, with consistent NAICS codes, the number of blue establishments increased 1% (from 3,060 to 3,104).
- From 2003 to 2014, the number of employees employed by blue business increased 50% (from 14,412 to 29,093), with the largest increase occurring from 2011 to 2012. From 2012 to 2014, the number of employees employed by blue businesses increased 3% (from 28,260 to 29,093).
- From 2003 to 2014, the quarter 1 payroll for blue business increased by 95% (from \$119M to \$232M), with the largest increase occurring from 2011 to 2012. From 2012 to 2014, the quarter 1 payroll for blue businesses increased by 14% (from \$204M to \$232M).
- From 2003 to 2014, annual payroll for blue businesses increased by 111% (from \$574M to \$1.21B), with the largest increase occurring from 2011 to 2012. From 2012 to 2014, the annual payroll for blue businesses increased by 10% (from \$1.10B to \$1.21B).

12. Redacted Businesses

There were 458 businesses that had a NAICS code that was classified as blue, but based on knowledge of the business or the SIC code, it was determined that they were not blue and they were removed from the dataset before completing the analysis. Examples of these removed businesses include graphic and interior design firms, general construction, telecommunications, and automotive dealers.

The following businesses were identified as blue but had no Dun & Bradstreet data available, which means there was no NAICS code, SIC code, employee numbers, revenues, or physical location available. Those 11 dark blue businesses with an asterisk had their 2015 or 2016 Form 990 available online, so gross revenue data was available – together they have \$1,655,793 in gross revenues. However, because the data were incomplete and adding it did not change the overall trends (the dark blue revenues are 6% of the economy with or without this data), it is not included in any of the tables in the appendix or in the final report. All the other businesses were excluded from the analysis, including the count of businesses.

BUSINESS NAME
BLUE ROCK HEIGHTS ASSN
CANAL SPORTSMANS CLUB INC
CAPE COD MARINE TRADES ASSOCIATION INC
FALMOUTH WATER STEWARDS INC
FRIENDS OF NICKERSON STATE PARK
FRIENDS OF SCUSSET BEACH RESERVATION
GREEN DUNES BEACH ASSOCIATION INC
MASHPEE WAMPANOAG ROD & GUN CLUB
MILL POND PRESERVATION ASSOCIATION INC
NAUSET HEIGHTS ASSOCIATION INC
NAVY SEABEE VETERANS OF AMERICA
PILGRIM LAKE TERRACE ASSOCIATION INC
SEABROOK MEADOWS ASSOCIATION INC
SEASHELL LANE COMMUNITY ASSN INC
THE FISHERMAN STATUE FUND INC
THE SHORE INCORPORATED
TROUT UNLIMITED
UNITED STATES POWER SQUADRONS
FRENCH CABLE STATION MUSEUM IN ORLEANS INC
U S LIFE SAVING SERVICE HERITAGE ASSOCIATION INC
*BARNSTABLE ASSOCIATION FOR RECREATIONAL SHELLFISHING INC
*BARNSTABLE ROWING INC
*BHS SAILING BOOSTERS CLUB
BOURNE COMMUNITY BOATING INC
BREWSTER PONDS COALITION
*CAPE AND ISLANDS ROWING ASSOCIATION INC

EAST COAST WINDSURFING ASSOCIATION
HERRING PONDS WATERSHED ASSOCIATION LTD
INTERNATIONAL LONGSHOREMENS ASSOCIATION
*MARTHAS VINEYARD FISHERMENS PRESERVATION TRUST INC
*MASSACHUSETTS BASS FERDATION INC
*NATIONAL MARINE LIFE CENTER INC
*PERCH POND PRESERVATION INCORPORATED
RED BROOK HARBOR YACHT CLUB INC
*SQUIBNOCKET BASS AND SURF CLUB LTD
TRUSTEES OF SANDWICH BEACHES INC
*WATERSHED ASSOCIATION OF SOUTH HARWICH
*WYC SAILING EDUCATION FOUNDATION INC

13. Blue Businesses

There is an available listing of every businesses coded as dark or medium blue that was included in the analysis. Please contact the Cape Cod Chamber of Commerce to receive a copy of the list.

APPENDIX D

Blue Economy Initiatives Worldwide



ORGANIZATION	SUMMARY	FOCUS	ECONOMIC DEVELOPMENT GOALS	MEASURABLE SMART OUTCOMES	CONNECTION & ENVIRONMENT & ECONOMY	MULTI ORGANIZATIONS OR SINGULAR	GEOGRAPHIC SPECIFIC	STRUCTURE	FUNDING
Cape Cod Blue Economy Project	Regional initiative to promote & sustain maritime focused economy including tourism, marine research, land use planning	Economic Development: Maritime & Tech economy; Healthy water; Education for the future; Infrastructure	Actions related to each of three themes that intend measurable progress	Completed. Action Plan identifies eight distinct actions with specific goals and outcomes for each.	Yes, maintaining access to coastal resources & developing resilient systems is crucial to effort	Multiple organizations with partners	Cape Cod region	Sponsored by Cape Cod Chamber of Commerce as lead organization with support State's Seaport Economic Council	State for planning. Private foundation established for securing action funds.
Macomb County Blue Economy Initiative	An initiative to bring together all the "players" to develop the Blue Economy.	Economic Development: Business development (Smartwater Tech); Quality of Life (Recreation & Tourism); Fresh Water Studies (Fresh Water Institute)	Yes, specifics for each focus point	Yes, most goals are specific and measurable	Yes, includes environmental stewardship, restoration and preservation as part of mission	Multiple organizations - Goal: "Bring together all the potential players"	Yes, Macomb County	Sponsored by County Government	Government funded; Not clear if membership fee
Ketchikan Marine Industry Council (Alaska)	Supports development of a qualified regional workforce & coordinates regional marine business	Economic Development: Development of workforce through career & technical education. Much workforce from outside Alaska, seeks to develop local	Yes, 8 stated goals	Yes	No, no mention of environmental impact on economy	Singular, with partner Maritime Works, a State sponsored entity	Yes, Ketchikan County	Annex Ketchikan Chamber	Pools private, public, philanthropic dollars
The Maritime Alliance and The Maritime Alliance Foundation	Non-profit industry association and cluster organization for San Diego maritime technology	Economic Development: Creating Blue Tech & Blue Jobs by promoting sustainable, science based ocean & water industries; Foundation focus on workforce	Yes, economic technology development, but clear on specifics	Not clear	Yes "Promoting development of ecosystem where Blue Economy can flourish"	Multiple member organizations; part of international cluster alliance with 7 members	San Diego based with CA Coastal Commission representation; very broad membership base	President, ED, 2 PT staffers; Board oversight	Member dues and some sponsorships

ORGANIZATION	SUMMARY	FOCUS	ECONOMIC DEVELOPMENT GOALS	MEASURABLE SMART OUTCOMES	CONNECTION ENVIRONMENT & ECONOMY	MULTI ORGANIZATIONS OR SINGULAR	GEOGRAPHIC SPECIFIC	STRUCTURE	FUNDING
		development, research, community outreach							
Seychelles National Blue Economy Roadmap	Project establishes a broad direction for future investment and development of sustainable ocean based economy	Economic Development: Economic diversification, food security, sustainable management of marine environment, creation of jobs, notably high value jobs	Yes, specific touching several areas: ecosystem recovered/protected, increased investment, utilization of ocean energy	Clear outputs: stakeholder engagement, resources, consistent implementation	Yes, speaks to enhanced maritime domain awareness and with increased enforcement	Single	Seychelles focused	Under direction of Seychelles Minister of Finance	Government
Grenada: Blue Growth Coastal Master Plan	Plan is draft that integrates plan for marine and coastal/environment and economic activities they can support sustainably	Economic Development: Oceans & Fisheries, Tourism, Communities (involvement of community), vision (harness untapped potential)	Yes, includes policy goals and objectives: Development of investment zones, specific growth initiatives, growth centers	Plans show specific actions and programs to achieve	Yes, key to sustainability plan	Single	Grenada	Government oversight with support from CROP and World Bank	Government and private investment
Lombok, Indonesia Blue Economy Implementation Program.	Integrated, upstream & downstream program covering fisheries, aquaculture, tourism, pearl industry, ecosystems, energy, infrastructure	Economic Development: Business & Tech Development of Lombok region. Also, emphasis on reducing marine pollution, halting destruction marine habitats, increase regulation on harvesting	Unclear. Note: limited to articles, not able to find actual plan	Unclear	Yes, see focus	In collaboration with Food & Agriculture organization of the UN	Lombok	Government	Government

ORGANIZATION	SUMMARY	FOCUS	ECONOMIC DEVELOPMENT GOALS	MEASURABLE SMART OUTCOMES	CONNECTION ENVIRONMENT & ECONOMY	MULTI ORGANIZATIONS OR SINGULAR	GEOGRAPHIC SPECIFIC	STRUCTURE	FUNDING
Aquacelerator (Australia) - The Blue Economy Challenge	An effort to revolutionize aquaculture industry by inspiring innovators	Research/Education: Sponsors Blue Economy Challenge which selects 10 most innovative solutions to Blue Economy	Yes, goal to find 10 most innovative aquaculture solutions	Yes, by finding the 10	Foundational - "Be part of challenge to reengineer aquaculture as solution that exploits opportunity not oceans	Single	Global with Indian Ocean focus	Part of Australian Dept. of Foreign Affairs and Trade Innovation Xchange	Government Funded
Center for Blue Economy at Middlebury Institute of International Studies (Monterrey, CA)	Research, education and analytics to promote a sustainable Blue Economy	Research/Education: Academic research training entity focused on importance of ocean/coastal resources for regional economies	No	No	Yes, central to mission	Singular research and academic institution	Global	Small staff of directors as faculty	Relies on donors and tuition
Global Ocean Forum	International, independent, non-profit mission to promote good governance of healthy marine ecosystems	Research/Education: Environmental focus, primarily research/education organization	No	Yes, listed goals & accomplishments	yes	Multinational organization	Global, reaches across government and non-government entities	International Board oversight	Multifaceted; Government, research institutions, foundations, etc.
State of Sustainability Initiatives (SSI) project (report)	Founded based on need for improved information exchange among stakeholders in voluntary sustainability initiatives and standards	Research/Education: Stimulate regular reporting in state of play across voluntary sustainability initiatives; is information gathering and reporting focus	No	No	Yes, focus of the reporting	Singular	Global	Sponsored by Swiss State Secretariat for Economic Affairs	State Secretariat

ORGANIZATION	SUMMARY	FOCUS	ECONOMIC DEVELOPMENT GOALS	MEASURABLE SMART OUTCOMES	CONNECTION ENVIRONMENT & ECONOMY	MULTI ORGANIZATIONS OR SINGULAR	GEOGRAPHIC SPECIFIC	STRUCTURE	FUNDING
Japan (General)	Only found 1 article, but demonstrated Japan is an active Indian Ocean partner in the Blue Economy	Alliance/Advocacy: Focused on non-traditional maritime with new frontier items: renewable energy, deep sea mining, gas reserves, marine biotech, aquaculture (seaweed as new super food) digital fabric (undersea cable, broadband)	Not clear	Not clear	Yes, but does not appear to be big emphasis	Partners other Indian Ocean	Indian Ocean	Government	Government
Asia Pacific Economic Cooperation (APEC) (subset of Ocean & Fishing Working Group)	Group in 2014 ranked Blue Economy its' #1 funding criteria. The organization and working group appears to be a strategic, organizing, sharing/communications group	Alliance/Advocacy: Overall, to define a shared vision of the Blue Economy and working group puts forward a plan with 7 priority areas and expected outcomes	Yes, 7 priorities	Yes, with deadlines, etc.	Yes, specific projects on sustainability	Multi-organizational	Pacific Ocean	Government sponsored by several nations	Unclear
Blue Growth - European Commission Maritime Affairs Division	Long term strategy to support sustainable growth in marine & maritime sectors	Alliance/Advocacy: Economic Development in 5 areas, Renewable Energy, Biotech, Tourism, Aquaculture, Mineral Resources	Strategic component could be viewed in goals context	Possibly	"Ocean governance" to reduce human pressures on oceans creating conditions for a sustainable Blue Economy	European membership	Europe	Part European Commission Maritime Division	Government Entity

ORGANIZATION	SUMMARY	FOCUS	ECONOMIC DEVELOPMENT GOALS	MEASURABLE SMART OUTCOMES	CONNECTION ENVIRONMENT & ECONOMY	MULTI ORGANIZATIONS OR SINGULAR	GEOGRAPHIC SPECIFIC	STRUCTURE	FUNDING
Caribbean Regional Oceanscape Project (CROP); Output Report: Towards a Blue Economy: A Promise for Sustainability	Project will assist island nations to transition a Blue Economy where sustainable ocean-based industries deliver jobs, reduce poverty, create shared prosperity	Alliance/Advocacy: Living, non-living (oil, gas) resources, ecosystems and processes. Emphasis on threats to ocean systems and the impact on the region	Includes specific approach/actions that can be take (no set specific goals); Also, speaks to demonstrating "ocean investment principles" to attract investors	Not clear	Yes, very concerned about impact of threats	5 countries: Grenada, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines and Dominica	Caribbean	World Bank support with Organization of Eastern Caribbean State and Commonwealth Secretariat	World Bank