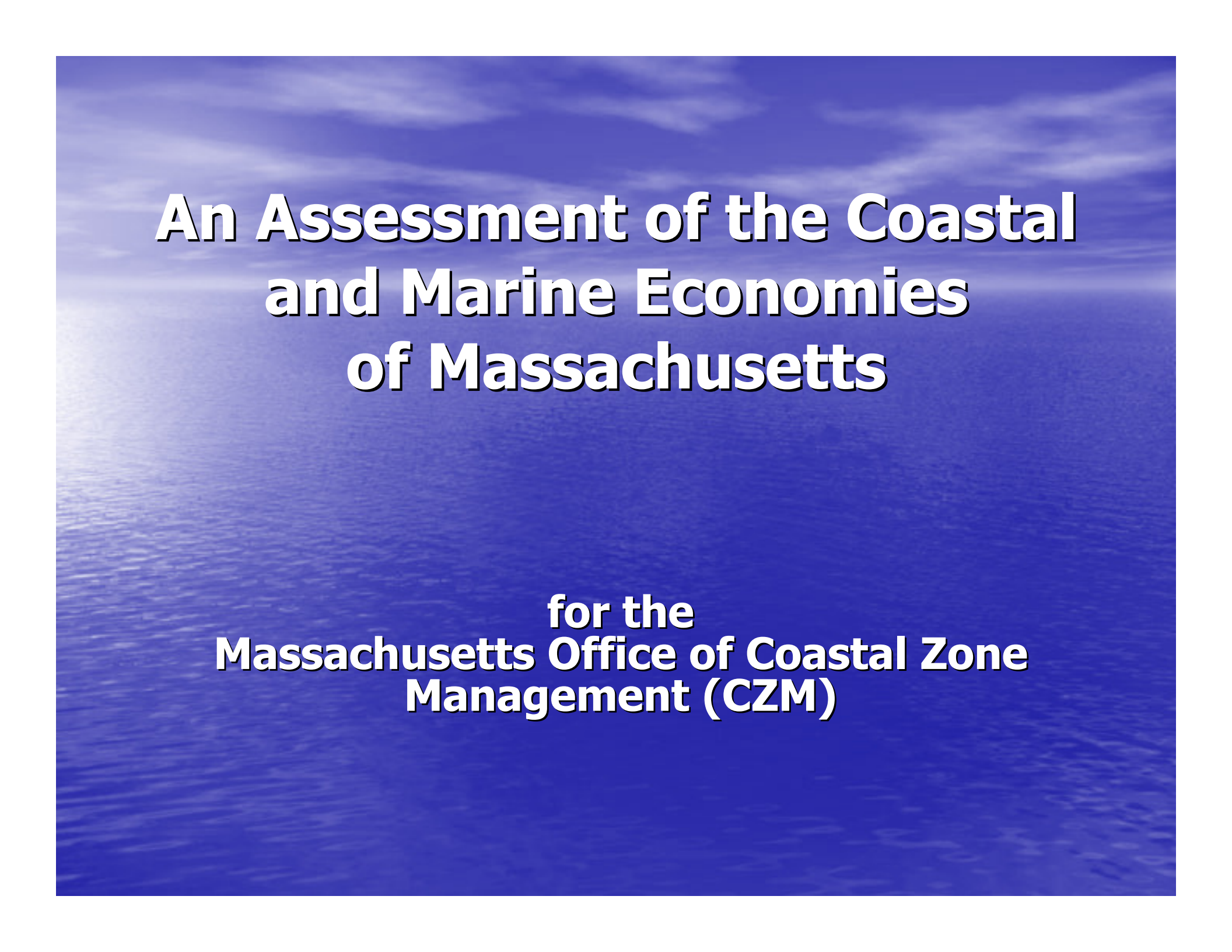


Massachusetts: Leading the Way on Ocean Management

Assessment of Ocean and Coastal Economy in the
Commonwealth of Massachusetts

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The background of the slide is a photograph of a bright blue sky with wispy white clouds at the top, transitioning into a deep blue ocean with gentle ripples at the bottom. The text is centered and rendered in a bold, white, sans-serif font with a black drop shadow.

An Assessment of the Coastal and Marine Economies of Massachusetts

**for the
Massachusetts Office of Coastal Zone
Management (CZM)**

Research Team

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Study Objectives

- Identification and definition of sectors comprising the coastal and marine economies of the Commonwealth
- Economic impact analysis of the coastal and marine economies

Economic Impact Assessment: Methodology

- Input-Output Analysis
 - Used to describe and predict commodity flows between industries or sectors.
 - Used to estimate total output generated by an industry or sector
- IMPLAN Software
- Data Inputs to the Model
 - Employment data – ES202, other sources
 - Payroll data used to customize the model
- Use of allocation formulas to allow employment estimates, where necessary

DEFINITIONS: Types of Economic Impacts

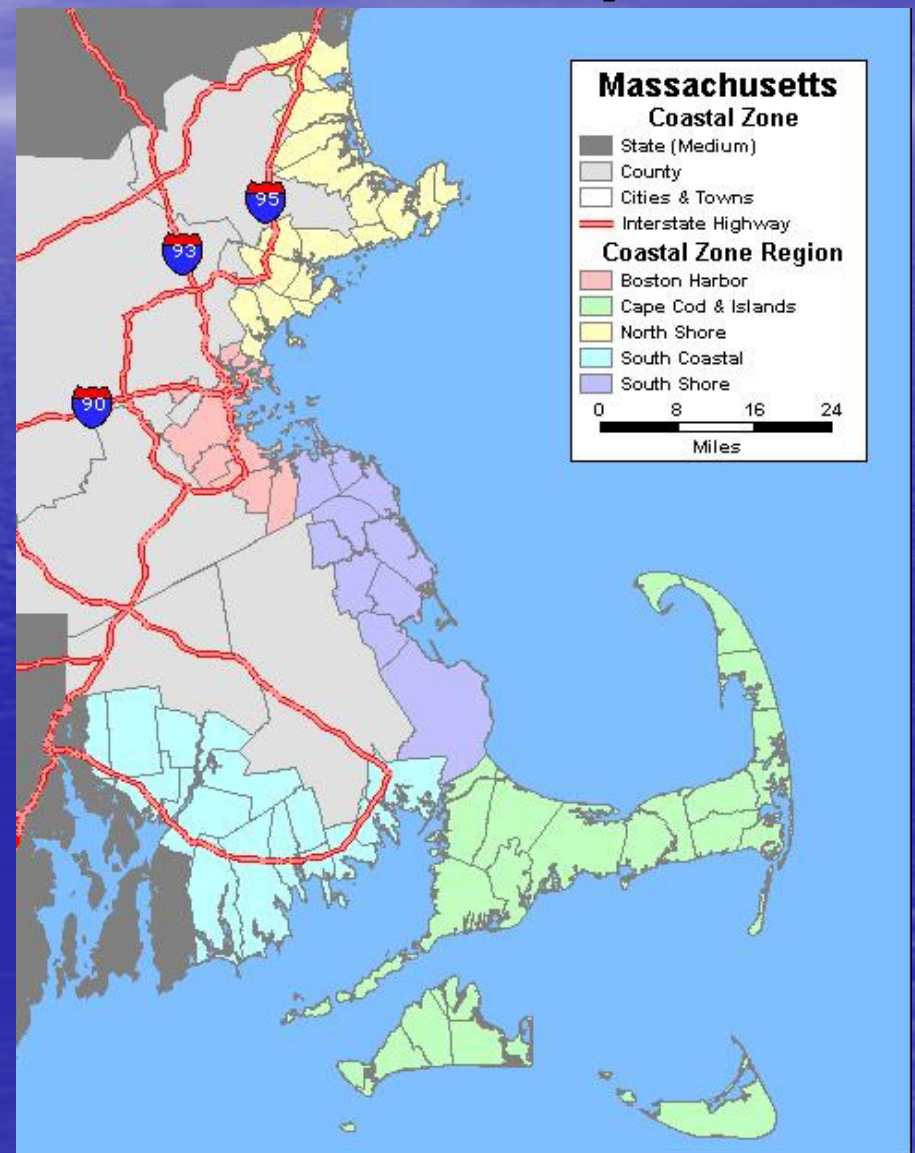
- ***Direct impacts*** are the economic activities carried out at a business establishment or project and are therefore an immediate consequence of the economic activity that would not have occurred in the absence of the business establishment or project.
- ***Indirect impacts*** derive primarily from off-site economic activities that are attributable to the identified business activity. These economic activities occur mainly as a result of non-payroll expenditures.
- ***Induced impacts*** are the multiplier effects of the direct and indirect impacts created by successive rounds of spending by employees and proprietors.
- ***Total impacts*** are the sum of the direct, indirect, and induced impacts.

Definitions: Multipliers

- Estimators of the 'ripple effect' in the local economy.
- Ratio of new income and spending resulting from each initial new dollar spent in the region.
- Two types: *employment multipliers* and *income multipliers*.

What is the coastal economy?

All economic activities within the coastal communities of Massachusetts (not necessarily related to the presence of the ocean)



The Coastal Economy

- 71, 160 establishments (33 percent of state establishments)
- 1,161,326 employees (37 percent of state employment)
- Over \$60 billion in total annual payroll
- Average annual wages of \$51,836 compared to state average of \$48,934

The Coastal Economy

- Largest Industry Sectors:
 - Health Care and Social Assistance (17 percent of employment)
 - Trade, Wholesale and Retail (14 percent)
 - Arts, Entertainment, Accommodation and Food Services (11 percent)
 - Finance, Insurance and Real Estate (10 percent)
- Annual Gross Regional Product – \$117 billion (37 percent of Massachusetts GSP in 2004)

What is the marine economy?

All commercial activities related to and / or having inputs from the sea.

Marine Economy: Major Sectors

- Commercial Seafood Industries
- Marine Transportation
- Coastal Tourism
- Marine Science and Technology
- Marine-related Construction and Infrastructure

Marine Science and Technology

Establishments, Employment and Wages by NAICS, 2004

2002 NAICS	Description	Establ	Empl	Wages	Ave. Wages
Total Marine in Massachusetts		10,955	152,441	\$4,308,400,235	\$28,263
Marine Science and Technology		184	5,055	\$418,699,680	\$82,821
Sub-sector 1 - Instrumentation and Equipment		11	1,441	\$126,465,634	\$87,786
334511	Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing (part)	10	1,393	\$123,234,690	\$88,485
334519	Other Measuring and Controlling Device Manufacturing (part)	1	48	\$3,230,944	\$67,452
Sub-sector 2 - Marine Services		107	2,985	\$265,399,985	\$88,914
541330	Engineering Services (part)	33	445	\$34,957,444	\$78,549
541710	Research and Development in the Physical, Engineering, and Life Sciences (part)	74	2,540	\$230,442,541	\$90,730
Sub-sector 3 - Marine Materials and Supplies		10	140	\$6,596,269	\$47,109
325510	Paint and Coating Manufacturing (part)	2	62	\$3,564,550	\$57,234
336399	All Other Motor Vehicle Parts Manufacturing (part)	7	75	\$2,935,535	\$39,036
333120	Construction Machinery Manufacturing (part)	0	3	\$96,184	\$37,868
Sub-sector 4 - Ship and Boat Building and Repair		56	490	\$20,237,793	\$41,308

NOTE - In rows marked "part" allocation formulas have been used to adjust original data

Source: Mass. DUA, ES-202, 2004

Marine Science and Technology

MST Research and Education Sub-sector: Economic Impacts of Research Spending, 2004

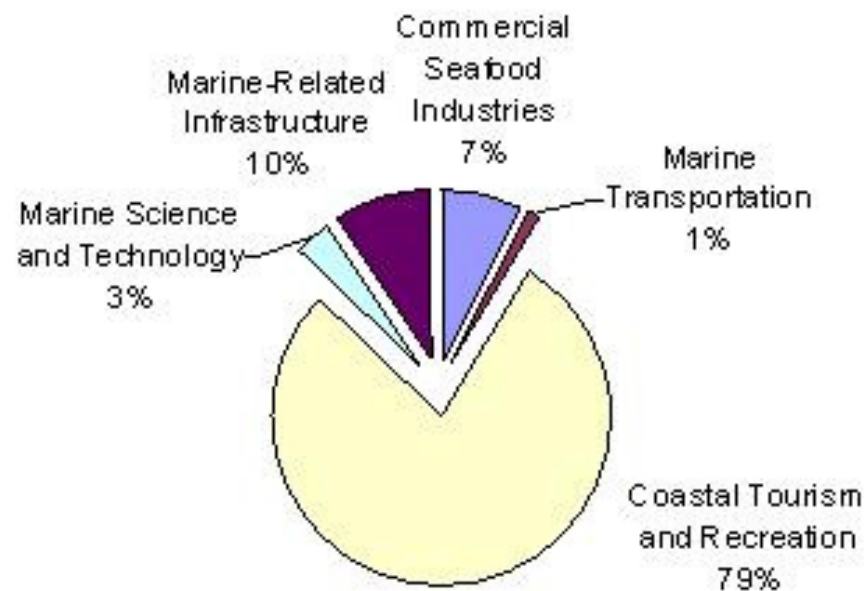
Direct Spending (Research Funds)	All Spending	\$170,376,912
	Total Amount Spent in Region (Massachusetts)	\$133,598,886
	Total Amount Spent outside of Massachusetts	\$36,778,026
Direct Employment	Total	1,348
Direct Payroll	Total Payroll	\$72,409,642
	Average Annual Payroll per Employee	\$53,708.38
Employment Generated (Indirect and Induced)	Total	1,013
Annual Payroll Generated (Indirect and Induced)	Total	\$37,860,321
	Average Annual Payroll per New Employee	\$37,371
Overall Impact (Total Output)	Employment (Direct, Indirect, and Induced)	2,361
	Total (Direct, Indirect, and Induced)	\$249,507,137
Multiplier Effects	In-State Spending Multiplier	1.87
	All Spending Multiplier	1.46

Source: UMass Donahue Institute

Marine Economy: Economic Value

Employment by Sector

Marine Industry Employment by Sector, 2004



Marine Economy

Businesses, Jobs and Wages by Sector

Sectors	Businesses	Jobs	Wages per employee
Commercial Seafood Industries	1,110	11,270	\$45,227
Marine Transportation	171	2,099	\$44,230
Coastal Tourism and Recreation	7,640	119,420	\$19,580
Marine Science and Technology	184	5,055	\$82,821
Marine-Related Construction and Infrastructure	1,851	14,596	\$65,013
Total Marine Industry	10,955	152,440	\$28,263

Source: Mass. DUA, ES-202, 2004; U.S. Bureau of the Census, Nonemployer Series, 2003; Mass. Division of Marine Fisheries

Marine Economy: Employment Impacts

Employment Impact of Marine Industry, Massachusetts, 2004

Marine Sectors	Input	Output				
	Employment	Direct	Indirect	Induced	Total	Multiplier
Commercial Seafood Industries	11,270	11,270	5,025	6,159	22,454	1.99
Marine Transportation	2,099	2,099	2,125	1,708	5,932	2.83
Coastal Tourism and Recreation	119,420	119,420	15,536	22,475	157,431	1.32
Marine Science and Technology	5,055	5,055	2,348	4,078	11,481	2.27
Marine-Related Construction and Infrastructure	14,596	14,596	5,038	6,903	26,537	1.82
Total Marine Industry	152,441	152,441	30,072	41,324	223,836	1.47

Source: Mass. DUA, ES-202, 2004; U.S. Bureau of the Census, Nonemployer Series, 2003; Mass. Division of Marine Fisheries. IMPLAN analysis by the authors

Marine Economy: Output Impacts

Marine Industry Output Impacts, Massachusetts 2004

Marine Sector	Input	Output				
	Employment	Direct	Indirect	Induced	Total	Multiplier
Commercial Seafood Industries	11,270	916,823,281	329,842,336	307,891,314	1,554,556,931	1.70
Marine Transportation	2,099	289,755,957	134,830,261	104,036,340	528,622,558	1.82
Coastal Tourism and Recreation	119,420	5,069,549,937	1,705,687,021	1,943,492,974	8,718,729,932	1.72
Marine Science and Technology	5,055	589,664,057	257,942,625	309,937,261	1,157,543,943	1.96
Marine-Related Infrastructure	14,596	1,823,174,648	457,212,492	563,115,087	2,843,502,227	1.56
Total Marine Industry	152,441	8,688,967,880	2,885,514,735	3,228,472,976	14,802,955,591	1.70

Source: Mass. DUA, ES-202, 2004; U.S. Bureau of the Census, Nonemployer Series, 2003; Mass. Division of Marine Fisheries. IMPLAN analysis by the authors.

Survey of Marine Economy Business Owners

- Conducted by phone, May 2006
- 548 valid responses from total of 3,503 calls
- Survey respondents randomly chosen from list of contacts organized by sector
- Number of respondents from each sector based on distribution of businesses in each sector
- Margin of error of plus or minus 4.7 percent

Surveyed Businesses:

- Businesses from all five marine economy sectors
- Over 90 percent of the sample consisted of small businesses with fewer than fifty employees.
- Fifty-one percent reported fewer than ten employees.

Survey: Sales / Revenue Growth

The majority of businesses are optimistic that revenues will increase during the next twelve months

- Nearly two-thirds of businesses expect revenues or sales to increase during the next 12 months.
- In contrast, only 33 percent of businesses reported revenue or sales growth over the past twelve months.

Survey: Employment Growth

- Over two-thirds of businesses report no employment growth over the past twelve months.
- A little less than one quarter of businesses increased employment during the past twelve months.
- Nearly two-thirds of businesses have no expectation of increased employment over the next twelve months.

Survey: Supplier Relationships

- The vast majority of businesses surveyed (80.3 percent) purchase supplies primarily from businesses located within Massachusetts.
- Sixty-four percent of businesses purchase supplies primarily from within twenty-five miles of their location.

Survey: Customers

- A significant percentage of businesses (54 percent) draw customers primarily from outside their region and from out-of-state.

Survey: Laborforce Recruitment

- A large majority of surveyed marine economy businesses mostly recruit workers from nearby:
 - 70.0 percent recruit mostly from within their community
 - 17.2 percent recruit mostly from within their region

Survey: Recruitment Difficulties

- Thirty percent of businesses across sectors report problems recruiting sufficiently skilled workers, including sectors that do not demand a high number of skilled workers.
- 10.5 percent of surveyed businesses report that it is a “big problem” finding skilled workers.

Survey: Significant Obstacles to Business Growth

- The biggest issue cited was the cost of real estate: 45.3 percent of surveyed businesses consider the cost of real estate a significant problem for their business.
- A related issue, the availability of suitable land for expansion, was the next most significant problem (for 26.8 percent of businesses).
- Government regulations and permitting issues are the third most significant problem (for 22.6 percent of businesses).

Massachusetts: Leading the Way on Ocean Management

Seafloor Mapping in Massachusetts
William C. Schwab
US Geological Survey



Massachusetts: Leading the Way on Ocean Management

Energy Facilities Development in Massachusetts'
Coastal Ocean Environments

Moderator: Charlie Natale, ESS Group, Inc.

