A Training Program for Ferry Boat Operators: Assessing the Feasibility

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Section 1: Introduction

For thousands of North Carolinians, the system of ferry boats operated by the North Carolina Department of Transportation's Ferry Division represents a link to their places of employment, their homes and their neighbors. For some communities, ferry boats represent the only way to travel to the mainland and the only way to bring the visitors that support their tourist-based economy. An effective ferry boat system depends on the more than 250 personnel who pilot the boats, run the engine rooms and perform the duties that ensure that people and their vehicles get to their destination safely and efficiently. Most of these personnel are required to meet the rigorous licensing requirements of the United States Coast Guard (USCG). To acquire the knowledge necessary to obtain licenses, the Division sends its employees to training programs, most of which are located out of state and some as far away as Louisiana. There are currently no training courses offered through any public institution of higher education in North Carolina that meet the needs of the Ferry Division.

The purpose of this study is to assess the feasibility of offering training for ferry boat operators at community colleges in North Carolina. Because the training needed to work on a ferry boat is similar to other water transportation occupations, the demand for such training from mariners outside the Division is also discussed. Specifically this study addresses the following:

- Certification requirements and training needs for water transportation occupations;
- Estimated demand for training from the Ferry Division, from similar private mariners in North Carolina, and from surrounding states;
- How Ferry Division training needs are currently being met;
- The capacity of North Carolina community colleges to undertake such a training program; and
- Analysis and findings related to the feasibility and costs of operating a program at a North Carolina community college and considerations for where to locate a program.

Section 2: Skill and Training Requirements for Water Transportation Occupations

The US Coast Guard regulates and certifies individuals who work on commercial boats and ships. There is an enormous range of certificates issued by the Coast Guard based on the responsibilities of the worker, the type of vessel he works on and what bodies of water the vessel transverses. In alignment with the scope of this study, we will focus on those areas of training and certifications necessary to operate ferry boats. However, there is quite a bit of cross over between these certificates and training requirements and those needed by tugboat and barge operators, though vessel sizes vary. Ferry boat operator licenses are less similar, on the other hand, to smaller charter boats licenses (which carry no more than six paying passengers) and licenses for international merchant mariners who work aboard cargo ships and tankers.

Career Paths at the Ferry Boat Division

The NC Ferry Division is part of the state's Department of Transportation and employs 490 individuals, 266 of whom serve on boats. US Department of Labor (USDOL) statistics indicate that nationally almost 75 percent of boat captains and mates have a high school diploma or less. USDOL occupational descriptions for these positions do not state that a college certificate or degree is necessary for these positions, and interviews with the Ferry Division confirm that a college background is not necessary. In fact, a high school diploma is not required for entry-level positions; however, it is required to advance to upper level positions on a boat.

While college courses or degrees are not necessary to be hired or promoted, the math required to pass navigational radar courses (described later) involves geometry and simple trigonometry and those preparing for higher level Coast Guard exams sometimes take refresher math classes.

Entry-level positions include Crew Member and Oiler; mid-level position is a Crew Member II. The highest ranking members of a boat's crew are its Mate, who assists the Captain, the Engineer who is responsible for maintaining the ship's propulsion and other mechanical and electronic systems, and the boat's Captain, also called a Pilot or Master.

While occasionally a new Mate or Master is hired "off the street," typically the Division promotes lower ranking crew members who have accumulated necessary "underway time" (hours at sea) and demonstrate an ability to advance to higher-level positions. The required hours at sea to advance to higher maritime is very high, making it almost impossible to enter the career track mid-stream. The Ferry Division pays for individuals being "upgraded" to higher positions to obtain the specialized training required by the Coast Guard for their new license and to prepare for the certification exam.

It is worth noting the atypical work schedule of ferry boat operators. Personnel work 12 hour days, seven days in a row and then have seven days off. The work can be physically demanding, although the physical examination required by the Coast Guard is not considered too difficult.

Coast Guard Certification Process

The process of obtaining a Coast Guard license varies based on what job you have, what type of vessel you will work on and where that vessel is operated.

In general, all licenses require passing a paper examination, documentation of a specified amount of "underway" (at sea) time, a physical examination, and a security background check. Licenses must be renewed every five years. These exams are offered at regional Coast Guard centers; the closest to North Carolina is in Charleston, SC.

As part of an effort to partially privatize the licensing procedure a number of years ago, the Coast Guard began a program that allows maritime schools to submit their courses for specific licenses to the Coast Guard for approval. If the courses are approved, individuals who pass them receive the corresponding license without sitting for an exam after meeting the other requirements. However, this process primarily pertains to licensing for charter boat operators and small commercial boats under 100 tons. The process for obtaining a license to operate larger boats such as ferries and tugboats still requires going to a regional examination center and sitting for an exam.

There are no requirements to take any courses before sitting for a Coast Guard license "paper" exam. However, licensing exams for large boats are not easy, particularly for Engineers, Mates and Masters. As such, the majority of these individuals take a license preparation exam at a maritime school, most of which are private proprietary schools. These are classroom-based courses that teach "to the test," not unlike an SAT preparation class. There are also fairly expensive computer-based courses (CDs) on the market to help prepare for these exams.

Firefighting and Radar Training Requirements

Importantly, in addition to the paper exam described above, Engineers, Mates and Masters licensed to operate inland boats 300 tons or greater must satisfactorily complete Coast Guard-approved courses in basic and advanced shipboard firefighting courses. To be licensed to operate a boat 200 tons or greater, an individual must also satisfactorily complete an approved "radar observer" course in order to show competency in this aspect of navigation.

Unlike the license preparation courses that vary according to license, firefighting and radar courses are the same regardless of which license you seek. The NC Ferry Division requires all of its Engineers, Mates and Masters to hold licenses that require the firefighting and or radar courses. Most private ferry boat operators and towing operators in the state also usually hold licenses that require these courses.

Shipboard firefighting and radar courses comprise, according to interviews, the largest share of training expenses for the Ferry Division. A deck officer (Mate or Master) or engineer only needs to take basic and advanced firefighting one time in his career. Deck officers, however, take an in-depth radar class the first time they become a Mate or Master and then must take a shorter "refresher" course every five years when their license is up for renewal.

These two types of training are also the most expensive for a school to set up because of significant equipment requirements. Finding qualified instructors can also be difficult. These factors will be explored in greater detail later in the report.

Ferry Occupations, Certificates and Required Skills

The classification, skills, and coast guard licenses required by the Ferry Division are shown in Table 1.

Table 1: Ferry Boat Occupations at a Glance, North Carolina Ferry Boat Division

Ferry Division Position	Required Coast Guard License	Supplemental Courses beyond Licensing Exam	Minimum Educational Requirements/ Experience*	Key Skills	Pay Range (per year)
Ferry Master (captain)	Master Great Lakes/Inland 1600 Tons	-Radar Observer -Basic & Advanced Firefighting -Radio Operator License	High School diploma and 4 years experience on deck of vessel over 100 gross tons	Thorough knowledge of operation & maintenance of ferry vessels, ability to chart, plot and navigate; ability to supervise	$32,000-$49,000
Ferry Mate	Mate Great Lakes/Inland 1600 Tons	-Radar Observer -Basic & Advanced Firefighting	High school diploma & 2 years experience including 1 year as Able Seaman	Considerable knowledge of operations and basic maintenance of ferry vessels, ability to safely navigate	$24,000-36,000
Ferry Chief Engineer	Chief Engineer	Basic & Advanced Firefighting	High School diploma, 3 years experience	Thorough knowledge of marine & diesel engines & all auxiliary equipment; ability to supervise	$31,000-47,000
Oiler	QMED	None	Grammar school, six months experience	Knowledge of operation, repair and maintenance of marine equipment	$23,000-34,000
Crewman II	Able Seaman	None	9th grade, two years expeience	Operation and maintenance of hoists & motors and key safety devices	$22,000-32,000
Crewman I	Ordinary Seaman	None	Grammar School	Operate a motor, load vehicles, make minor repairs, recognize need for large repairs	$20,000-28,000

Source: NC Ferry Division, NC Office of State Personnel, US Coast Guard web site

*State job position descriptions allow direct equivalent experience to substitute for some minimum educational requirements

All positions except Crewman 1 also require CPR/First Aid courses, which the Ferry Division provides in-house

Content of Ferry Boat Operator Training

As previously mentioned, there are three types of training associated with obtaining Coast Guard certificates: license preparation exams, basic and advanced shipboard firefighting, and radar observer courses. The section below briefly describes the courses in terms of content, duration and how they are delivered. Later in the report we will go into more detail concerning where this training is available and how much it costs.

All shipboard firefighting and radar observer courses, *as well as* instructors, must be approved by the US Coast Guard in order to meet licensing requirements. This is not the case for license exam preparation courses.

Basic & Advanced Shipboard Firefighting

USCG approved fire fighting courses entail detailed instruction (16 hours for basic training and 37 hours for advanced training) that outlines firefighting objectives in the Code of Federal Regulations (CFR). The subjects covered in these courses include: theory of fire; fire prevention; fixed fire-extinguishing systems; fire control aboard ships; training seafarers in fire fighting; and fire investigation and reporting. Many of these subjects allow students to train safely during practical exercises and demonstrations of competency. In most courses students learn the blueprint of a vessel and how to organize emergency squads for firefighting.

Necessary Facilities / Equipment: Most estimates place the cost of a stand alone shipboard firefighting facility at $2 million, although some high estimates place it at almost $10 million. This includes the cost of the building, including a "burn room," as well as necessary equipment including hoses, uniforms, and other safety materials. The cost of retrofitting an existing public safety facility to include a shipboard firefighting component is much less, however. Estimates on this cost range from $100,000 to $500,000. It should be noted that neither of these estimates include the cost of purchasing land.

Radar Observer

USCG approved radar courses include the radar observer (unlimited) course for new certificates and the radar observer recertification course for those seeking to renew their license. The radar observer (unlimited) course is typically given in a week long (5 day) course that complies with CFR. It provides hands on collision avoidance and radar navigation practice on radar simulators. In this course students are expected to become knowledgeable about basic radar theory and proficient at transfer plotting.

Licensed Radar Observers are required to renew their licenses every 5 years as outlined in the CFR. The radar observer (unlimited) recertification course is typically a 1-day course that prepares students for renewal endorsement.

Necessary Facilities / Equipment: The radar classes can be taught in any available classroom that can house computer workstations. Conversations with the leading retailers of the software and hardware necessary to run such a program estimate the cost for equipment purchase to be $93,000. This cost includes $85,000 for the cost of the radar simulation software for eight network stations and an instructor station. $8,000 is for the associated computer hardware.[1]

License Exam Preparation Courses

Each mariner applying for a license must present certificates confirming the completion of the Coast Guard approved radar observer and firefighting courses.

In addition, they must sit for the Coast Guard exam that corresponds to their position. Most deck officers and engineers being promoted to these higher level positions choose to take some sort of preparation course, either in class, at home or through computer based offerings. These exam prep courses are not regulated or approved by the Coast Guard. It can be difficult to find qualified instructors to teach them and there are many competing products and schools on the market.

Necessary Facilities / Equipment: classroom space only

Table 2 shows the duration of the classes, as well as the typical tuition for each type of training.

Table 2: Duration and Costs for Maritime Firefighting and Radar Courses

Course	Typical Session Duration	Typical Tuition
Radar Observer (initial)	5 days	$450
Radar Observer (renewal)	1 day	$200
Advanced Firefighting	5 days	$500
License Exam Preparation Courses	1 to 4 weeks	$850 to $2000

Source: Web sites of schools most commonly used by the Ferry Division as well as those in close proximity to North Carolina.

[1] Source: Herbert F. Taylor, President, Kongsberg Maritime Simulation Inc.

Section 3: Current Ferry Boat Operator Training Options

The Ferry Division uses a wide range of schools to provide its employees training. Students have attended schools in Louisiana, New Jersey, Virginia and numerous other states. Table 3 shows the number of schools offering Coast Guard approved courses in advanced firefighting and radar observer. The table shows all schools in states east of the Mississippi River.

Table 3: Number of Schools by State Offering Cost Guard courses in Radar and Advanced Firefighting, States East of the Mississippi River[2]

State	Radar	Advanced Firefighting
Connecticut	1	0
Florida	4	5
Kentucky	1	1
Louisiana	8	7
Maine	2	1
Massachusetts	2	3
Maryland	3	3
New Jersey	0	1
New York	3	2
Rhode Island	2	1
Tennessee	2	0
Virginia	4	0
West Virginia	2	2

License exam preparation courses are not listed here because offerings for exams such as Mates or Masters 1600 gross ton changes frequently.

A closer examination of the schools used most frequently by the Ferry Division shows how far Ferry Boat operators must travel to receive training, which adds to the expenses associated with the training. Indeed, travel is the largest portion of the Ferry Division's training expenditures (discussed later). Table 4 shows distance from the Ferry Division's headquarters to these institutions both in terms of mileage and expected travel times.

[2] Note, one school may offer both radar and shipboard firefighting classes. Source: U.S. Coast Guard.

Table 4: Distance to Training Centers from Morehead City[3]

Name of School	Location	Mileage from Morehead City	Approximate driving time from Morehead City
Chesapeake Marine Training Institute	Hayes, VA	220	5 hours
Houston Marine Training Services	New Orleans, LA	975	16 hours
Marine Safety Consultants/ Tidewater School of Navigation	Virginia Beach, VA	215	5 hours
Military Sealift Command (Atlantic)	Freehold, NJ	570	10 hours
Tidewater Community College	Norfolk, VA	190	4 hours

Note: the Ferry Division identified these schools as the most commonly used institutions

An interview with James Cavo, the Course Approval Team Leader with the US Coast Guard National Maritime Center, indicates that maritime education is a competitive market.[4] There are a number of schools and this official was not aware of significant problems in terms of demand from students outstripping supply of schools. He did, however, note that the Carolinas and Georgia were lacking a radar training school whereas other coastal parts of the country had numerous programs. With respect to demand to shipboard firefighting, he stated that over the past six years demand has been higher than normal because new international standards were enacted to require lower level merchant mariners to attend firefighting school. However, those regulations have now been phased in and he expects demand from merchant mariners to go back to previous mid-1990s levels.

[3] Distances and travel times from mapquest.com.

[4] Interview with James Cavo, 10/21/2005

Section 4: Demand for Ferry Boat Operator Training

This report examines the need and demand for a program aimed at training ferry boat operators in North Carolina. While the employees of the Division would clearly be the target of any training program, the classes offered could also potentially meet the needs of private passenger vessel operators and private shipping firms such as tugboats and barges both in North Carolina and in surrounding states. This section of the report attempts to gauge the demand for training programs within the Ferry Division, within North Carolina among private industry, and the potential for the program to serve individuals and companies outside the state's borders. The basis for estimating demand from the Ferry Division comes from information provided by its headquarters. The basis for determining demand from outside the Division comes from US Department of Labor's (USDOL) Bureau of Labor Statistics, which classifies all workers by state, including water transportation workers. The two categories we analyze are: Pilots, Mates and Captains, and Engineers. We sought more precise data by contacting the US Coast Guard and requesting the number of licensed deck officers and engineers in North Carolina; however, they do not track license holders by state.

North Carolina Department of Transportation, Ferry Division

The Ferry Division operates boats on eight different ferry lines serving Coastal North Carolina and the barrier islands. The division employs nearly 500 workers, 266 who are licensed by the Coast Guard. Table 5 shows number of licensed Division employees by Employee class.

Table 5: Shipboard Ferry Division Employment[5]

Employee Class	Number of Division Employees
Ferry Master	56
Ferry Mate	18
Ferry Engineer	53
Ferry Oiler	21
Ferry Crewman II	59
Ferry Crewman I	59

The entry level Ferry Crewman I does not require outside training for licensure by the Coast Guard. Therefore, 207 employees of the Division require formalized training at some level.

These 207 employees do not require training each year and all do not require the same courses. There are two ways to calculate the annual training demand. First are the courses needed to obtain an initial license in each employee class. Second, are the courses needed to renew the license. For the purposes of this report, we assume that the Division would use any new program offered through the state system instead of any comparable program offered through another institution.

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[5] North Carolina Department of Transportation, Ferry Division

Initial license annual demand

As already described, in order to be licensed in particular positions, a certain level of coursework must be achieved. Consultation with the Ferry Division reveals that most employees advance through the ranks of the Division and thus require training at each level of advancement. The Division states that rates of attrition vary from year to year and therefore it is difficult to determine how many individuals can be expected to enter a new employee class.

The USDOL's Bureau of Labor Statistics provides a general national occupational outlook for Water Transportation occupations and thus provides a way to estimate growth and turnover rates in the industry. According to BLS, "Overall, employment in these occupations is projected to grow more slowly than the average for all occupations through the year 2012. More slowly than average indicates a growth rate of between three and nine percent.

To calculate the turnover rate of employees at the Division, we use the Bureau of Labor Statistics most recent statistics relating to job turnover. In July of 2005, the BLS calculated a national 3.5 percent turnover rate in all occupations. We apply that figure in determining the number of openings in each employee class at the Division. Table 6 shows a projected number of licenses annually requiring course work from within the Ferry Division:

Table 6: Annual Number of Ferry Division Employees requiring upgrades (projected)[6]

Position	Number of new licenses annually (projected)
Ferry Master	2
Ferry Mate	1
Ferry Engineer	2
Ferry Oiler	1
Ferry Crewman II	2

Of special interest is the number of individuals rising to either Chief Engineer or Mate. Those individuals would not only need to take licensing preparation courses but would need to take a Basic and Advanced Firefighting and Radar Observer courses. (It is presumed that an individual upgrading to the Captain position would already have an Advanced Firefighting degree, having served as a mate or as a lead operator on a vessel outside the Division). An estimate of three employees per year would seem to be the most statistically accurate estimate. The Ferry Division, however, estimates that between six to ten employees require firefighting training any given year.

[6] Numbers used come from current employee lists supplied by the Ferry Division, with a 3.5% growth rate applied.

Renewal license annual demand

Certain licenses are required to be renewed every five years. Most deck officer positions have a five-year renewal cycle—although time in service can be substituted for a course, a fact that would apply to almost all employees within the Division. The one license renewal that would require the completion of an approved Coast Guard course is that of Radar Observer. This license is required of all Ferry Masters and Ferry Mates, of which there are currently 77 employed by the division. Assuming that 20 percent (one-fifth) of these individuals need their license renewed each year, this would mean that 15 Division employees could be expected to take a Radar Observer renewal course each year.

Total Demand in North Carolina

The Ferry Boat Division is not the only employer of individuals who could potentially benefit from operator training. There are currently 14 private passenger carrying water vessels regulated by the North Carolina Public Utilities Commission and defined as "ferries".[7] Table 7 shows these companies by name and location.

Table 7: Private Ferry Boat Operators in North Carolina[8]

Private Ferry Boat Operator	Location
Anderson Maritime, Inc.	Beaufort
Bald Head Island Transportation, Inc.	Bald Head Island
Barrier Island Transportation Service, Inc.	Harkers Island
Cape Lookout Ferry Service, Inc.	Harkers Island
Core Sound Kayaks and Touring Company	Beaufort
Island Ferry Adventures	Morehead City
Johnny's Goodtime Fishing Charters	Davis
Morris Marina, Kabin Kamps & Ferry Service, Inc.	Atlantic
Mystery Tours, Inc.	Beaufort
Ocean Isle Fishing Center, Inc.	Ocean Isle
Outer Banks Ferry Service	Beaufort
Portsmouth Island Boat Tours	Ocracoke
Local Yokel Ferry & Tours	Harkers Island
Waterfront Ferry Service, Inc.	Morehead City

[7] The North Carolina Public Utilities Commission regulates fees charged by these private operators. For the purposes of the Commission ferry boats are defined as transporting passengers from one fixed point to another. Thus, cruise ships or charter points that return to the same point of departure without a scheduled stop are not subject to regulation.

[8] North Carolina Public Utilities Commission

In addition to these operators, there are shipping companies based in North Carolina that require Deck Officers with similar training to those needed by the Ferry Division. This includes charter boats, tugboats, barges and towing vessels. Table 8 below lists the companies included in the Waterborne Transportation Lines of the United States survey published by the US Army Corps of Engineers, Institute for Water Resources. Each company listing includes the number of registered vessels, the company's registered North Carolina location and the primary purpose of the companies. Note that neither the Ferry Division nor lines regulated by the Public Utilities Commission are included in this chart.

Table 8: Private Operators Water Transportation Craft, Non-Ferry Boat[9]

Company	Location	Vessels	Purpose
Alger Willis Fishing Camps	Davis	3	Passengers
Astron General Const. Co	Jacksonville	1	Tanker
Barrier Island Transportation Service	Harkers Island	3	Passenger
Cape Fear River Boats	Wilmington	3	Passenger
Cape Fear Towing	Wilmington	4	Tugboat
Cogentrix Virginia Leasing Corporation	Charlotte	1	Freight
Cypress Barge Co., Inc	Asheville	2	Barge
Hanover Towing	Wilmington	4	Tugboat
Harbor Lines	Wilmington	3	Towing
Intracoastal Marine	Coinjock	3	Towing
Irrevocable Trust	Gastonia	1	Barge
James River Towing	Morehead City	4	Towing
Jones, J. A. Construction	Charlotte	1	Barge
McAllister Towing Of Wilmington	Wilmington	5	Towing
Morehead City	Wilmington	3	Tugboat
Outrageous Diving	Morehead City	1	Passenger
PCS Phosphate	Aurora	13	Freight
Skeets Winner Corporation	Wilmington	5	Passenger
Stevens Edens Towing	Sneads Ferry	1	Tugboat
Sunn Barges, L.L.C.	Huntersville	25	Barge
T&C Towing	Elizabeth City	1	Towing
U. S. Ship Management, Inc.	Charlotte	18	Containership
Wasson Barge Co., Inc.	Asheville	20	Barge
Wasson Investment Corp.	Asheville	30	Barge
Total		**155**	

[9] U.S. Army Corps of Engineers, Institute for Water Resources, *Waterborne Transportation Lines of the United States Volume 2 – Vessel Company Summary*, 2003

While the above figure offers some suggestion on the number of companies operating ships that presumably require advanced licenses to operate it is more difficult to ascertain precisely how many individuals at each company hold licenses.

To gain more information, the project team looked at data collected by the US DOL's Bureau of Labor Statistics (BLS). BLS estimates that 350 North Carolina workers were employed as captains, mates or engineers in the field of water transportation. Their breakdown of this employment is shown in Table 9.

Table 9: North Carolina Employment in Water Transportation[10]

Employee Class	Number of Employees
Captains, Mates and Pilots of Water Vessels	290
Ship Engineers	60
Total	**350**

Since BLS does not use classifications based on Coast Guard licenses, we cannot completely correlate their statistics with the employment classes reported by the Ferry Division. If the number of Ferry Division captains, mates, and engineers is removed from the BLS data, North Carolina has 223 high ranking water transportation personnel not employed by the Ferry Division. An unknown number of these individuals work aboard international cargo ships, and while these individuals require some of the same firefighting and radar training as Ferry operators, they sit for different Coast Guard licensing exams (and hence would take different preparation courses).

Initial license demand

Using the same rate of 3.5 percent turnover suggested in the section on the Ferry Boat Division, every year approximately eight private water transportation employees would require a course to achieve certification to serve in a new position. This figure is subject to fluctuation, however, and certain years might see much higher or lower numbers. For the purposes of this study, we are using both a high and low estimate of demand for the training.

Demand for renewal

Since only Mates and Masters are required to have Radar Observer licenses, these are the only personnel that would require a renewal cost. Assuming that the 74 Ferry Division employees are subtracted, that means that there are 216 Private Mates and Captains in North Carolina that hold a Radar Observer endorsement. Assuming that an equal number of these individuals renew their license each year, 43 private students each year could be expected to take a Radar Observer class each year at some location.

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[10] Bureau of Labor Statistics, U.S Department of Labor

National demand

Nationally, the Bureau of Labor Statistics reports that there are nearly 33,000 workers employed in the occupational classifications of Captains, Mates and Pilots of Water Vessels and Ship Engineers. Table 10 shows the breakdown according to BLS.

Table 10: National Employment in Water Transportation[11]

Employee Class	Number of Employees
Captains, Mates and Pilots of Water Vessels	24,040
Ship Engineers	8,900
Total	**32,940**

Although Ferry Division employees currently travel across the Eastern part of the United States for training, it is most likely that any national demand for programs offered by a state community college would come from nearby states. Table 11 shows the water transportation employment in these positions for the states bordering North Carolina with coastal access.

Table 11: Water Transportation Employment in Bordering States[12]

	Number of Employees
South Carolina	
Captains, Mates, and Pilots of Water Vessels	280
Ship Engineers	N/A
Georgia	
Captains, Mates, and Pilots of Water Vessels	220
Ship Engineers	N/A
Virginia	
Captains, Mates, and Pilots of Water Vessels	1,450
Ship Engineers	1,310
Total	3,260

As Table 11 shows, while South Carolina and Georgia have similar employment in water transportation to North Carolina, Virginia has an extremely large number of workers in this field. Indeed, that state has the fourth highest concentration of water transportation in the nation, the vast majority of whom are located in the Norfolk-Hampton-Virginia Beach Metropolitan area. That area has a number of schools that serve the radar observer and initial license requirements but no firefighting school. South Carolina and Georgia lack both a firefighting and a radar observer school.

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[11] Bureau of Labor Statistics, US Department of Labor

[12] Bureau of Labor Statistics, US Department of Labor

Aggregating the Demand Figures

It is difficult to determine how much of the regional market for classes that a North Carolina training program could capture. Tables 12 and 13 offer both a high and low estimate for any potential program demand. Demand is broken down into three categories: demand from the Ferry Boat Division, demand from North Carolina private operators, and demand from surrounding states.

Importantly, for the low estimate the following assumptions are made:

- 3.5 percent in annual occupational growth rate to assess the numbers of individuals needing new licenses;
- 20 percent of deck officers requiring a radar observer renewal class;
- 100 percent of Ferry Division employees using the community college program. For firefighting, this estimate used the 3.5 percent turnover rate to determine need for this type of training;
- 25 percent of North Carolina private operators attending the firefighting, initial license and renewal of radar observer classes;
- 10 percent of Georgia and South Carolina operators attending the firefighting, initial license and renewal of radar observer classes; and
- 5 percent of Virginia operators attending the initial license and renewal of radar observer classes and 10 percent attending the firefighting classes.

Importantly, for the high estimate the following assumptions were made:

- 3.5 percent in annual occupational growth rate to assess the numbers of individuals needing new licenses;
- 20 percent of deck officers requiring a radar observer renewal class;
- 100 percent of Ferry Division employees using the community college program. For firefighting, this was estimated at 8 employees, an average provided by the Ferry Division, to determine need for this type of training;
- 75 percent of North Carolina private operators attending the firefighting and radar observer classes;
- 50 percent of Georgia and South Carolina operators attending the firefighting, initial license and renewal of radar observer classes; and
- 10 percent of Virginia operators attending the initial license and renewal of radar observer classes and 20 percent attending the firefighting classes.

Table 12: Estimated Potential Demand for NC-based Training

Low Estimate

Course	Ferry Division Potential Annual Demand	North Carolina Private Operators Potential Annual Demand	Regional Operators (SC, GA, VA) Potential Annual Demand	Total Potential Annual Demand
Initial Radar License	8	2	19	**29**
Renewal of Radar License	15	11	38	**64**
Shipboard Firefighting	3	2	11	**16**

Table 13: Estimated Potential Demand for NC-based Training

High Estimate

Course	Ferry Division Potential Annual Demand	NC Private Operators Potential Annual Demand	Regional Operators (SC, GA, VA) Potential Annual Demand	Total Potential Annual Demand
Initial Radar License	8	6	28	**52**
Renewal of Radar License	15	32	105	**152**
Shipboard Firefighting	8	6	28	**52**

Section 5: Current Community College Capabilities

No current community college in North Carolina offers training programs or courses applicable to the licensing of ferry boat operators. With the exception of the shipboard firefighting training, however, starting such a program does not require extremely large capital investments on the part of the college. Indeed, all that is required is classroom space for license exam preparation courses, and, in the case of radar observer classes, a computer lab with workstations and simulated radar lab software for each student.

It should be pointed out that one real advantage of hosting a ferry boat operator program at a community college is the strong quality assurance standards that exist throughout the system. As mentioned, certain courses offered for ferry boat operators, particularly those in the area of license preparation, are not usually monitored for quality by an outside authority. Any course that would be offered through a North Carolina community college would need to meet the high standards that apply to all continuing education and credit programs offered through a state college. Thus, the Ferry Division, as well as private operators, could be assured that their employees were receiving a high level of training.

To evaluate the specific capabilities of coastal community colleges, the project team looked at willingness to host such a program, general experience in the field of marine-related occupations, and any efforts underway to meet the demand.

Three coastal colleges in the North Carolina Community College System offer marine-related programs that were considered by this study.

- College of The Albemarle (Elizabeth City)
- Carteret Community College (Morehead City)
- Cape Fear Community College (Wilmington)

Site visits were made to both Cape Fear CC and Carteret CC and phone interviews were held with representatives from College of The Albemarle. All three community colleges expressed an interest in training for ferry boat operators, contingent on information about the number of students that could be expected to attend. The following briefly describes the colleges' maritime-related activities. Considerations about where to locate a potential ferry boat operator training program is found in section six.

College of The Albemarle

College of The Albemarle's relatively new Marine Sciences program focuses on training for marine-related occupations that involve marine conservation, water analysis, marine scientific research, and commercial fishing. This program is not directly related to the training that ferry boat operators need for their required licenses and certifications. Leadership at the college indicated a willingness to collaborate with other community colleges in providing necessary training.

Carteret Community College

Carteret Community College offers a diploma in Marine Propulsion Systems and has offered continuing education courses for pilots of small watercraft. The college is developing plans for an off-campus public safety training center, with the first stated priority to be shipboard firefighting training. Funding has not been obtained for this project, as the first priority is securing land to build the facility. A potential location for the facility has been identified; it is owned by the Federal government and there are preliminary plans to attempt to purchase the site.

Cape Fear Community College

Cape Fear Community College offers Marine Technology, Heavy Equipment and Transport Technology/Marine Systems, and Marine Propulsion Systems (Diploma). Completions (graduations) in these programs are low, with Marine Technology having the largest number (20 in 2004-2005). The college will be starting construction of a public safety training facility at its North Campus soon. This $10 million project is a joint initiative of the college, the City of Wilmington, and New Hanover County. The plan for the facility includes elements that would be applicable to a program to provide Coast Guard approved firefighting training.

Section 6: Feasibility Analysis and Findings

Finding 1: Hosting a training program at a North Carolina Community College would save the Ferry Division approximately $17,500 per year.

The Ferry Division pays for the majority of its employees' training costs. This includes the cost of tuition at the appropriate schools as well as travel costs associated with traveling to these schools. In addition, if the budget allows, the Ferry Division pays the license renewal costs of many of its employees. Determining how much the Ferry Division has spent on training is a difficult task. The Division does receive some funds through the NC Department of Transportation that are allotted to training expenses. However, the majority of training expenses are done on an expense voucher system, whereby an employee pays for the cost of his training and then is reimbursed by the Division. The project team requested breakdowns of training-related expenditures by type of training and job position; however, the Division was only able to provide aggregated numbers.

Ferry Division training expenditures vary greatly from year to year dependent on position need, according to Division staff. Table 14 shows the average annual training costs for Ferry Division staff. The table breaks down these expenses into three categories: tuition, travel and Coast Guard license renewal fees.

Table 14: Recent Training Expenditures, NC Ferry Division[13]

Expense Category	Average Annual
Tuition	$8,816[14]
Travel	$19,116
Coast Guard License Fees	$10,500
Total	**$29,616**

If there were a Ferry Boat program at a North Carolina community college, the travel line item would be significantly reduced. As previously discussed, individuals are often forced to travel hundreds or even thousands of miles away for training programs, requiring the Division to pick up the cost of mileage or airfare, lodging and meal per diems. Although the location of a community college program may cause some employees to travel away from home, a reduction in travel costs of 80 percent seems reasonable.

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[13] These figures come from two sources. The Ferry Division reported expense vouchers for training related expenses for the last three years, 2003-5. These figures were averaged. In addition, figures from the NC Department of Transportation from 2005 showed additional training expenses.

[14] $5,447 of this expense was for two Mates candidates to attend a school in Louisiana

The Coast Guard licensing fees that the Division pays would not be affected by the presence of NC-based maritime training. Further, it is unknown to what extent tuition fees would be reduced, because this depends on how much a local program would charge. The project team found that generally community college-based maritime programs do charge less than proprietary schools, but not dramatically so. Therefore we estimate an annual tuition savings of 25 percent.

Taking into account, therefore, significantly reduced travel and moderately reduced tuition costs, this study estimates that if there were a comprehensive NC community college ferry boat training program, there would be an overall annual cost saving to the Ferry Boat division of approximately $17,500, as shown in Table 15.

Table 15: Estimated Reduction in Training-related Costs for Ferry Division

Expense Category	Annual Reduction
Tuition	$2,200
Travel	$15,300
Total	**$17,500**

Finding 2: There are Numerous Financial Considerations for Starting NC Community College-based Ferry Boat Operator Training

When considering the financial feasibility of investing in and operating training for ferry boat and other similar water transportation workers, the essential elements to take into account are:

- potential demand
- potential revenues
- estimated costs, both start up and operating

In addition, there are non-financial considerations to take into account. These include broad issues such as how a program fits with a college's mission, impact on the community and potential benefits for local economic development. They also encompass other issues such as finding qualified instructors and administrators, and opportunity costs associated with using college resources in this particular area as opposed to another endeavor.

Table 16 gives a summary of the project team's best estimate of the financial picture associated with starting the three components of a program: Coast Guard license exam preparation courses (Mate, Master and Engineer up to 1600 gross tons), radar observer courses (initial and renewal) and shipboard firefighting.

Start-up costs for curricula development for each area are difficult to predict. If a college is able to find a qualified instructor who has already developed or has access to existing curricula for various courses, these costs could be quite low. If the college must develop its own curricula from scratch, course development costs could quickly mount. For the purpose of this study, we estimate course development costs of $30,000 for each of the three training areas; however, costs could fluctuate in either direction.

The costs of a stand-alone shipboard firefighting program are used in these estimates. However, retrofitting an existing or planned public safety building that would include a shipboard firefighting component could dramatically reduce costs.

Table 16: Estimated Start-up Costs for Ferry Boat Training Program

	License Exam Preparation Courses	Radar Observer Training	Shipboard Firefighting	Total—Comprehensive Program
Capital / Equipment Expenditures	0*	$93,000[15]*	$2,000,000[16]	**$2,093,000**
Curricula Development	$30,000	$30,000	$30,000	**$90,000**
Total	**$30,000**	**$123,000**	**$2,030,000**	**$2,183,000**

**assumes available classroom space.*

[15] This cost includes $85,000 for the cost of the radar simulation software for eight network stations and an instructor station. $8,000 is for the associated computer hardware. Source:, Herbert F. Taylor, President, Kongsberg Maritime Simulation Inc.

[16] This estimated cost is for a new facility solely devoted shipboard firefighting, excluding land.

Table 17: Estimated Annual Operating Costs for Ferry Boat Training

	License Exam Preparation Courses	Radar Observer Training	Shipboard Firefighting	Total—Comprehensive Program
Instructor(s) (low demand—3 sessions/year*)	$1,350	$1,350	$2,700	**$5,400**
Instructor(s) (high demand—6 sessions/year)	$2,700	$2,700	$5,400	**$10,800**
Annual Supplies	$300	$2,000	$50,000	**$52,300**
Annual Admin. /Overhead*	$8,000	$8,000	$8,000	**$24,000**
Total (range for low & high demand)	**$9,300 to $10,700**	**$11,350 to $12,700**	**$60,700 to $63,400**	**$81,700 to $87,100**

**sessions average 1 week*

Estimated Revenues

Table 18 estimates revenue from ferry boat training according to type. The demand figures stem from the estimates and assumptions laid out in Section 4. The tuition rates are based on a review of what other maritime schools charge. It is assumed that a community college program would be self-supporting—in other words would not access state non-credit full time equivalent (FTE) reimbursements—because relatively low student numbers and high program costs make FTE reimbursements too low.

Table 18: Estimated Annual Revenues from Ferry Boat Training

	Cost/ student	*Projected Number of Students (see Section 4)*		Revenue	
		Low demand (3 sessions/yr)	High demand (6 sessions/yr)	Low demand	High demand
License Exam Preparation Courses	$850	29	52	$24,650	$44,200
Initial Radar Observer	$450	16	52	$13,050	$23,400
Radar Observer Renewal	$200	64	152	$12,800	$30,400
Shipboard Firefighting	$500	16	52	$8,000	$26,000
Total				**$58,500**	**$124,000**

Recouping Start-Up Costs

Table 19 estimates how long it would take for radar, firefighting and a comprehensive program to recoup start-up expenditures. Recuperation of costs for developing and offering solely the license exam preparation courses are not presented because the factors are too variable, as discussed previously. In addition, only demand from water transportation workers is taken into account. There could be additional demand from land-based fire departments, as discussed later in the report.

Table 19: Estimated Time to Recoup Start-Up Costs

(Water Transportation Demand Only)

Type of Training	Low Demand Scenario	High Demand Scenario
Radar Observer Training (initial & renewal courses)*	4 years	2 years
Shipboard Firefighting**	251 years	77 years
Comprehensive: radar, firefighting, & license prep exams	37 years	17 years

**costs for the two types of training also includes administrative costs found in Table 16 (i.e., $8,000)*

***Assumes stand alone facility for the purposes of Shipboard Firefighting.*

Finding 3: This study does not recommend development of a stand-alone NC community college-based comprehensive training program for Ferry Boat operators comprising all three components: license preparation exams, radar training and shipboard firefighting.

This recommendation is reached because of the modest annual cost savings that would accrue to the Ferry Division, the high expense of creating a comprehensive program, relatively low demand numbers among water transportation workers, and an overall competitive education market for maritime training.

The feasibility of individual training components within a ferry boat operator program are assessed below.

Finding 4: This study assesses the feasibility of establishing the individual components of a ferry boat operator training program at a NC community college as follows:

Coast Guard License Exam Preparation Courses (up to 1600 gross tons level)

The feasibility of offering preparation courses for high level Coast Guard deck officer and engineer licenses is the most difficult to assess because the barriers to entry in this market are relatively low and competition for students is significant.

If a college were to find the right qualified instructor with a very strong reputation and access to curricula that could attract students to license exam preparation courses, the outlook for generating a high level of demand is fairly good. However, finding such a person may prove difficult. One option would be to form a revenue sharing partnership with an existing out of state or proprietary school to host classes at a NC community college, sharing revenue. This market is perhaps the most volatile of the three types of training because schools can enter and leave it easily (courses are not regulated or approved by the Coast Guard because they are voluntary), and there is competition from computer-based training and home study products.

Radar Observer Training (initial and renewal)

A case can be made to invest in the equipment and expertise necessary to offer radar observer training at a NC community college.

Computer simulation software and workstations necessary to teach radar observation are not prohibitively expensive. Our analysis shows that start-up costs could be recouped in no more than just over 3.5 years. Further, an official with the US Coast Guard's licensing division noted that while in general the radar training market is competitive, there are no schools in the Carolinas or Georgia. And, unlike licensing exams and firefighting training which is are only required once in a individual's career (once he reaches his top licensed career position), maritime workers must renew their radar observer training every five years, boosting demand for the training.

However, we did not find any examples of a maritime school that offers only radar training. The overhead and marketing costs would likely make it necessary to combine this training with some license preparation courses as already described. A college would likely use the same instructor to teach both and offering both types of training would build the program's reputation and attract students.

Shipboard Firefighting Training

Demand from water transportation workers is not sufficient to warrant investment in a stand-alone NC Community College-based shipboard firefighting school because construction costs are very high and demand is relatively low.

The most expensive component of any program geared to meeting the needs of ferry boat operators is the advanced fire fighting program. The program requires significant capital investment in land and equipment—unlike other programs it is not simply a matter of purchasing computer software and hardware that can be established in an existing classroom. Estimates on how much it would cost to start a dedicated shipboard firefighting program range from $2 to $10 million. Given demand estimates for water transportation workers, which range from 16 students to 42 students annually, the start-up costs do not justify such initial expenditures.

There are ways, however, that such a program could piggy-back on other public safety programs that seek to train land-based firefighters. For instance, Carteret Community College has made a proposal to build a $4.2 million public safety training facility that would include a marine firefighting program. Carteret CC considers the marine firefighting program to be a high priority. Cape Fear CC has a public safety training facility that is slated for construction. The proposed facility includes elements that could allow for the provision of Coast Guard approved training for marine operators.

Although outside of the scope of this particular study, a shipboard firefighting program could not only meet the needs of water transportation operators, it could help coastal community fire departments receive training on how to fight fires on the water. According to fire chief Jerry Leonard with the Morehead City Fire Department there are "less than a dozen" certified shipboard firefighter trainers, although there were more than 600 firefighters in the County. According to Carteret Community College, the need for firefighters who understand how to fight fires on water is a critical one.[17]

> "In virtually all cases, marine fires are severe enough to require mutual-aid, which is support from neighboring fire departments. For example, in August, 2005, a fire on a fishing trawler in Carteret County required 'at least 40 firefighters from no less than four county departments,' (Carteret County News-Times, 8/19/05). A 1998 marina fire in Carteret County, sparked by an electrical problem on a fishing boat, ultimately needed six fire departments to extinguish. In such instances, the demand for adequately prepared shipboard firefighters is immediately multiplied. In the event that the majority of firefighters on a scene are inadequately trained, the human, economic, and environmental outcomes can be swift and catastrophic. Too much water on a fire can easily sink or capsize a ship. Inexperience with confined spaces can quickly lead to lost lives. Not having enough relief personnel can prolong the fire and devastation." [18]

The potential demand for marine firefighting training for land-based firefighters in North Carolina has not been quantified and is outside of our scope of work. However, it appears that any marine firefighting program would need to be flexible enough and dedicated to serving this market. Indeed, conversations with officials in the field of water transportation indicate that this component of a firefighting school would be the key to its viability. As shown above, estimated potential demand from solely water transportation workers does not appear sufficient to justify its costs.

What seems to be clear is that constructing a stand-alone facility for the sole purpose of training marine and/or ferry boat operators is not the most cost-effective option. It may make more sense to retrofit an existing or planned public safety facility that can be adapted to provide for the training of shipboard firefighters. Special attention would need be given to ensure that the facility met the requirements of the US Coast Guard.

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[17] Carteret Community College Proposal for Funding for the North Carolina Marine Fire Fighting Council

[18] Carteret Community College Proposal for Funding for the North Carolina Marine Fire Fighting Council

Finding 5: Given relatively low student demand and concerns about financial viability of a program solely for water transportation workers, this study does not recommend a specific community college to develop a stand-alone program. However, site location considerations for a dual-purpose shipboard firefighting program and for the other components of ferry boat training are discussed below.

Both Cape Fear Community College and Carteret Community College are planning to build new firefighting training facilities. Since the Cape Fear facility is closer to construction (Carteret is still at least two years away from purchasing the land), this report recommends that Cape Fear consider including a Coast Guard approved training program for Deck Officers and engineers.

The decision on where, if anywhere, to locate a license preparation and radar training program aimed at training water transportation operators depends on which population such a program targets. Because Carteret County is home to the largest portion of Ferry Division employees, locating the program at Carteret Community College may make the most sense (see Table 20). This would reduce Ferry Division travel expenses to the greatest degree.

Table 20: Coast Guard-Licensed Ferry Division Employees by County[19]

County	Employees
Carteret	114
Dare	52
Hyde	30
Brunswick	21
Beaufort	17
Currituck	9
New Hanover	5
Pamlico	4
Craven	3
Onslow	2
Pender	1
Washington	1
Out of State	5

[19] North Carolina Department of Transportation, Ferry Division

However, as been shown in previous sections, in order to be financially viable student demand would necessarily also come from outside the Ferry Division. As such, one option would be a cooperative and jointly marketed training program between Cape Fear and Carteret Community College that seeks students from beyond North Carolina's borders. Cape Fear could incorporate self-supporting shipboard firefighting into its soon-to-be constructed public safety facility and Carteret could develop on its campus the capacity to offer high quality self-supporting Deck Officer and Engineer license exam preparation courses (up to 1600 gross tons) and Coast-Guard approved radar observer training. The combined entity could be promoted as the North Carolina School for Maritime Safety, complementing both institutions' other maritime education programs. Lower level Coast Guard-approved training courses for charter boat captains, already taught by Carteret Community College and some other coastal colleges, could also be included in this partnership.

It should be noted that while College of The Albemarle would be well qualified to offer the Radar and license exam preparation courses the proximity of its campus to the Norfolk MSA makes it a less viable option. Several schools in that metropolitan area already offer those courses, including Tidewater Community College. However, College of the Albemarle should be considered as a potential partner in any jointly marketed program as their marine focus make them an attractive collaborator.

Under this scenario, the importance of cooperation cannot be over emphasized. Unless jointly coordinated and marketed, it seems doubtful either school would independently be able to attract sufficient students to make the programs viable.

Appendix A: Schools offering Coast Guard Courses in Radar and Advanced Firefighting, States East of the Mississippi[20]

School	City	State	Radar	Advanced Firefighting
American Boatschool, LLC	Mystic	CT	X	
Sea School	St. Petersburg, FL (floating campus)	FL	X	
RTM STAR Center (Dania/Toledo)	Dania Beach	FL	X	
Resolve Fire & Hazard Response, Inc.	Port Everglades	FL		X
Pyrotech Firefighting School	St. Petersburg	FL		X
OnBoard Maritime Training	Ft. Lauderdale	FL	X	
Maritime Professional Training	Ft. Lauderdale	FL		X
Maritime Fire & Safety Training Institute	Fort Lauderdale	FL		X
International Maritime Training	Ft. Lauderdale	FL	X	
Chapman School of Seamanship	Stuart	FL		X
Bluewater Maritime School	Atlantic Beach	FL		
Ingram Marine Group	Paducah	KY	X	
Center for Maritime Education	Paducah	KY		X
Martin International	La Place	LA	X	
Louisiana Technical College-Young Memorial Campus	Morgan City	LA	X	X
Louisiana State University	Baton Rouge	LA		X
Lafource Merchant Marine Training Services	Larose	LA	X	
L.E. Fletcher Technical Community College	Houma	LA	X	X
Houston Marine Training Services	New Orleans	LA	X	X
Edison Chouest Offshore	Galliano	LA	X	X
Delgado Community College	New Orleans	LA	X	X
Consulting & Safety Services	Thibodaux	LA		X
Cenac Training Services	Houma	LA	X	
Northeast Maritime Institute	Fairhaven	MA	X	X
New England Maritime	Hyannis	MA		X
Massachusetts Maritime Academy - Center for Maritime Training	Buzzards Bay	MA	X	X

[20] U.S. Cost Guard

School	City	State	Radar	Advanced Firefighting
Seafarers Harry Lundeberg School of Seamanship	Piney Point	MD	X	X
Maritime Institute of Technology & Graduate Studies	Linthicum Heights	MD	X	X
Calhoon MEBA Engineering School	Easton	MD	X	X
Vineyard Maritime	Freedom	ME	X	
Maine Maritime Academy	Castine	ME	X	X
Military Sealift Command (Atlantic)	Freehold	NJ		X
U.S.M.M.A Global Maritime & Transportation School	Kingspoint	NY	X	X
State University of New York Maritime College - Continuing Education	Bronx	NY	X	X
Center for Maritime Education	New York	NY	X	
Meridian Maritime	Pawcatuck	RI		X
Marine Safety International (Network/Norfolk/San Diego)	Middletown	RI	X	
Confident Captain/ Ocean Pros	New Port	RI	X	
River School	Memphis	TN	X	
Davis Marine Training	Barlett	TN	X	
U.S Army Transportation School	Ft. Eustis	VA	X	
Tidewater Community College	Norfolk	VA	X	
Marine Safety Consultants/ Tidewater School of Navigation	Virginia Beach	VA	X	
Chesapeake Marine Training Institute	Hayes	VA	X	
Tri-State Maritime Training Center	St. Albans	WV	X	X
Marshall Community & Technical College	Huntington	WV	X	X

Appendix B: Benchmark Training Programs at Community Colleges

Tidewater Community College

The Hampton Roads Maritime Training Center (HRMTC) is located within the Workforce Development and Community Education Division of Tidewater Community College. The Center is located in Norfolk, Virginia, which has a substantial maritime industry. The Center is offers US Coast Guard-approved courses for training and certification in many aspects of seamanship including Charter Boat Captain's License 6-pack; Radar Observer and Radar Renewal; and Master not more than 100 gross tons.

The Radar Observer (Unlimited) course is particularly popular at the Center with an average annual enrollment of approximately 30 students (6 students per session). The course costs $450 and students are responsible for their own lodging and travel accommodations.

Kingsborough Community College

Kingsborough Community College of the City University of New York (CUNY), offers a two-year Associate in Applied Science (A.A.S.) degree in marine technology with a focus on vessel operations. The college is located on a 72-acre waterfront campus in Brooklyn, surrounded by Jamaica Bay, Sheepshead Bay, and the Atlantic Ocean.

Kingsborough's marine technology instructors come directly from industry, so they are teaching what they do themselves every day. The program has multiple partnerships including close connections with the local chamber of commerce and a community advisory board. Members of the advisory committee include the captain of a fishing vessel, a representative of the Sea Grant program, educators, and maritime industry experts.

Clatsop Community College

Clatsop Community College located in Astoria, Oregon has a Marine Training Station (MTS). Courses at MTS are offered in a flexible format, allowing students to start any time and choose their own attendance schedule. The courses are self-paced and guided by skilled instructors. Most programs are approved by the US Coast Guard. Courses include STCW-95 approved GMDSS, ARPA, Bridge Resource Management, Advanced Fire Fighting and Basic Safety Training. Other classes include Radar Observer, Marine Safety, Marine Licensing Programs, Crew Member Training, Vessel Operations, Marine Electronics, Net Mending, Galley Cooking, Seamanship, Watchkeeping, Practical Navigation, Coastal Navigation, Charts, Aids to Navigation, Marine Weather, Tides & Currents, Celestial Navigation, Boat Handling, Flashing Light and other marine related topics.

Marshall Community & Technical College

Marshall Community & Technical College is located in Huntington, West Virginia. The college has an Inland Waterways Academy that mainly focuses on training for the tugboat industry, however, some of the courses within the academy focus on the basic training of mariners. Some of these of these courses include firefighting, radar, and license preparation courses. The radar courses cost approximately $350, and the firefighting courses cost approximately $450 with a $200 lab fee. The Academy has established a partnership with Tri State Fire Academy in Huntington, West Virginia. The firefighting course has a live training facility includes a three-level towboat structure that has been designed for propane-fueled simulation.

Seattle Central Community College

The Seattle Maritime Academy (SMA) is located at Seattle Central Community College in Washington State, which has the largest ferry system in the United States and one of the nation's largest ports. WSF has 10 major routes and 20 terminals that are served by 29 vessels. SMA provides formal programs and training in a variety of marine subjects and topics under the aegis of community education. Maritime training is also provided under contract to private sector companies, government agencies, military units, and unions. The format and scope of instruction is customized to meet each customer's specialized training needs.

The level and scope of training offered is directed towards the following maritime sectors: commercial fishing, Merchant Marine and the workboat industry. SMA offers about 45 courses annually, including basic safety training, marine deck technology, basic piloting and navigation, nautical road rules, marine engineering technology, and courses for the recreational boater. SMA operates with 6 staff and 10 faculty members. SMA offers formal certificate programs in both Marine Deck Technology and Marine Engineering Technology.

In addition to the two formal credit programs (Marine Deck Technology & Marine Engineering Technology), SMA also provides training in a non-degree format under the umbrella of continuing education. Instruction is offered in boating, fisheries skills, marine affairs, marine engineering, marine safety, navigation and, seamanship. Course format and duration ranges from half-day lectures to one-day seminars to two- or three-day workshops to quarterly programs. The nature of the training runs the gamut from vocational education to professional-technical training to licensure preparation to public safety campaigns. Students receive certificates in all courses successfully completed and they may opt to take select courses for academic credit and/or sea-time credit.