PUBLIC POST-SECONDARY EDUCATION REVIEW

Institutional Submission by Senior Leadership of Memorial University

July 15, 2020

SUBMISSION TO THE PUBLIC POST-SECONDARY EDUCATION REVIEW (PPSER) COMMITTEE OF EXPERTS:

Karen Kennedy
Kevin Keough
Doreen Neville

ON BEHALF OF MEMORIAL UNIVERSITY, INCLUDING THE FOLLOWING:

Board of Regents
Office of the President
Vice-Presidents Council
Deans Council

PREPARED BY:

President’s Advisory Committee on the Public Post-secondary Education Review
## Contents

Letter of Transmittal 3  
Introduction 4  
Governance 9  
Teaching and Learning 11  
Research 16  
Public Engagement 18  
Administration and Finance 21  
Infrastructure 26  
Conclusion 29  
Summary of Recommendations 30  

Additional Information Relating to Areas of Focus in the PPSER Terms of Reference 31  

- Effectiveness 31  
- Sustainability 32  
- Accountability 33  
- Accessibility 34  

**Appendix A:** Board of Regents Interim Report on PSE Review Process 35  

**Appendix B:** Membership of Relevant Memorial Groups 38  

**Appendix C:** Marine Institute PPSER Submission 40
Letter of Transmittal

July 15, 2020

To: Karen Kennedy
   Chair, Committee of Experts, Public Post-secondary Education Review

From: Iris Petten
   Chair, Board of Regents, Memorial University of Newfoundland
   Dr. Vianne Timmons
   President and vice-chancellor, Memorial University of Newfoundland

This submission, prepared for the committee of experts appointed to conduct the Public Post-secondary Education Review initiated in 2018, was developed and approved by senior leaders at Memorial University, including the Board of Regents, the Office of the President, Vice- Presidents Council and Deans Council. It provides information from a broad-based institutional leadership perspective on Memorial University today, how it has changed since the last review in 2004 and priorities going forward to inform a long-term vision for the next decade and beyond. In addition, groups within the university were encouraged to contribute submissions to highlight their unique perspectives. Submissions include, but may not be limited to:

- Campuses and locations
  - Grenfell Campus
  - Labrador Institute
  - Marine Institute

- Faculties and schools
  - Faculty of Engineering and Applied Science
  - Faculty of Medicine
  - Faculty of Nursing
  - Health Sciences Deans
  - School of Graduate Studies
  - School of Human Kinetics and Recreation
  - School of Music

- Senate’s Planning and Budget Committee

- Office of the Vice-President (Research) portfolio

The Marine Institute’s submission is attached as Appendix C. The other submissions have been forwarded directly to the Committee of Experts, and all submissions are available on Memorial University’s post-secondary education (PSE) resource website.

Thank you for your consideration of this report.

Iris Petten, ICD.D.  
Vianne Timmons, OC, PhD
Introduction

Past

The year 2020 marks the 95th anniversary of the founding of Memorial University College, created out of the ashes of the First World War, which decimated a generation in Newfoundland and Labrador. Conceived as a living memorial, the college was developed with a spirit of hope: “. . . that in freedom of learning their cause and sacrifice may not be forgotten.”

From a mere 55 local students in 1925, Memorial now has more than 18,000 students from more than 100 countries. St. John’s campus, located in scenic Pippy Park, is home to 16 faculties and graduates approximately 3,000 students annually. The university now has more than 100,000 alumni worldwide.

After Memorial University moved out of its original Parade Street campus to new quarters in 1961, the College of Fisheries, Navigation, Marine Engineering and Electronics opened in the location in 1964. The college continued to grow and was renamed the Institute of Fisheries and Marine Technology. In 1992 the provincial government merged the institute with Memorial University. Today, the Marine Institute is one of the most respected centres for marine learning and applied research in the world.

In an attempt to strengthen relationships between Newfoundland and Labrador and Great Britain, Lord Taylor (president, 1967-73) established a modest residential campus in the town of Harlow, England, where he had once served as a medical officer. In 1969 the doors of Harlow Campus opened. Since then, more than 4,500 students from 26 disciplines have studied and lived there – gaining an invaluable international perspective.

In the early 1970s the university approved the creation of a branch campus to enable students from outside the Avalon Peninsula to study closer to home. The West Coast Regional College in Corner
Brook officially opened in 1975 offering two years of university study. In 1979 it was named Sir Wilfred Grenfell College after the intrepid physician and social entrepreneur. Today Grenfell Campus is a student-focused, community-engaged campus of Memorial University that offers a growing suite of undergraduate and graduate degree programs.

Memorial University has a long history in Labrador, not only in research, but also in the well-remembered educational and engagement activities of the Extension Service. The Labrador Institute of Northern Studies was announced in 1977, and in 1997, the university changed the focus of the institute’s activities and renamed it the Labrador Institute of Memorial University. Today the institute is an academic unit of the university and is on the path to becoming our sixth campus. The Labrador Institute is committed to Northern-led, Northern-focused and Northern-based education.

In 2018 Memorial opened Signal Hill Campus located in downtown St. John’s. The facility is a dynamic hub for collaborating, learning and connecting. It is a place for fostering social and economic innovation, professional and organizational development, civic engagement and public dialogue. Several units relocated here, including the Harris Centre, Office of Public Engagement, Gardiner Centre and Genesis. The campus also has private accommodations for graduate students and modern conference facilities and services.

Over the last 95 years, Memorial graduates have had significant impact across all sectors and industries in the province and beyond. From discoveries in renewable and non-renewable resources, to service in the municipal, provincial and federal governments, to leading the way in technology, business, community development, social justice and education, the high calibre of education at Memorial has paved the way for growth and innovation. Five years from now, when we recognize the 100th anniversary of our founding, we will celebrate those past and present who made us what we are today. But at no point will we
forget our origin – a living legacy of those who lost their lives in the First World War and subsequent conflicts. It is a unique origin among universities in North America. At this institution, we carry our responsibility as a living memorial with us every day as we work to make a difference and to make things better for our young people, and all Newfoundlanders and Labradorians.

Present

In many ways, Memorial University is a solution to the challenges faced by the province. Memorial’s high-quality programs attract – and retain – energetic and ambitious people to Newfoundland and Labrador as students and as faculty and staff from around the world as well as across the province. These bright minds are tackling some of the province’s most important challenges and opportunities through groundbreaking research and advanced education, while training for a changing world. This is particularly important in times of unprecedented global change, as the university has a significant role to play in terms of post-pandemic economic recovery. The rich history of mutually beneficial relationships the university has fostered throughout the province ensures that the university is aware of and responsive to the needs of the people of Newfoundland and Labrador. Memorial’s special obligation to the people of the province includes the commitment to being a comprehensive, national-calibre university that supports the advanced education needs and aspirations of the people of Newfoundland and Labrador.

The diverse range of academic and professional programs offered at the university supplies the workforce required in most areas of society, with many of our professional programs placing 100 per cent of their graduates. Responding to demand, the Faculty of Medicine expanded its medical education class from 64 to 80 seats in 2013-14. All academic and professional programs are subject to constant academic and accreditation reviews that ensure continued improvement in the quality of programs and their graduates. For example, the School of Pharmacy
implemented a doctor of pharmacy program in conformity with national accreditation standards. Furthermore, the university has developed programs that meet the unique demands of Newfoundland and Labrador, such as the internationally lauded Ocean and Naval Architectural Engineering Program, an interdisciplinary graduate program in aquaculture, as well as specialties in agriculture and rural medicine.

Due to the success of the Ocean Frontier Institute, faculty at Memorial are developing unique graduate programs with Dalhousie University and the University of Prince Edward Island that will produce graduates who can facilitate growing a marine-based economy, allowing the province to realize the opportunities created by funding for the Ocean Supercluster. The new doctor of psychology program trains clinical psychologists in response to a request from the Department of Health, providing the provincial government with expertise that they found difficult to obtain through recruitment. The School of Music and Faculty of Business Administration developed a novel joint degree that provides musicians with the business skills necessary to build a successful career.

**Future aspirations**

The university is committed to using continuous improvement methodologies to ensure that people, places and processes are aligning in student-centric ways while meeting the needs of Newfoundland and Labrador. As Newfoundlanders and Labradorians look to re-skilling and up-skilling for opportunities post COVID-19, Memorial will play an important role through strengthened continuing education opportunities through the delivery of microcredentials to ensure that sectors of our economy have access to specific, useable skills that address current challenges and emerging opportunities. More broadly speaking, the university has several ambitious and exciting initiatives on the radar: creating a new strategic plan; implementing campus planning processes; preparing for Canada Games 2025; and preparing to mark the institution’s 100th anniversary milestone.
This submission outlines several priority areas moving forward that ensure Memorial remains a leader in research, teaching and learning, and public engagement, and a cornerstone of economic and social development in the province.

Realizing aspirations

This document and the companion PSE resource website respond to the important questions posed by the Terms of Reference for the Public Post-Secondary Education Review committee. Information is provided on how Memorial is currently addressing effectiveness, sustainability, efficiency and accessibility, and where and how more can be done to advance these vital areas. The website provides detailed information and analysis on each of the categories in this submission, and more.

Working collaboratively with provincial government and other key stakeholders, Memorial aspires to maintain the high quality of teaching and learning, research and engagement that the people of the province want, need and deserve.
Governance

In September 1925, Memorial University College opened with five faculty and 55 full-time students. Over the next two decades enrolment would increase and the college would grow to offer two-year preparatory programs for agriculture, medical, dental and engineering studies, in addition to teacher training, chemistry, physics, mathematics, history, English, French, German and the classics.

Memorial University was created through legislation in 1949. Much has changed in the intervening decades, yet the Memorial University Act remains substantively untouched. The Act is fundamentally a product of an earlier time, created before Memorial University evolved into a complex, comprehensive, multi-campus organization operating in a vastly different environment.

Modernized governing legislation, developed collaboratively, will help ensure Memorial can continue to meet the needs of Newfoundlanders and Labradorians. It is essential that legislation addresses universities’ multiple roles in our modern world, reflects best practice in the country and sets forth a governance structure that balances institutional autonomy and public accountability. Specific areas of concern include university mandate and vision, property, finances, labour relations, governance bodies and senior appointments.

This approach is in keeping with Recommendation 1 in the 2017 report Review of Governance Culture and Practices: Memorial University by Harriet Lewis:

The Memorial University Act should not be amended piecemeal if it is to be further amended. Rather, careful thought should be given to its modernization to reflect the maturity and recognized quality of the institution, and to state
more clearly the distribution of governance responsibility and authority between the institution (its autonomy) and the government (accountability). (p. iii)

Recent trends in post-secondary education governance in Canada point to specific changes that may be useful to implement. For instance, a 2004 article in the Canadian Journal of Higher Education noted that, “Memorial is an outlier for being the only university in Canada that does not practice a key component of collegial governance — that is, having faculty representation on the board. According to their statute, anyone who teaches at the university cannot sit on their board.” At the same time, there is a national trend of reducing the number of board positions to increase effectiveness. In May 2017 a Report on Evolution of Governance Practices at McGill University presented data indicating that 10 of the U15 Canadian research universities have 25 or fewer members of the board. The U15 group is an association of 15 Canadian public, research-intensive universities. The University of Saskatchewan, for example, with a student enrolment of 20,000 (comparable to Memorial’s), has only 11 members on its Board of Governors.

The interim report of Memorial’s Board of Regents Sub-Committee on the Post-secondary Education Review, appended to this submission as Appendix A, identifies select key parameters to examine in a modernization of the Act. Such topics include maintaining and enhancing the comprehensive nature of the university, empowering the board to borrow funds and acquire capital assets and giving the board greater flexibility in revenue generation. As it is currently written, the Act significantly restrains Memorial from making important decisions to plan effectively and sustainably for the future. The final list of amendments should be determined through consultation and collaboration among the university, its stakeholders and the government.

2 / www.secretariat.usask.ca/board/#Meetings
Recommendation

Form a collaborative task force to modernize the Memorial University Act.

The governance section of the university’s Post-secondary Education Review resource website explains the bicameral system of governance at Memorial, with details on the distinct authority and responsibilities of each of the two governing bodies, the Senate and the Board of Regents. It also presents information on key guiding documents developed through consultative processes, the multiple layers of internal and external accountability and compliance with legislative and regulatory requirements.

Teaching and Learning

The foundational statement for the vision for teaching and learning at Memorial, as outlined in Teaching and Learning Framework 2023, is as follows:

Memorial University continues its commitment to innovation and excellence in teaching and learning. Memorial connects learners and educators to each other, the community and the world to exchange and create knowledge to advance the greater good of society. Students transform into graduates with superior qualities to contribute knowledge and expertise locally, nationally and internationally.
As a university, Memorial plays a unique role in society by providing students and faculty the freedom to pursue new knowledge. Academic leadership directly translates strategic goals, priorities and the budget into academic and research outcomes and drives many of the outreach activities at Memorial University. Unlike most institutions in Canada, Memorial’s budget model facilitates co-operation, allowing academic units to develop novel interdisciplinary programs, joint degrees and minor degrees that provide unique opportunities, qualifications and benefits to students.

In terms of accessibility, Memorial University has relatively low admission requirements compared to other Canadian universities in conformity with its special obligation to the people of the province. There are a number of smaller universities that have similar or lower entrance requirements, but only the University of Saskatchewan and the University of Manitoba are comparable based on both their research profiles and their admission requirements.

To ensure that Memorial remains student-centred, all academic units have voting student representation on key committees (e.g., faculty council and committees tasked to review and advise on curriculum and programs, waivers, appeals, etc.) and provide additional lines of communication for students to decision-makers. These range from deans meeting with students, either in their classes or through special town halls; regularly scheduled meetings with associate deans responsible for undergraduate programs; and student representation on key decision-making committees within academic units.

Memorial University is a national leader in offering programs that provide relevant experiences to students during their academic programs. These include Memorial’s Undergraduate Career Experience Program, Student Work and Service Program, co-operative education work terms and internship programs that
integrate work experience with the academic program and summer employment opportunities that integrate with federal programs to enhance student learning experiences. Due to its geographical isolation, the university also provides support for students to attend regional student meetings. Science Atlantic conferences allow Memorial students to engage with other students throughout Atlantic Canada, for example. Support is also available through the School of Graduate Studies and the Graduate Students’ Union. Academic units help fund scholarly travel for graduate students, as well.

Memorial provides specialized opportunities and resources for students to ensure a high-calibre learning experience. These range from pan-institutional initiatives such as robust library resources and learning spaces to a diverse array of international and online learning opportunities. Academic units play host to a range of specialized resources for students, too. One example is the Memorial Centre for Entrepreneurship, a joint venture of the faculties of Engineering and Applied Science and Business Administration, which allows students to broaden their career options and establish new companies. Other examples include state-of-the-art learning laboratories in the new Core Science Facility, access to the Core Research Equipment and Instrument Training facilities, which allow students to learn about and use the institution’s most advanced research instrumentation, and the Centre for the Study of Music, Media and Place in the School of Music, among others.

The School of Graduate Studies also provides one of the most comprehensive professional skills development opportunities in Canada. The school offers more than 100 Enhanced Development of the Graduate Experience workshops and programs in diverse skills and competencies in learning and research, management and responsibility, and communication and teamwork. Similar to the Memorial Centre for Entrepreneurship program, graduate students have access to the Entrepreneurial Training Program that guides students in learning the fundamentals of entrepreneurship and starting a business.
Memorial University creates learning opportunities that challenge our students on a global scale. Marine Institute student teams regularly compete internationally in the design, construction and use of remotely operated vehicles. Related to that, the faculties of Engineering and Applied Science and Science received funding for the development of autonomous marine observation systems that will develop new technology to facilitate ocean observation. The Faculty of Business Administration’s celebrated Enactus Memorial team uses the power of entrepreneurial action to transform lives and shape a better, more sustainable world. To date, the teams have won 10 national championships and two world titles. The Faculty of Engineering and Applied Sciences’ Paradigm Hyperloop Team placed second and eighth overall in two international competitions and is ranked the top team in Canada. Beyond international success, a feature that unites all these teams is the diverse representation of students from different parts of the university, including the St. John’s campus, the Marine Institute and Grenfell Campus – teaching our students how to co-operate between institutions and disciplines, compete on a global scale and demonstrate that they have the capacity to be the best in the world.

As Memorial’s student body becomes proportionally more international, and more students move into professional and graduate programs than ever before, the university constantly adapts to meet the student population’s changing needs. It is important to understand that graduate student programming often requires different supports and greater investments than undergraduate studies. For example, research-based graduate programs typically require specialized research equipment, funding for field work and a lower student-professor ratio. The contributions of these graduate students lead to new knowledge creation, innovative activities and the translation of knowledge into products, practices and policies.

In addition to the general broad-based considerations above, there are teaching and learning-related recommendations relating to specific university units that deserve consideration as part of the review. These include the Labrador Institute’s academic growth;
the consolidation of hospital-based nursing schools with the Faculty of Nursing; and finalizing implementation of the Faculty of Engineering and Applied Sciences’ growth plan:

**Recommendations**

- **Continue to support the Labrador Institute’s growth as an academic unit.**

- **Implement the consolidation of hospital-based nursing schools with the Faculty of Nursing to improve nursing student experience and retain faculty, and develop facilities to support program integration.**

- **Finish implementation of the Faculty of Engineering and Applied Sciences’ growth plan to equip the province to compete for projects and support the growth of local industry.**

Visit the teaching and learning page on the university’s Post-secondary Education Review resource website to learn more about the integrated model of Memorial’s student educational experience, administrative changes affecting teaching and learning that have occurred since the last review in 2004 and enrolment numbers by program and by students’ place of origin. Information is also provided on how and where students can learn (various campuses and online), degree pathways and course transfer, academic support tools for students and professional upskilling and reskilling.
Considerable growth in research funding at Memorial over the past 10 years, to a total of approximately $110,000,000 in 2018-19, significantly increased the university’s economic impact on Newfoundland and Labrador. Memorial is internationally recognized for innovative research that is addressing challenges facing our province, country and world, with specializations ranging from rural medicine to marine/ocean engineering. One of the two leading research-intensive universities in Atlantic Canada, Memorial is within the top 20 research universities in Canada, as calculated by Research Infosource. In 2019 Memorial ranked first among Canada’s universities with medical schools when it came to industry research income as a percentage of total research income. According to the prestigious Times Higher Education World University Rankings, Memorial ranks among the top 301-400 global universities in the clinical, pre-clinical and health categories.

In 2016, partnering with Dalhousie University and the University of Prince Edward Island, Memorial received one of the largest Canada First Research Excellence grants in Canada, being awarded $94 million, with an additional $133 million in partner contributions to create the Ocean Frontier Institute. Our success in this competition built upon our topflight expertise in marine research, unique infrastructure and capacity to become a world-leading institution in oceans-related research and technology. It also established the foundation upon which the successful Ocean Supercluster is based.

As a leading multidisciplinary university, Memorial also has a well-earned reputation for innovative research and groundbreaking advancements in areas such as social enterprise and innovative-driven entrepreneurship, Indigenous research and sustainable fisheries.
Memorial is a world leader in genetic techniques that advance research and treatment of disease. That success has also created commercial opportunities. This research is supported by the Atlantic Medical Genetics and Genomics Initiative, a $9.6-million Genome Canada Project and the Translational and Personalized Medicine Initiative, a $50-million project that provides enhanced, personalized patient care through collaborative multidisciplinary research. This latter initiative includes the $30-million Centre for Health Informatics and Analytics, a next-generation health informatics and data analytics hardware and software platform.

Over half of Memorial’s graduate students are enrolled in research-intensive programs. More than 20 per cent are enrolled in doctoral programs at the St. John’s campus and Marine Institute. Grenfell Campus’s first doctoral program was approved by the Senate and the Board of Regents in summer 2020. Doctoral enrolment, specifically, is closely linked to institutional research intensity, and enrolment in PhD programs at Memorial has more than doubled since the 2004 post-secondary education review.

Research at Memorial results in highly qualified graduates, as well as newly created and applied knowledge and creative works. Visit the research page on our Post-secondary Education Review resource website for detailed information and statistics on the above, as well as on knowledge mobilization and commercialization, research partnerships and real-world impacts.
Public Engagement

Public engagement for Memorial means collaborations between members of the university with members of the public, where the collaborations are characterized by mutual respect, mutual contribution and mutual benefit. A defining characteristic of public engagement partnerships is that they support the academic mission of the university, including teaching and learning, research, scholarship and creative activity.

Memorial actively cultivates an environment that celebrates diversity and provides an inclusive workplace, free from racism and discrimination. Last year, Memorial’s president officially signed on to the new federal pilot program, Dimensions, to ensure the university’s research is more inclusive. Launched by the federal government, Dimensions aims to address systemic barriers, particularly those experienced by members of underrepresented or disadvantaged groups, including, but not limited to, women, Indigenous Peoples, persons with disabilities, racialized groups and members of LGBTQ2+ communities. Memorial also recently developed a Canada Research Chairs Program Equity, Diversity and Inclusion (EDI) Action Plan that presents impactful equity, diversity and inclusion objectives, indicators and actions that will enable swift progress towards addressing disadvantages currently experienced by individuals from the four designated groups – women, Indigenous Peoples, persons with disabilities and racialized groups. Memorial also developed a plan for targeted hiring of five Indigenous scholars into tenure track positions. These faculty searches will commence as soon as approval is secured from the provincial Human Rights Commission. The university’s Employment Equity and Diversity Plan recommends the establishment of a senior role with responsibility for EDI; recruitment is ongoing for the inaugural vice-provost of equity, diversity and inclusion. The successful candidate will build strong relationships with senior administrative, academic and student
leaders, as well as with the broader university community. Examples of other units supporting EDI include the School of Graduate Studies, which holds monthly lunch and learn sessions focused on a variety of EDI topics, and the Student Life office, which recently launched a Trans and Gender Diverse Students’ Handbook.

Building upon the work of the Presidential Task Force on Aboriginal Initiatives and the subsequent President’s Advisory Committee on Aboriginal Affairs, Memorial’s framework for Indigenization began with one of the most robust consultations of its kind in Canadian higher education history. In November 2019 Memorial released a summary report on the 26 consultations that took place with members of Indigenous communities across Newfoundland and Labrador from August 2018-August 2019. The report, Summary of Indigenous Community Engagements, is available online. The purpose of the consultations was to gain thoughts and perspectives about past, current and potential engagements between Indigenous communities and Memorial University to guide the development of Memorial’s Indigenization Strategy. In June 2020 the draft Strategic Framework for Indigenization was made available to Indigenous communities as well as the Memorial University community for feedback.

Recommendation

Support Memorial’s efforts to implement an EDI strategy to increase diversity on our campuses and create more inclusive workplaces for faculty, staff and students.

While there is a rich history of engagement between the university and communities in Newfoundland and Labrador and beyond,
there are currently no effective mechanisms in place bridging the full post-secondary system in the province. To meet the evolving post-secondary education needs and expectations of the people of the province and to support the future social, economic and cultural development of Newfoundland and Labrador, collaborative strategic visioning and planning for the public post-secondary education system is essential. By revitalizing the role of the Council on Higher Education, it may be possible to create a forum for the government, the university and the college to advance vital system development work. This work may lead to new opportunities to support provincial needs and growth initiatives, such as exploring the creation of an agriculture program offered jointly by Grenfell Campus of Memorial University and the College of the North Atlantic. Ultimately, the council could achieve significant impact by strengthening existing networks to maximize relationships and integration of organizations throughout the province.

**Recommendation**

**Revitalize the role of the Council on Higher Education.**

For more information on public engagement at Memorial as it relates to the review, please visit the public engagement section of our Post-secondary Education Review resource website.
While the envelope of research funding is growing, the operating budget of the university is struggling to keep pace with organizational requirements. Memorial’s operating grant from the Government of Newfoundland and Labrador has been cut repeatedly since 2012-13. As of 2019-20, Memorial has had to cut $39.5 million from the budget to accommodate funding reductions and cost increases. The university has made every effort to absorb these cuts while maintaining the quality and integrity of programs and responding to the changing needs of students. However, the decline in operating funds, coupled with inflationary, infrastructure and other unavoidable cost increases, is making it extremely difficult for the university to meet its special obligation to provide high quality university education, training and research to the people of the province.

Memorial now struggles to compete for talented faculty, staff and students and to be responsive to emerging trends and opportunities. Faculty salaries at Memorial are now below those of peers at comparable universities in Atlantic Canada, such as Dalhousie University and the University of New Brunswick. Employee positions have been cut throughout every academic unit. For example, the Faculty of Medicine is reducing its faculty complement by 30 per cent and reducing startup support for new faculty. The Faculty of Humanities and Social Sciences cut 28 faculty positions in addition to cuts in its administrative staff. The Faculty of Engineering and Applied Science eliminated 15 faculty and staff positions.

Furthermore, the elimination of the Research Development Corporation of Newfoundland and Labrador’s Ignite Program has meant that provincial government-funded startup support for new faculty was eliminated. This means academic units must
find additional money to recruit new faculty in order to have them establish their research programs at Memorial at the same time that the units are experiencing budget reductions. The result is multi-year delays as academic units work to accumulate the funds necessary to offer a competitive startup package to new faculty. Some units reduced this level of support, meaning their faculty recruitment offers are simply not competitive with those of other Canadian universities. The impact of these cuts is now beginning to appear on the university and province and include increased stress levels as workloads on remaining faculty and staff have increased. This also manifests itself in a loss of faculty in critical areas who moved to other universities. For example, the Department of Computer Science has so far lost four of its 21 faculty to other universities in the last three years. In addition to positions lost from other types of attrition, it means that nearly half of the department has been lost at a time when the province is experiencing labour shortages in its growing technology sector.

Memorial now lacks the resources to pursue emerging societal priorities in a timely way, and the lack of provincial government matching funds to drive innovation and attract funds from federal, private and other sources prevents the university from tapping into major external revenue sources. Further, there is a loss of academic and administrative capacity being experienced due to loss of personnel and funds in budget cuts, leading to a loss of ability to pursue opportunities that arise. This capacity reduction is taking place in an environment that is increasingly more complex and demanding. The extensive funding cuts over the past seven years resulted in a significant loss of social capital that is required to lead much needed change.

At many Canadian universities, tuition fees are a significant source of revenue and increases are implemented on a regular basis. At Memorial, the provincial government has supported a student tuition fee freeze since 1999 by providing in its annual operating grant an amount in lieu of a tuition fee increase by the university. The freeze at Memorial has constrained revenue generation in a serious way, as can be seen in the comparison of tuition fees at Memorial and other Canadian universities:
In 2018 the tuition freeze was maintained for students from Newfoundland and Labrador, while tuition fees for other Canadian students and international students increased. In 2019-20 the province earmarked $4 million for the grant in lieu of tuition. At the same time, the operating grant for Memorial (excluding the Faculty of Medicine which is funded separately) was reduced by $5.6 million ($2.6 million reduction was announced in 2016-17 and $3 million announced in 2017-18). This reduction in the operating grant effectively cancelled out the grant in lieu of a
tuition increase. Since 2013, Memorial has received base budget cuts that exceed the grant in lieu of a tuition increase by $9 million; this does not include a further $8 million that has been set aside to repay the provincial government’s loan to construct the Core Science Facility.

Clearly, a new approach is needed for funding university education. By moving from an almost fully subsidized low-tuition model to an accessibility model of providing financial support and resources to only those who need them, Memorial’s financial foundation will be strengthened in a sustainable way while maintaining access for learners with financial need. Differential tuition fees is one approach used by many institutions in Canada that could be used in Newfoundland and Labrador. Quebec, in particular, maintains very affordable tuition rates for in-province students while subsidizing less of the cost of educating students from other provinces and countries. In a program-based differential mode, tuition could be set to reflect the market demand and the resources required for specific courses and programs. While a traditional undergraduate first-year lecture course may be less expensive to offer, some advanced classes and graduate programs require complex equipment and low professor-to-student ratios. Tuition could be charged according to a cost-recovery model that reflects the expenses incurred by the institution, thereby relieving some of the financial pressure on the provincial government. A progressive tuition model requires a progressive student aid program, designed to allocate supports to those in need and ensure equitable access to post-secondary education.

Some campuses at Memorial are more financially nimble. The Marine Institute, for example, generates a significant portion of its income from non-grant sources (about 50 per cent on average since 2004, which is more in line with other Canadian university funding models). A large contribution to this non-grant revenue comes from industrial training, research and projects.
Recommendation

Revisit the current funding model to explore more sustainable approaches.

Considering sustainability more specifically, Memorial has a clear commitment to acting in a manner that is environmentally, economically and socially sustainable in administration, academic and research programs. The university has promoted sustainability in its operations for many years; however, at this juncture, Memorial is establishing a Sustainability Office and a leadership position to evolve its sustainability initiatives and to build a roadmap for the future. The new Sustainability and Climate Action Office (SCAO) reporting to the vice-president (administration and finance) has a pan-university focus and, in addition to the new leadership position, includes the transfer of the current sustainability co-ordinator position from the Department of Facilities Management. The SCAO will work closely with the broad-based University Sustainability Committee on a strategic planning process for the development of strategies, policy, plans and initiatives to embrace a sustainability culture with themes including leadership and culture, climate action, energy, travel and transportation and waste management. Funding for the office is achieved through targeted savings and energy initiatives.

View the administration and finance page on our Post-secondary Education Review resource website to see more details on the items above, as well as further details pertaining to human and financial resources at the university.
Infrastructure

As Newfoundland and Labrador’s only university, Memorial has many buildings across multiple campuses and locations. Memorial’s facilities consist of more than 100 buildings (or more than 4.1 million square feet of floor space), with more than half of the space being at least 35 years old. The large physical footprint and aging infrastructure result in high costs for maintenance, security, heating, lighting and snow clearing. Some of the older buildings require extensive work to repair and maintain major components, such as roofs, walls, windows, mechanical systems and electrical systems. The facilities condition index (FCI) evaluates the current condition of physical infrastructure. A new building, for example, typically has an FCI of zero per cent. The target at Memorial is 12 per cent, or fair-to-poor condition. Currently, the university’s FCI is 29 per cent. At this level, building components and infrastructure systems will begin to fail, undermining teaching, research and engagement at Memorial, and limiting the institution’s ability to attract highly qualified students and faculty. The present course of sequential redevelopment of old infrastructure is due to lack of resources, lack of university control of infrastructure resource utilization and government infrastructure development and financing approval processes that are not nimble. To date, there has been limited government appetite to take on any level of debt for innovative redevelopment. This review is an opportunity to examine novel approaches to infrastructure renewal.

Memorial maintains a comprehensive preventative maintenance program, but as buildings and systems age, systems reach the end of their functional life and require significant repair or replacement. For example, with regular maintenance, elevators are estimated to last for 20-30 years. In facilities that are more than 35 years old, such as the Arts and Administration building that opened in 1961, the elevators are past their expected useful life and fail regularly. This has significant implications for accessibility and
safety. New construction addresses accessibility issues by meeting or exceeding building codes and considers emerging needs, such as gender-neutral washrooms.

When repair or replacement of building infrastructure items are postponed due to fiscal constraints, it is referred to as deferred maintenance. Ideally, organizations would plan, execute and pay for maintenance as needs arise. Fiscal constraints limit the ability of organizations to conduct such maintenance and, as a result, solutions that might be less costly and time-consuming become more expensive and difficult as time goes on. Deferring maintenance is a common practice at public institutions due to limited fiscal capacity. At Memorial, the accumulated deferred maintenance liability for physical infrastructure is approaching a critical level. Memorial’s buildings require an investment of approximately $500 million to fully address their degradation. A total of $24 million per year is required to maintain facilities at the current 29 per cent FCI status.

A change in the financial model will enable more innovative approaches to university financing for needed infrastructure, including debt financing. In light of continued government funding reductions and significant aging infrastructure issues, Memorial needs flexibility to develop unique solutions to address complex infrastructure needs. For example, the Core Science Facility currently under construction is funded through federal and provincial investments, as well as an internal reallocation of university resources and borrowing.

Further, Memorial’s lack of ownership of some buildings poses challenges, so it is recommended that Marine Institute’s Ridge Road campus and Offshore Safety and Survival Centre facilities be transferred from the provincial Department of Transportation and Works to Memorial University. One strategy to support a move towards innovative infrastructure development would be to create a task force in which Memorial partners with the provincial government and other key stakeholders to find sustainable pathways.
Memorial leaders are committed to finding creative ways to meet the research, teaching and engagement needs of a 21st-century university. Memorial has a **multi-year infrastructure plan** that identifies projects in the planning stage, in early stages, in progress and for future consideration. This is a planning tool that ensures facilities will function to meet the needs of future academic priorities and missions as funds become available.

### Recommendations

- **Explore options for dedicating funds to infrastructure development and mitigating deferred maintenance.**

- **Transfer the Marine Institute’s Ridge Road campus (including the Engineering Technology Centre) and its Offshore Safety and Survival Centre facilities, including operational and deferred maintenance funding, from the provincial Department of Transportation and Works to Memorial University.**

Visit the [infrastructure page](#) on our Post-secondary Education Review resource website to learn more about the university’s built and technological infrastructure, preventative and deferred maintenance, research infrastructure and changes since the 2004 post-secondary education review.
Conclusion

Memorial University is a strong post-secondary education institution that outperforms many similar-sized Canadian universities in research capacity and the quality of graduating students. Memorial faculty and students demonstrate themselves to be competitive at the national and international levels and focused on issues that are relevant to Newfoundland and Labrador and beyond. The university trains the next generation to be well prepared for future challenges, work to enrich culture and diversify the economy by building upon the talent and knowledge of the province’s population. Memorial not only retains local students to stay and help the province grow, but attracts significant numbers of young people from other parts of Canada and from around the world to study and begin their careers here.

Looking forward to the future, Memorial is embarking upon a strategic planning process to engage all members of its community in defining a shared vision for the future. The process is in preliminary stages. The plan, which will cover 2021-26, will guide Memorial into its 100th anniversary.

To explore more detailed information on each of the categories in this report, as well as view other university community submissions to the Public Post-Secondary Education Review committee, please visit Memorial’s PSE resource website.

Memorial University is keen to continue contributing to the successful future of Newfoundland and Labrador and seeks clarity on how the university and the government can work together to effectively plan for this evolving role.
Summary of Recommendations

- Form a collaborative task force to modernize the Memorial University Act.
- Continue to support the Labrador Institute’s development as an academic unit.
- Implement consolidation of hospital-based nursing schools with the Faculty of Nursing to improve nursing student experience, retain faculty and develop facilities to support program integration.
- Finish implementation of the Faculty of Engineering and Applied Science’s growth plan to equip the province to compete for projects and support the growth of local industry.
- Support Memorial’s EDI efforts to increase diversity on our campuses and create more inclusive workplaces for faculty, staff and students.
- Revitalize the role of the Council on Higher Education.
- Revisit the current funding model to explore more sustainable approaches.
- Explore options for dedicating funds to infrastructure development and mitigating deferred maintenance.
- Transfer the Marine Institute’s Ridge Road campus (including the Engineering Technology Centre) and Offshore Safety and Survival Centre facilities, including operational and deferred maintenance funding, from the provincial Department of Transportation and Works to Memorial.
Additional Information Relating to Areas of Focus in the PPSER Terms of Reference

In March 2019 the Government of Newfoundland and Labrador released the finalized terms of reference for the Public Post-secondary Education Review and announced its panel of experts. The terms of reference for the review identified four areas of focus: effectiveness, sustainability, accountability and accessibility. The following relevant Memorial University information is available on the university’s Post-secondary Education Review resource website:

Effectiveness

The Effectiveness section of the Post-secondary Education Review resource website provides detailed information on how Memorial meets the needs of Newfoundland and Labrador:

- Development of a multi-year infrastructure plan.
- Contribution to immigration.
- Implementation of academic program review process.
- Establishment of programs to meet evolving needs, including nine new undergraduate programs and 21 new graduate programs developed since the 2004 review as well as four Labrador-specific programs.
- Institutional involvement in international education (including seven Harlow Campus programs).
- Knowledge creation, transfer and application.
• Technology transfer and application.
• Program flexibility.
• Research and innovation capacity.
• Opportunities for public involvement in research and innovation.
• Research awards and honours.
• Teaching and learning resources, including technology and accessibility supports, faculty/student ratios and average class size, and interdisciplinary programs.
• Success of learners as demonstrated through National Survey of Student Engagement and Canadian Graduate and Professional Student Survey results
• Truth and Reconciliation.
• Professional development through the Gardiner Centre and continuing education programs.
• Experiential and work-integrated learning.

Sustainability

The Sustainability section of the Post-secondary Education Review website provides detailed information on the capacity of the university to be supported and maintained and the sufficiency of funds:

• Revenue generation, including the funding model, budget overview, operating budget review initiatives, sources of funding (including provincial government grant for operations and capital, tuition fees, research funding, and philanthropic support) and operational innovations, including the self-sustaining budget model of Signal Hill Campus, the Honeywell energy performance contract and the voluntary retirement program.
• Public investment to ensure appropriate capacity, including provincial funding trends and information on the economic impact of Memorial.
• Administrative/service/program integration and renewal, ranging from internal to Memorial to national collaborations.
• Knowledge creation, transfer and application.
• Entrepreneurship opportunities through eight centres, programs and initiatives across the institution.

• Community revitalization and diversification through initiatives such as the Signal Hill Campus, *Vital Signs*, the Population Project and Yaffle.

## Accountability

The *Accountability* section of the Post-secondary Education Review resource website provides detailed information on Memorial’s obligation to account for its activities, accept responsibility for them and to disclose the results in a transparent manner:

• Governance models, including the composition and operation of the Board of Regents and Senate.

• Institutional mandates and autonomy through the Memorial University Act, institutional vision, mission and values, institutional planning frameworks, strategic plans and action plans.

• Institutional administration, with information about the organizational structure as well as new and revised policies since the 2004 review.

• Relationship with government through governing legislation, government representatives on Memorial’s governing boards and reports of the auditor general.

• Compliance with relevant legislation, policies and procedures.

• Indicators and reporting requirements.

• Development and performance of internal controls, including internal audit, proactive/protected disclosure and enterprise risk management.
Accessibility

The Accessibility section of the Post-secondary Education Review resource website provides detailed information on how Memorial ensures opportunities for all to achieve greater diversity, increase accessibility and support more inclusiveness:

- Academic preparedness as demonstrated through retention and student success.
- Student career and transitions, including on-campus student employment, co-operative education and other program-based experiential education.
- Supports, services and inclusive education, specifically highlighting those for Indigenous students and students who require learning accommodations.
- Health and wellness supports for students, including the Student Wellness and Counselling Centre.
- Student success through academic and extracurricular supports, academic advising and the Student Success Collaborative initiative.
- Recruitment practices and enrolment statistics for Grenfell Campus, the Marine Institute and St. John’s campus.
- Student financial assistance, including scholarships and awards, student loans and university-subsidized residences.
- Articulation agreements and processes to foster learner mobility.
- Lifelong learning opportunities through the Gardiner Centre, the Genesis Centre, part-time graduate programs and continuing professional education.
- Physical facilities, with information on deferred maintenance, new buildings and facilities, access to facilities by the public and renovations to improve usability.
Appendix A: Board of Regents Interim Report on PSE Review Process
CONFIDENTIAL

ISSUE:

Interim Report of the Ad hoc Sub-Committee of the Executive Committee on the Post-Secondary Education Review

BACKGROUND:

At a meeting held on July 4, 2019, the Board approved the appointment of an ad hoc Sub-Committee on the Post-Secondary Education Review. The mandate of the ad hoc Committee is to:

(a) Oversee the preparation of the official response to the Post-Secondary Education Review from the administration and the Board of Regents of Memorial University.

(b) Recommend this response for approval by the Board of Regents or by the Executive Committee of the Board if a more timely response is required.

(c) Serve as the main liaison with the Panel of Experts on behalf of the Board and the University Administration

The University is currently in the process of developing a resource website to help facilitate sharing of data relevant to this review. A sample of Memorial’s Governance tab for this website is provided in the background documentation for information.

At its first meeting held on November 21, 2019, the ad hoc Committee held a wide-ranging discussion on the areas for review by the Panel of Experts for the post-secondary education system including effectiveness, sustainability, accountability and accessibility of the system. The Committee concentrated its attention in the first instance on the following principles to guide the development of the University’s submission:

• Memorial must remain accessible to students of this province, the rest of Canada as well as international students and must continue to put the needs of students as its highest priority.

• In order to be accessible, Memorial must maintain and enhance its comprehensive nature, its physical plant and its human capital.

• In order to be effective and continue as a top-tier post-secondary education institution in teaching and learning, research, scholarship and public engagement, Memorial’s Act must be opened to reflect best practices at comparable Canadian universities. The following is an illustrative but not an exhaustive list of parameters which should be addressed in this review:

  - Employee representation on the Board
  - Board authority to borrow funds and acquire capital assets
  - Board flexibility in revenue generation
- Board authority to appoint the President

- These changes are designed to reflect best practices at comparable Canadian universities and will enable Memorial to continue to play its role in Newfoundland and Labrador’s public post-secondary education system and continue to contribute to the future of our Province, particularly in the production of talent relevant to the Province, the country and the world.

RECOMMENDATION:

As the first step in the preparation of the official response to the Panel, the ad hoc Committee is preparing to address the need to modernize the Act via a consultative process within parameters such as:

- Reinforce the principle that Memorial must maintain and enhance its comprehensive nature, its physical plant and its human capital.
- Provide for employee representation on the Board
- Empower the Board to borrow funds and acquire capital assets
- Give the Board greater flexibility in revenue generation
- Give the Board authority to appoint the President
- Other parameters to be identified.

Following the Board meeting of December 5, 2019 and Board discussion of these parameters, the ad hoc Committee will engage in a thoughtful process to develop these proposals in more detail as part of its submission to the Panel.

The ad hoc Committee will also prepare further sections of its response to the Panel in a manner consistent with the Panel’s Terms of Reference as outlined here. The response in its entirety will be transmitted for approval to the Board or, if a more timely response is required, to the Executive Committee of the Board.

COMMUNICATIONS CONSIDERATIONS:

The Board Secretary will communicate the Board’s decision to the Chair of the Board of Regents and the President and Vice-Chancellor.

Iris Petten  
Chair, Board of Regents

Gary Kachanoski  
President and Vice-Chancellor

November 26, 2019
Appendix B: Membership of Relevant Memorial Groups

President’s Advisory Committee on the Public Post-secondary Education Review:

Margot Brown / executive director, Office of the President

Victoria Collins / executive director, Marketing & Communications

Paula Dyke / special advisor to the president, strategic projects, Office of the President

Dr. Rob Greenwood / associate vice-president (public engagement and external relations) and director, Harris Centre

Meaghan Whelan / associate director (communications), Marketing & Communications

Sandy Brennan / strategic support to ad hoc committee, Marketing & Communications

Deans Council

Dr. Isabelle Dostaler / dean, Faculty of Business Administration

Dr. Karen Goodnough / dean, Faculty of Education

Dr. Greg Naterer / dean, Faculty of Engineering and Applied Science

Dr. Todd Hennessey / dean, School of Fine Arts
Dr. Aimée Surprenant / dean, School of Graduate Studies and associate vice-president (academic)

Dr. Linda Rohr / dean, School of Human Kinetics and Recreation

Dr. Jennifer Simpson / dean, Faculty of Humanities and Social Sciences

Dr. Margaret Steele / dean, Faculty of Medicine

Dr. Ian Sutherland / dean, School of Music

Dr. Alice Gaudine / dean, Faculty of Nursing

Dr. Shawn Bugden / dean, School of Pharmacy

Dr. Travis Fridgen / acting dean, Faculty of Science

Dr. Michele Piercey-Normore / dean, School of Science and the Environment

Dr. Ken Jacobsen / interim dean, School of Arts and Social Science

Dr. Heather Hair / acting dean, School of Social Work

**Vice-Presidents Council**

Dr. Mark Abrahams / provost and vice-president (academic) pro tempore

Dr. Neil Bose / vice-president (research)

Kent Decker / vice-president (administration and finance)

Dr. Jeff Keshen / vice-president (Grenfell Campus)

Glenn Blackwood / vice-president (Marine Institute)

**Ad Hoc Board of Regents Sub-committee**

Robert Bishop

Doug Letto

Iris Petten / chair, Board of Regents
Appendix C: Marine Institute PPSER Submission
Fisheries and Marine Institute of Memorial University of Newfoundland

SUBMISSION TO

Public Post-Secondary Education Review (PPSER) Committee

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

JUNE 2020
Table of Contents

Introduction .................................................................................................................................................. 2

Section 1: Marine Institute Overview ........................................................................................................... 4

1. Marine Institute .................................................................................................................................... 5
   1.1 Overview ............................................................................................................................................. 5
   1.2 Operations .......................................................................................................................................... 7
      1.2.1 Applied Academics ....................................................................................................................... 7
      1.2.2 Knowledge Generation .............................................................................................................. 10
      1.2.3 Industrial Solutions .................................................................................................................... 12
      1.2.4 Public Engagement ..................................................................................................................... 15
      1.2.5 International .............................................................................................................................. 17
      1.2.6 Finances ..................................................................................................................................... 18

Section 2: Major Marine Institute Achievements Since 2005 ............................................................................ 22

2. Major Marine Institute Achievements Since 2005 ................................................................................. 23
   2.1 Achievements in Teaching and Learning .......................................................................................... 24
   2.2 Achievements in Research ................................................................................................................ 28
   2.3 Achievements in Engagement .......................................................................................................... 28
   2.4 Achievements in Conditions for Success ........................................................................................... 29

Section 3: Marine Institute’s Next Vision .................................................................................................... 31

3. Marine Institute’s Next Vision ................................................................................................................ 32
   3.1 Creating an Enabling Environment ................................................................................................... 35

Section 4: Responses to Questions Posed by the Post-Secondary Review Committee ............................. 40

4. Responses to Questions Posed by the Post-Secondary Review Committee .......................................... 41
   4.1 Effectiveness: Is the public post-secondary system meeting the needs of Newfoundland and Labrador and are there opportunities to do more? .............................................. 41
   4.2 Sustainability: What is reasonable in terms of the size, scope and structure of the public post-secondary education system and its capacity for sustainability? ........................................... 41
   4.3 Accountability: What is the optimal model for the province’s public post-secondary system to deliver high quality education? ................................................................................................... 41
   4.4 Accessibility: How can the province’s public post-secondary education system best ensure opportunities for all to achieve greater diversity, increase accessibility and support more inclusiveness? .............................................................................................................. 44

Appendix A – Marine Institute Schools and Centres .................................................................................. 45

Appendix B – Marine Institute Programs List ............................................................................................. 48
Introduction

This document is the Fisheries and Marine Institute of Memorial University’s submission to the Public Post-Secondary Review Committee for the 2019/20 post-secondary review. The document builds on the Marine Institute’s consultations with the Committee, which occurred on June 27, 2019, August 27-28, 2019, and February 3, 5 and 21, 2020. Public consultations with the Marine Institute community were postponed due to the pandemic. At the time of writing it is not certain when these consultations will take place.

The document is divided into four sections. The first section provides a detailed overview of the Marine Institute and its place in the post-secondary system in Newfoundland and Labrador. The Marine Institute is a unique institution in its structure, composition, and mandate. We have approximately 1,200 students registered in traditional post-secondary education programs, and about 5,000 learners engaged throughout the academic year in industrial response training that enables our ocean economy to thrive. The second section outlines some of the Institute’s significant accomplishments since the last post-secondary review process in 2004. It has been a time of substantial change at the Institute as we worked to implement Vision 2020, the vision and strategic planning process that has guided our development since 2005. The third section includes a detailed overview of the Marine Institute’s Vision 2041, to guide Newfoundland and Labrador to the world through global leadership in applied oceans education and research. We believe that this is a compelling vision, one that will shape our goals, guide our decisions and solidify our reputation for oceans-related excellence. The Institute is committed to attaining this Vision. It will require intense work on our part to achieve, but we are eager to get started. Achieving the Vision will also require an enabling environment in which to nurture the Institute’s development. Key elements of this enabling environment include:

- Being a part of a multi-campus Memorial University that includes increased responsibility in the administration of degrees, and continued responsibility for administrative and research activities.
- Continuance of the Marine Institute’s marine/oceans mandate in programming, applied research and technology transfer in Newfoundland and Labrador.
- Appoint the Chair of the Marine Institute’s Industry Advisory Committee as a member of the Board of Regents.
- Transfer of the Ridge Road campus (including the Engineering Technology Centre) and OSSC facilities to the Marine Institute, including operational funding and deferred maintenance.
- Establishment of a multi-year technological and capital infrastructure development fund for the Marine Institute that will support our own efforts in this area. The fund would be used to purchase/build new infrastructure, technology and equipment and leverage funding from other programs and industry.
- Maintain a Marine Institute funding envelope within the annual grant to Memorial University.

The final section addresses the questions posed by the Public Post-Secondary Review Committee. This section covers a number of issues related to the post-secondary education system in Newfoundland and
Labrador. This submission attempts to provide the Committee with ideas and insights related to the issues being examined by the Public Post-Secondary Review Committee.
Section 1: Marine Institute Overview
1. Marine Institute

1.1 Overview

The story of the Fisheries and Marine Institute of Memorial University (Marine Institute/the Institute) is one of remarkable success and adaptability. The Institute was founded as the College of Fisheries, Navigation, Marine Engineering and Electronics in 1964 in the recently vacated campus of Memorial University on Parade Street. The College opened with 164 students registered in vocational courses and four diplomas of technology. In 1985, the College of Fisheries was relocated to the Ridge Road campus, where it remains today, and was renamed the Newfoundland and Labrador Institute of Fisheries and Marine Technology (commonly referred to as the Marine Institute). In 1992, a reorganization of the province’s post-secondary education system resulted in the Marine Institute becoming affiliated with Memorial University.

Today, the Marine Institute is the most comprehensive institution of its kind in the world, with highly qualified personnel and unique facilities, such as a full-mission ship’s bridge simulator and the world’s largest flume tank. The Institute offers educational opportunities that include graduate and undergraduate degrees, diplomas, certificates and industry responsive training for the ocean sector. The Marine Institute is governed by Memorial University’s Board of Regents, but also has an Industry Advisory Committee made up of representatives from the various ocean industries that the Institute serves. This committee advises the Institute on our education and training programs, and the direction of our research and development enterprise. In 2019, the Marine Institute had an operating budget of approximately $55 million (since 2004, an average of half this amount has been generated through industry partnerships and collaboration), and approximately 377 employees, including 205 faculty members. The Institute’s main campus is located on Ridge Road in St. John’s, Newfoundland and Labrador. Satellite campuses and facilities include the Mt. Scio Bioprocessing Facility in St. John’s, the Offshore Safety and Survival Centre in Foxtrap, the Holyrood Marine Base, the Regional Fisheries and Marine Centre in Lewisporte, and the Safety and Emergency Response Training Centre in Stephenville.

The Marine Institute’s mission is to foster economic development in strategic sectors of the Newfoundland and Labrador economy, particularly the fisheries and offshore, and to enable Newfoundlanders and Labradorians to participate in the marine industry nationally and internationally. In early 2020, following a lengthy and inclusive consultation process, the Marine Institute launched our vision and strategic plan ‘To the World in 2041’. The vision for the future of the Marine Institute is simple: to guide Newfoundland and Labrador to the world through global leadership in applied oceans education and research. Together, the Institute’s mission and vision provide for the development of the Institute as an industrially relevant institution, which is accomplished through our wide range of education and training offerings, as well as participation in research and development, technology transfer, and public policy advocacy initiatives. These activities, which are delivered through three specially focused schools (School of Fisheries, School of Maritime Studies, School of Ocean Technology) and a number of research and development centres, allow the Marine Institute to provide a singular contribution to the economic development to the local Atlantic Canadian region, as well as the national and international communities.
Marine Institute Structure

The Marine Institute has three academic units – the School of Fisheries, the School of Maritime Studies, and the School of Ocean Technology. The Institute’s educational efforts are supported by Academic and Student Affairs, Administration and Finance, and Research and Strategic Partnerships. The Institute is also home to the Canadian Centre for Fisheries Innovation, a separately incorporated entity that provides the tools of scientific research and technology to the fishing industry, and One Ocean, a liaison organization for the fishing and offshore oil and gas sectors.
Each of the schools is also home to a number of specialized research centres, as illustrated in the diagram below. More information on the Marine Institute’s Schools and Centres can be found in Appendix A.

1.2 Operations
1.2.1 Applied Academics

Programs

The Marine Institute has a unique educational landscape, educating students in traditional post-secondary education programs, as well as industrial response training that enables our ocean economy to thrive. It includes a mix of programming ranging from industry-focused short-courses, to certifications and diplomas of technology, bachelor’s degrees, advanced diplomas, post-graduate certificates, master's degrees and PhDs, all focused on the oceans sectors. Our programs provide graduates with credentials that are recognized around the world. The Marine Institute is the largest of its kind in Canada, and a number of our programs, including diploma programs in ocean mapping, underwater vehicles, and remotely operated vehicles, and upcoming graduate programs in applied oceans technology (ocean mapping) are unique to the Marine Institute and are not offered at any other post-secondary institutions in the country.

The Institute’s programs have a significant applied component; diploma and certificate programs include technical sessions and most programs incorporate an experiential learning component (work term). The technical session and experiential learning components of the programs are an essential component of student experiences at the Institute, and of their academic and career success.

The Marine Institute is committed to ensuring that our programs are accessible to students of all stages of life and backgrounds, and to those that are geographically distant from our facilities. In addition to
the programs taught at our facilities, many of our programs, including some bachelor’s and master’s programs, and short-courses, are available around the world through online learning. Our Community-Based Education Delivery unit works to facilitate and deliver training courses and programs in communities throughout Newfoundland and Labrador, Nunavut and other areas of the North.

A full list of our programs is available in Appendix B.

Students and Alumni
The success of our students (1,225 enrolled in Fall 2019) and alumni (an estimated 15,500 strong as of 2019) is the best indicator of the quality and relevance of our education and training programs. We are very proud of all our students and alumni, some of whom are highlighted below:

Michaela Barnes
Engaging females in non-traditional careers is a common theme of the Marine Institute’s recruitment initiatives, which have worked to involve prospective students in engagement activities relevant to Marine Institute programs and careers. One initiative, highlighted later in this document, that has had a powerful impact is the MATE Remotely Operated Vehicle (ROV) competition. Over the last decade, the competition has engaged thousands of junior high and senior high students involved in building and testing ROVs, and has encouraged participants to think differently about science and technology.

There is no better example of the success of that initiative than Michaela Barnes. Originally from Clarenville, NL, Michaela participated in the MATE competition throughout her junior and senior high school years. Through her involvement in MATE she became interested in subsea exploration and upon high school graduation enrolled in the Institute’s Ocean Mapping program. During her time at the Institute, Michaela was a significant contributor to the campus community, through her involvement in student government, school activities, and promotion of campus wellness, as well as in her role as the CEO of the Eastern Edge Robotics team.

Throughout her program, Michaela maximized opportunities to broaden her skills and technical expertise. On one of her work terms, she spent nearly two months at sea on two separate vessels conducting both research and exploration. The first was the RV Kilo Moana, where she was a Multibeam Watchstander on a joint research cruise between the US National Oceanic and Atmospheric Administration (NOAA) and the University of New Hampshire. After 34 days at sea on this ship, she joined the EV Nautilus, where she was a Seafloor Mapping Intern for Ocean Exploration Trust. During this work term, she crossed the Pacific twice; from Hawaii to Alaska, then from British Columbia back to
Hawaii. She explored the Mendocino Ridge, the Moonless Seamounts, and mapped lava flows from the newly erupting Kilauea Volcano. She was able to apply the theoretical and practical knowledge she gained in her program to real-world applications.

During her program, Michaela was a multiple scholarship and leadership award winner. She was Memorial University’s first female recipient of the Self-Directed Learning Award for her efforts in mapping NL’s deepest lake and was also the 2019 student speaker at graduation. Michaela was employed in her field before her graduation day, and is currently working locally, nationally, and internationally in the ocean mapping field.

Maggie Folkins
At the Marine Institute, Maggie Folkins has found a seamless balance in her academic program, research and training.

When Maggie was completing an undergraduate project in sustainable fishing gear as a part of her Biology degree at the University of New Brunswick, she never thought it would lead her to the Marine Institute and completing a Master’s Degree in Fisheries Science and Technology, and then laddering that work into a PhD.

Working at the Centre for Sustainable Aquatic Resources (CSAR) in the School of Fisheries has proved invaluable for Maggie. Her Master’s work investigated the use of underwater cameras to assess the effectiveness of experimental potting gear for Greenland halibut. Maggie’s individualized doctoral program focuses on resource assessments of multiple inshore species in the Canadian Arctic and makes use of her developing expertise with underwater cameras.

Maggie credits her success to the Institute’s strong community and industry connections. As a part of her Master’s research, Maggie was able to embrace research in Iqaluit, Nunavut and make connections with the community. These rich and beneficial connections were facilitated through the stewardship of many years of community-based work of her supervisor and colleagues in CSAR. Her work with CSAR in the North also fostered her thinking regarding the linkages of research to practical industry application for the benefit of northern communities.

Maggie is working to complete her PhD and is looking forward to embracing opportunities in the north as she addresses her research objectives.
The alumni of the Marine Institute offer wonderful examples of carrying on family traditions in the marine industry. One such alumni is Darnell Normore.

Growing up in L’Anse au Loup, Labrador, Darnell Normore’s father was (and still is) a Captain with Algoma Central Corporation. Algoma is one of the largest companies on Canada’s Great Lakes. Darnell always took an interest in the different places his father would travel for his job and followed along on a nautical chart of the Great Lakes that he had on his bedroom wall. He thought it seemed like an interesting career so when it came time to attend post-secondary, Darnell applied to the Marine Institute to study Nautical Science, with the intent of ultimately working on the Great Lakes like his dad.

Upon successfully completing all the requirements of his four-year program, including 360 sea days, Darnell graduated from MI with the Diploma of Technology in Nautical Science in 2012. With a lot of hard work, he moved up in the ranks very quickly at Algoma. He began sailing as Chief Mate in 2015, completed his Master Mariner certificate in 2017, and at the end of 2019 was fully promoted to Captain of his own vessel, an impressive accomplishment just seven years after his graduation.

Darnell credits his education, training, career support, as well as the very strong culture for promotion of officers at Algoma for his success. The mentorship of other Captains also strongly contributed, constantly pushing him to be better, and take on more responsibility. They would often give him command of the vessel in confined waters and were always available to answer questions about the trade if he was unsure of anything.

Darnell always enjoyed the ship handling aspect of the job the most. Now that he is a Captain, that is what he gets to do the most. He has been known to say that there is nothing better than ship handling in the rivers or the Canal on a nice day.

1.2.2 Knowledge Generation
The Institute has been active in research and development, particularly applied research, since its inception in 1964. Most of this activity takes place in our specialized research centres. In the past 15 years, we’ve continued to develop our already robust knowledge generation (research and development) capabilities through the addition of research-based graduate programs, new applied research centres and infrastructure, and a cadre of research scientists and research chairs. Some examples of recent projects include:
Coastal Restoration Project
In 2017, the Government of Canada announced that the Marine Institute would lead a $4.7 million investment over five years for a project to help restore the ecosystem in Placentia Bay, Newfoundland and Labrador as part of its Coastal Restoration Fund. This project is enhancing the Placentia Bay ecosystem, benefitting fish and shellfish resources in coastal waters through the restoration of eelgrass beds, and enhancing habitat through the deployment of artificial reefs. It is also attempting to restore migratory corridors for Atlantic salmon and increase ecosystem productivity for species at risk such as blue whales and leatherback turtles.

Ocean Choice International Research Chair in Stock Assessment and Sustainable Harvest Advice for Northwest Atlantic Fisheries
In 2017, the Institute’s Dr. Noel Cadigan was appointed as the Ocean Choice International Research Chair in Stock Assessment and Sustainable Harvest Advice for Northwest Atlantic Fisheries. The goal of the Chair is to further the state-of-the-art and current practice in fish stock assessment and focus on sustainability objectives and requirements for Northwest Atlantic Fisheries, specifically those on the Grand Banks, including but not limited to American Plaice, Yellowtail flounder, Greenland Halibut and redfish. As Research Chair, Dr. Cadigan is training master’s and doctoral students, expanding the province’s capacity and expertise to conduct and analyze assessment data and provide advice on stock sustainability. The Chair also helps address a critical shortage of skilled fishery stock assessment scientists in Canada and internationally. This position is funded through a $2.5 million investment from industry, government, academia, donors and the Marine Institute.

Unique research and training opportunities in the Canadian Arctic
Marine Institute students and scientists are accessing new research opportunities in the Canadian Arctic in collaboration with Nunavut and national and international partners. From 2014-2016, the Centre for Fisheries Ecosystems Research (CFER) teamed with the Arctic Fishery Alliance to design and undertake exploratory fisheries surveys aboard an industry vessel in increasingly ice-free Nunavut waters. The graduate-student-led team provided new information on the distribution and abundance of marine life in the eastern Canadian Arctic and the first local estimates of Greenland shark populations. These collaborations have since broadened to include multi-year exploratory surveys with the Nunavut Fisheries Association (2018-) and invitations to provide input to eco-certification evaluations involving Nunavut Fisheries.

The Marine Institute’s relationship with Tactical Marine Solutions, Ltd. led to an opportunity for in-kind training berths aboard the RRS Ernest Shackleton for Marine Institute bridge watch cadets and CFER student and scientist research teams when the vessel escorted the cruise ship Crystal Serenity through Canada’s Northwest Passage in 2016 and 2017. The students and researchers collected more than 3,000 nautical miles of continuous plankton, microplastics, and oceanographic data through Canada’s northern waters. These multi-national collaborations facilitated proof-of-concept demonstrations of emerging Arctic methodologies and further training opportunities currently supported by ongoing ArcticNet projects, let by CFER scientists.
Satellite Tag Analyses Inform Management of One of Canada’s Most Valuable Fisheries

Since 2013, CFER scientists and students have been leading the deployment, recovery, and analysis of pop-off satellite archival tags (PSAT) to reveal unseen movements and migrations of Atlantic halibut in the Gulf of St. Lawrence. The tags record light, temperature and depth information spanning a year, they are programmed to pop-off and float to the surface and transmit data through satellite networks. This work has been completed entirely aboard industry vessels, with more than 20 longline vessels used as sampling and recovery platforms in collaboration with fish harvesters across more than a dozen communities on Newfoundland’s west coast. This program’s support from industry (initially the Fish, Food, and Allied Workers Union) has since expanded to five additional fishery groups spanning five provinces. Results from this work have revealed the unknown timing and locations of halibut spawning—key parameters of use within the Fisheries and Oceans Canada’s stock assessment processes. This model for academic-industry collaboration has grown from initial provincial government support, to currently supporting 10 students across three universities with funding from the NSERC Strategic Grants for Partnerships program (2017-2020).

Canada Research Chair in Ocean Mapping

In 2018, Dr. Katleen Robert was named Canada Research Chair in Ocean Mapping, the Marine Institute’s first Canada Research Chair position. Dr. Robert’s research focuses on the areas of environment, energy and natural resources, fisheries and aquaculture and the arctic and northern regions. Her research aims include:

- Optimizing mapping approaches for robust monitoring of both economically- and ecologically-valuable habitats.
- Mapping the marine environment in 3D to integrate the surface, water column, and seabed.
- Developing value-added data products as cost-saving tools to target areas of interest, minimize environmental impacts, and quantitatively monitor change.

1.2.3 Industrial Solutions

The Institute’s relationship with our industry partners is one of our defining characteristics; it is through the provision of these industrial solutions that the Institute distinguishes itself as a critical economic asset in the province.

A report published in 2017 by Drs. Peter Warrian and David Wolfe of the Innovation Policy Lab of the University of Toronto¹ found that the Marine Institute is “a significant player and major contributor to the innovation eco-system of Newfoundland and Labrador” (p. 3). By rating the Institute’s program areas and expertise using NASA’s Technology Readiness Levels scale, the report found that our activities were largely in the range of 4 to 6 (and back again, repeating these activities with industry partners) and highlighted how the Marine Institute represents a working example of an effective innovation intermediary. In this role, the Marine Institute fosters public-private collaborations, bridging the gap to support the successful transition from research to technology commercialization. The Marine Institute

¹ Warrian, P. and Wolfe, D. (2017 September) Research and Technology Transfer at the Marine Institute, Memorial University of Newfoundland. https://www.mun.ca/harriscentre/media/Final_MI_Case_Study_Sept_18,_2017.pdf
has an interactive relationship with local industry, not merely projects with beginnings, middles and ends. Some examples of the Marine Institute’s work in industrial solutions are highlighted below:

**Dynamic Positioning in Ice Project**
The Centre for Marine Simulation recently concluded a five-year, ACOA-AIF research project to improve the safety and efficiency of oil and gas operations in ice environments by improving dynamic positioning (DP) system technologies for operations in ice. This research was conducted in collaboration with Kongsberg Maritime and the National Research Council (NRC) of Canada's Ocean, Coastal and River Engineering facility, and was funded through the Atlantic Canada Opportunities Agency, Petroleum Research Newfoundland and Labrador (PRNL), the former Research and Development Corporation (RDC), NRC, the Marine Institute and Kongsberg.

**Tow Out Simulation Projects**
The Centre for Marine Simulation (CMS) has been involved in simulating every gravity-based tow out that has taken place in the Grand Banks - Hibernia, Hebron, and the soon to be West White Rose’s Concrete Gravity Base (CGS). In these simulation studies, CMS and the client work together to assess a variety of risk variables, including weather, operational speed, tow support, and communication.

**Port Development and Vessel Simulation Projects**
CMS has worked on national and international port development projects, assisting port operators and developers in appropriate port layouts for optimal traffic efficiency and operational safety. This includes the Canada LNG terminal in Kitimat BC, the Baffinland terminal in Milne Inlet, Nunavut, the Yamal LNG facility in Yamal Peninsula, Russia, and the PDVSA terminal in Venezuela. CMS has competed globally for these simulation studies and continues to successfully bid on projects ongoing around the world.

CMS also assists clients with the assessment of vessel suitability for specific operations. Simulations involve building numerical models of vessels that are validated against actual vessel data; area databases often accompany these builds to ensure the vessel is performing optimally in the area of operation. Scenarios are simulated that look at vessel performance in assisting vessel docking and undocking, or whether the vessel power configurations meet the demand of the operation. The success of all these projects has brought in new clients and has fueled repeat business, enhancing CMS as a leader in simulation and modelling.

**SmartAtlantic**
The SmartAtlantic ocean observation system is an initiative of the Centre for Applied Ocean Technology (CTec). SmartAtlantic, initially SmartBay, has been operational since 2006, making it one of the longest operating ocean observation systems in Canada. From a geographic perspective, it is also one of the largest ocean observation systems in the nation.

Since its inception, the project has evolved significantly from both an application and technology perspective to the extent that today it is solidified as a valuable service provider in support of safe and efficient Atlantic maritime operations. Buoy locations, near-real time data feeds, custom forecasts, and
a host of static information layers are readily accessible via the SmartAtlantic web portal (www.SmartAtlantic.ca). Originally limited to the busy shipping zone of Placentia Bay, NL, SmartAtlantic today supports six permanent buoys around the island of Newfoundland as well as buoys off Halifax, Nova Scotia and Saint John, New Brunswick through partnering agreements with the associated port authorities and the Atlantic Pilotage Authority.

Ocean Networks Canada (ONC) – School of Ocean Technology (SOT) Collaboration
ONC is a not-for-profit society owned by the University of Victoria, responsible for operating the world-leading NEPTUNE and VENUS cabled ocean observatories, as well as other ocean observing assets across the country for the advancement of science and the benefit of Canada. ONC’s network of observatories collects data on physical, chemical, biological, and geological aspects of the ocean over long time periods, supporting research on complex Earth processes. The Centre for Applied Ocean Technology (CTec) is partnering with ONC to design and install a sub-sea fibre-optic cabled observatory in Holyrood, Newfoundland and Labrador. The installation will terminate at the Holyrood Marine Base with an observation node located approximately 4.5 kilometers offshore in 85 metres water depth. The observatory will provide the Institute with unprecedented ability to develop, test and demonstrate next-generation ocean instrumentation, including autonomous technology, as well as the ability to monitor real-time oceanographic conditions and marine mammal activity. The Institute and ONC have committed to making the data freely available to the global ocean observation community, as well as the general public at large.

Exxon Mobil – Wood Group Met/Ocean Monitoring and Fog Forecasting
The ability to accurately predict meteorological and oceanographic conditions on the Grand Banks, particularly the ability to accurately predict fog formation and intensity, has a significant impact on offshore oil operations from a cost, logistical and safety perspective. CTec has partnered with the Wood Group to undertake multi-year monitoring and fog prediction research program explicitly focused on enhancing helicopter scheduling and routing on behalf of Exxon Mobil. CTec’s role involves customization of a 3-metre oceanographic buoy for multi-season deployment on the Grand Banks. Buoy enhancements included the development of an open-source computer/data processing and logging computer, visibility sensor integration and power enhancement through enlargement battery payload and design, and integration of a vertical axis wind generator. Data from the buoy is transmitted in real-time direct to the Hibernia oil platform via radio for operational decision making and simultaneously to on-shore via satellite for integration into weather and fog prediction models being developed by the Wood meteorological team.

Development of an Efficient and Sustainable Yellowtail Capture Fishery
The objective of this NSERC-funded project was to strategically improve key operational aspects within the harvesting, processing and knowledge management operations of Canada’s yellowtail flounder fishery to make it more economical and sustainable. Dr. Paul Winger, at the Centre for Sustainable Aquatic Resources (CSAR), led a diverse team of researchers, including three M.Sc. graduate students, in partnership with Ocean Choice International L.P. (OCI). The research addressed challenges in harvesting technology, handling and holding practices onboard vessels, and knowledge management.
Reducing Seabed Impacts of Bottom Trawls
This seven-year ACOA-AIF project (2010-17) led by CSAR developed innovative fishing systems capable of catching commercial quantities of shellfish, but with reduced seabed impact compared to traditional bottom trawl systems. The research team developed several low-impact, seabed friendly trawling systems. More than 20 technical variants were conceived and evaluated during the project. These can be categorized as: 1) aligned footgears, 2) wheeled footgears, 3) drop-chain footgears, and 4) kite technology for spreading trawls. These concepts were numerically modelled using desktop computers, physically modeled using working engineering models in a flume tank, and field-tested using full-scale prototypes aboard commercial fishing vessels.

1.2.4 Public Engagement
Memorial University defines public engagement as “Collaborations between people and groups within Memorial and people and groups external to the University – i.e., the "public" – that further Memorial’s mission. Drawing on the knowledge and resources brought by all involved, public engagement involves mutual respect, mutual contributions and mutual benefits for all participants.” As Canada’s foremost fisheries and marine institute and the leading and most comprehensive marine institute in North America, the Marine Institute has a special responsibility to strengthen its education, research and industrial linkages locally, nationally and internationally, and develop the next generation of leaders for the oceans economy. Public engagement has been critical to the Marine Institute’s mission since the beginning, and we actively promote public engagement and community outreach initiatives in all aspects of our operations, particularly those aimed at youth. Some examples of our public engagement activities include:

Marine Advanced Technology Education (MATE) Remotely Operated Vehicle (ROV) NL Regional RANGER and SCOUT competitions
Over the last 14 years, the Institute has hosted the Newfoundland and Labrador regional MATE ROV competition. The competition is aimed at teams from junior high and high school, and enables students design, build and operate ROVs aimed at performing specific tasks and missions. With between 300 and 400 students from across the province competing each year. The top two high school teams go on to represent the province at the international competition. In addition to being fun and educational, these competitions connect students and educators with employers and working professionals from many marine industries, highlighting marine-related career opportunities, and promoting the development of technical, problem solving, critical thinking, and teamwork skills.

Youth and the Oceans Events
The Institute’s Youth and the Oceans events foster the energy and enthusiasm of youth. These events reach approximately 655 high school students across Atlantic Canada. The Youth and the Oceans events have been developed to represent the Newfoundland and Labrador Department of Education High School curriculum to ensure suitability, while representing all three academic schools of the Marine

---

2 https://www.mun.ca/publicengagement/memorial/what.php
Institute. Youth and the Oceans includes the following events: Be the Next Wave Conference Series, Elementary School Visits to Marine Institute, Jumpin’ Jellyfish, Professional Engineers and Geoscientists Newfoundland & Labrador (PEGNL) Ocean Technology Workshop, Regional Science Fair, Techsploration, and the Petroleum Industry Human Resources Committee (PIHRC) Oil and Gas Career Day.

Nautical Skills Competition (NSC), in collaboration with the Master Mariners of Canada (MMC) NL Division
The Nautical Skills Competition is a series of challenging exercises designed to test knowledge and ability in maritime skills in a fun and competitive environment. Founded by the MMC- NL Division in collaboration with the Institute, the NSC is designed for nautical science cadets at the post-secondary level, and aims to promote the maritime sector, encourage team building and professionalism, and foster a culture of safety. Each year, ten high school students who have been provisionally accepted into the Institute’s nautical science program are invited to attend to participate with our current cadets. The NSC has been a great way for our new students to interact with future classmates and the Company of Master Mariners and learn more about the maritime sector.

Model Boat Race
The Institute’s Annual Model Boat Race competition seeks to challenge high school students to apply the basic principles of physics and mathematics to the design and operation of marine vehicles. The competition engages about 90 high school students from around the province each year and strengthens the concepts of innovation and collaborative problem-solving. Students are also exposed to the many opportunities in Newfoundland and Labrador in the field of marine design, and the event helps them recognize the potential for a promising career.

Educational, Research, and Industrial Engagement
In fulfilling our mission and strategic plans, the Marine Institute has forged long-lasting and mutually beneficial collaborations with industry associations, academics, regulators, professional organizations, policymakers and the scientific community. These engagements are local, national and international in scope and across a broad spectrum of the oceans sector from fisheries and aquaculture, marine transportation to ocean technology.

Examples of our collaborations include being a founding member of NOIA and Oceans Advance, participating in and leading the International Association of Maritime Universities (IAMU), consultation with Indigenous and Northern communities and a consortium member of the European Union’s Horizon 2020 PrimeFish project. These are but a few of the dozens of public organizations and groups in which the Institute actively participates. Fostering these relationships happens at every level of our organization, and has enhanced our capability for more significant knowledge generation and dissemination and demonstrated our ability to innovate.

Our engagement has shaped our reputation as an accessible and valued partner in the sharing of our knowledge, scholarship, research and industrial expertise. In turn, our Institute is provided with an enhanced perspective and understanding of current and emerging trends and issues, which are in turn reflected in our teaching and learning and research frameworks for the benefit of the MI community.
1.2.5 International
The Marine Institute is one of the most internationally active post-secondary institutions in Canada, particularly in the areas of project and consultancy work. The Institute engages in development projects, contract training, and consultancies throughout the world - over 250 projects in 50 countries in the last 30 years through MI International, as well as other projects and initiatives that coordinated in our schools and centres. The Institute has partnership agreements, memoranda of understanding and articulation agreements with post-secondary institutions and other collaborators from all over the world. Over 180 Marine Institute and Memorial University personnel have participated in overseas projects (5-10% of our employees each year). Some examples of international project work include:

**Skills to Access the Green Economy SAGE-03 Grenada and SAGE-01 Belize (2020-2024)**
The SAGE program aims to increase the capacity of training institutions in the Caribbean to deliver gender-sensitive skills training programs that meet economic and environmental needs in the region. The Institute as project lead has partnered with Nova Scotia Community College to work with T. A. Marryshow Community College (TAMCC) in Grenada to develop programming and short courses related to the Blue Economy. These include coastal resource management, enhancing the capacity of TAMCC to provide education and training to support the country’s green and blue economies. The Institute has partnered with Vancouver Island University (lead) and Parkland College to implement a project in Belize to support capacity development of the University of Belize and ITVET institutions to develop programming in agro-forestry and fisheries. The SAGE program is funded by Global Affairs Canada (GAC) through Colleges and Institutes Canada (CICan).

**Caribbean Education for Employment (C-EFE) Program (2012-2016)**
The C-EFE program had a broad goal to build a competitive, productive and gender-equitable workforce in the Caribbean Community (CARICOM) region. The program was intended to strengthen regional coordination of quality assurance for demand-driven, gender and environmentally sensitive technical and vocational education and training and workforce certification systems. In addition, it was designed to increase employment (including self-employment) of female and male technical and vocational education and training graduates and certified workers. We partnered on projects in: Suriname (lead), Food Processing; Guyana (partner), Extractive Industries and Automotive; Jamaica (partner), Logistics; and Antigua (partner), Aircraft Maintenance. The C-EFE program was funded by GAC through CICan.

**International Youth Internship Program (IYIP- 2017-2021)**
The International Youth Internship Program (IYIP) is funded through GAC and implemented by the Institute (we are the only executing agency in Atlantic Canada). The Institute has been managing an IYIP Program through funding from GAC for 23 years. The program offers Canadian youth the opportunity to gain professional experience abroad, and provide them with the tools and skills needed to kick-off meaningful careers related to Blue Economy, environmental sustainability, adaptation to climate change, education, and/or international development. Through this four-year, $2 million dollar project, 100 interns will participate in six-month work placements (internships) to our partner institutions in Belize, Tanzania, Vietnam, Cambodia, and the Philippines. While overseas, interns work on issues related
to gender equality, climate change, natural resource management, and environmental sustainability in marine-related fields. Prior to the overseas placements, interns take part in a comprehensive pre-departure training program in St. John’s. Interns are paired with technical mentors from the Institute and Memorial’s vast network of leading professionals, in order to have some technical and career-related support while overseas. Upon their return to Canada, interns participate in re-integration sessions at the Institute in St. John’s, which include career development planning and networking opportunities.

**INVEST Co-op Indonesia**
The INVEST Co-op Indonesia Project is a part of a five-year (2015-2020), four-country program: Increasing Wealth and Food Security through the Integrated Cooperative Business Model (INVEST Co-op). The project aims to strengthen the position of small-scale aquaculture producers of seaweed, milkfish, and shrimp in four regencies of South Sulawesi by: 1) Working directly with Women and Men Small Aquaculture Producers (WMSAP) to improve the quality and quantity of climate and disaster-resilient production, and access to financial services and markets through co-operatives; 2) Enabling co-operatives to be sustainable, profitable and run gender-equitable businesses by strengthening their capacity and institutional capability to serve their members better; and, 3) Working with governments, private companies, business associations, and other stakeholders to strengthen networks and create a conducive environment for co-operatives to provide better livelihood to farmers. The project is being implemented by the Co-operative Development Foundation of Canada in partnership with the Institute, Koperasi Serikat Pekerja Merdeka Indonesia (KOSPERMINDO) and Induk Koperasi Kredit (INKOPDIT)-CUCO Indonesia.

**Africa Education for Employment (C-EFE) Program (2010-2020)**
CICan, through funding from GAC, has implemented a number of Education for Employment programs in Africa. In partnership with a number of Canadian partners, the Institute has implemented seven projects and one consultancy through CICan’s African initiatives, including projects/consultancies in Tanzania (5), Kenya (1), and Mozambique (2). Program objectives included the development of the institutional capacity of African partners to better provide learners with the knowledge, skills and competencies they require to enter the workforce, to address and complement Tanzanian efforts to improve the quality of Technical and Vocational Education and Training (TVET), coordinate existing skills training to maximize resource investment, strengthen linkages between employers and training programs, and to establish new TVET programming in response to labour market intelligence. Sector-specific areas of engagement included aquaculture, fisheries post-harvest processing, agro-mechanization, leadership, and eco-tourism.

### 1.2.6 Finances
The Marine Institute’s financial picture has seen some significant changes since 2004/05. Figure 1 below outlines the Marine Institute sources of income during the period:
The Marine Institute’s income increased from approximately $28 million in 2004/05 to approximately $55.4 million in 2018/19. One major source of income is our grant from the Provincial Government, which increased from approximately $10.8 million in 2004/05 to $30.9 million in 2018/19 (note that $4.4 million was a change in accounting methodology allocating fringe benefits from Memorial’s central budget to the Marine Institute’s budget in 2011/12 and not a grant increase of this amount). A summary of some of the significant increases to the Marine Institute’s Provincial Government grant and the allocated purpose are highlighted below:

- $400,000 to support operations and positions at the SERT Centre in Stephenville (2007/08)
- $1.75 million to support the creation of the School of Ocean Technology (positions and operating funds) (2007/08 and 2009/10)
- $600,000 for the creation of new master’s programs (Master of Maritime Management and Master of Technology Management) (2007/08)
- $315,000 to support operations at the Holyrood Marine Base
- $6.4 million in Growth Funding to address a structural deficit and pursue new initiatives outlined in Vision 2020 (2012/13 – 2014/15)
- $8.8 million in collective bargaining and salary step increases (2004/05 – 2018/19)

The Marine Institute has successfully implemented the initiatives for which we received increases in our Provincial grant. The School of Ocean Technology has been created and is flourishing (more information in Section 2.1) and we have significantly grown our graduate programs (more details in Section 2.1). The $6.4 million in growth funding has largely addressed our structural deficit, but we have experienced negative impacts from cuts to the Provincial grant over the last four years. With the $6.4 million in
growth funding we have also been able to: grow our research activities, including the number of NSERC eligible researchers and research chair positions (more information in Section 2.2); hire additional faculty positions in new and existing programs; provide additional student supports, including the creation of the student affairs portfolio (more information in Section 2.1) and positions in the Office of the Registrar and the Office of Career Integrated Learning; and create a Development and Engagement Office (more information in Section 2.3), that includes an alumni support position.

As can be seen Figure 1 and Figure 2, the Marine Institute generates a significant portion of its income from non-grant sources (about 50% on average since 2004). The most significant contribution to our non-grant revenue, is revenue generated from Training, Research and Projects. As illustrated in Figure 2, this revenue has varied somewhat over the years, and is mostly dependent on the training and project work that we do with our industry partners. The Institute now faces additional competition in some of its training programs from private providers, which has resulted in fewer industry short-course students. The downturn in the price of oil has compounded this, as companies are less likely to send their employees to do what are perceived as ‘optional courses’. As the Provincial Government’s finances are so closely tied to the price of oil and gas, the downturn in this industry has meant that the both the Institute’s grant and non-grant revenues have been impacted.

**Figure 2: Marine Institute Gross Revenue Breakdown by Type**

Despite the Province’s freeze on tuition, Figure 3 below shows that there has been some growth in our tuition revenue. This growth is largely due to the transfer of bachelor’s and graduate tuition to the Marine Institute by the St. John’s campus in 2012/13, and the Campus Renewal and Student Services
fees, implemented in 2017/18. Several of the Institute’s programs are also eligible for funding through the Labour Market Development Agreement (LMDA) between the Province and the Federal government, which supports Canadians with Employment Insurance (EI)-funded skills training and employment assistance. The amount of revenue that we receive from the LMDA varies each year, depending on how many EI-eligible students study in Marine Institute programs.

Figure 3: Breakdown of Tuition and General Revenue

The Institute has also been impacted by the ending of funding support for initiatives, such as SmartBay (Provincial and Federal Government funding of approximately $7.2 million from 2009 to 2016) and the Centre for Fisheries Ecosystems Research (CFER) (Provincial Government funding of $16.9 million from 2010-2016). The Marine Institute has managed to secure sustaining funding for SmartBay through a partnership with Oceans Network Canada. An extension of funding for CFER has been secured for five years through the Atlantic Fisheries Fund (AFF), but the funding will have to come from operations once the AFF funding expires.

The cuts to the Provincial Government grant and the impacts of the industry downturn that we’ve experienced in the last several years have had a significant impact on the Marine Institute’s operations. We’ve been able to manage our way through the changes, largely through attrition and making changes to operations, such as administrative efficiencies and workforce adjustments at some of our revenue generating centres, but we are close to the limit of what can be done without making major academic program changes or negatively impacting the experience of our students.
Section 2: Major Marine Institute Achievements Since 2005
2. Major Marine Institute Achievements Since 2005

In 2004, the Marine Institute embarked on a new visioning process, Vision 2020. The vision that had guided the Institute for the previous two decades had largely been achieved, and it was time to turn the Institute’s attention to the future. Vision 2020’s ambitions for the Marine Institute were simple ‘To be a world oceans institute setting the standard for education, training, innovation and research’. Vision 2020 was endorsed by all major stakeholders, including the Institute’s employees, its Industry Advisory Committee, the Memorial University Board of Regents, and the Provincial Government Cabinet.

At the onset of Vision 2020, the Marine Institute set out to expand engagement in seven key sectors of the oceans economy, based upon industry demand and development: fisheries, marine transportation, aquaculture and biotechnology, defence, science, marine transportation and energy. Each of these sectors shared cross-cutting themes that the Marine Institute also aimed to address. From using technology to utilize ocean resources, to understanding the ocean’s environmental impact, to upholding international standards for safety, security and emergency response, to participating in the development of global ocean policy and the effective management of ocean industries, the Marine Institute aimed to be a major player in the development of our global oceans economy.

The Institute decided to implement Vision 2020 with the guidance of three five-year strategic plans, enabling us to adapt to changing fiscal and political realities, such as the rise and subsequent drop in the price of oil, for example. The implementation plans grouped its initiatives into four major areas:

- Teaching and Learning
Through a focus on development in these areas, the Marine Institute has celebrated a number of achievements on its path to becoming a world oceans institute, outlined in the sections below:

2.1 Achievements in Teaching and Learning
Vision 2020 identified that Teaching and Learning (students and programs) would continue to be the Marine Institute’s primary area of focus. A number of the initiatives in this area are highlighted below:

School of Ocean Technology
The creation of the School of Ocean Technology (SOT) in 2007 was integral to fulfilling one of Vision 2020’s key cross-cutting themes of ocean technology. As noted in previous sections, SOT offers programs ranging from industrial short courses to master’s degrees in areas related to ocean technology. Programs such as the Diploma of Technology/Bachelor of Technology in Ocean Mapping and Underwater Vehicles and the Master of Technology Management were developed after SOT was created in 2007. The School is also the home of Dr. Katleen Robert, who is the Canada Research Chair in Ocean Mapping, the Institute’s first Canada Research Chair. SOT is currently in the process of establishing a research-based master’s program and a graduate diploma in ocean mapping, linked to the Canada Research Chair, which will see its first intake in the Fall 2020. The School’s research centre, the Centre for Applied Ocean Technology (CTec), housed at the Institute’s Holyrood Marine Base facility, enables the Marine Institute to be a leader in one of the five primary themes of the oceans economy – ocean technology – and puts into practice the Institute’s principles, including innovation, collaboration, and research. Through SOT, the Institute is also the only remotely operated vehicle (ROV) training institute in North America and the only post-secondary institution in the world that offers such training.

Student Affairs Portfolio
In 2013, student services at the Institute were consolidated into the Student Affairs portfolio and a director position was created to oversee the services. Student Affairs is responsible for recruitment and enrolment, career-integrated learning, health and wellness, and student supports, including academic transitions, risk management, and disability services. Student Affairs is also responsible for managing the relationship with the student unions. All activities are now centralized within a single entity that has the flexibility and skillset to respond to changing student demands, as the students themselves articulate their needs better and more clearly.

Enrolment
The recruitment and retention of students was one of the major goals of Vision 2020. Enrolment at the Institute briefly declined at the onset of Vision 2020 when student enrolment was centralized within the
university for a short period in 2004, but overall enrolment numbers have seen steady growth following
the re-integration of recruitment responsibilities in 2005. Rapid growth from 2009 to 2011, and again in
2018, brought enrolment to its current numbers, with 1,225 students registered in the Fall/2019 – a 35%
increase from Fall/2009. In Fall 2019, 10% of students enrolled at the Institute are international
students, up from 2% in 2009. The discontinuation of the Royal Canadian Navy training program at the
Institute, which is now taught within the RCN, had a significant negative impact on enrolments at the
Institute (in 2011 enrolment in these programs was 105 students).

<table>
<thead>
<tr>
<th>Table 1: Marine Institute Enrolment Summary Fall 2009 – Fall 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctoral Degree</td>
</tr>
<tr>
<td>Master’s Degree</td>
</tr>
<tr>
<td>Graduate Diploma</td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
</tr>
<tr>
<td>Diploma and Certificate</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Note: the enrolments in Table 1 include both full-time and part-time students.

In addition to the students enrolled in certificate, diploma and degree programs, the Marine Institute
also offers a suite of industrial response training courses, in a variety of areas, including:

- Offshore Petroleum Industry Training
- Marine Transportation Training
- Simulator Based Training
- Maritime Safety and Security
- Firefighting
- Fishing, Aquaculture and Small Boat Industry
- Industrial Safety and Emergency Response
- Aircraft Rescue and Firefighting
- Environmental
- Processing
- Fishing Masters

Industrial response training makes up a significant portion of the Marine Institute’s education and
training activities. This type of training contributes a considerable part of the revenue that is generated
at the Institute, as noted in Section 1.2.6 Finances.
Table 2: Marine Institute Industrial Response Enrolment* Summary 2009/10-2018/19

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Enrolment</th>
<th>Training Days**</th>
<th>Full Time Equivalents (FTEs) ***</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009/10</td>
<td>6,973</td>
<td>29,240.5</td>
<td>875</td>
</tr>
<tr>
<td>2010/11</td>
<td>6,448</td>
<td>27,656.5</td>
<td>827</td>
</tr>
<tr>
<td>2011/12</td>
<td>7,673</td>
<td>28,385.0</td>
<td>849</td>
</tr>
<tr>
<td>2012/13</td>
<td>7,812</td>
<td>30,560.5</td>
<td>914</td>
</tr>
<tr>
<td>2013/14</td>
<td>7,851</td>
<td>27,119.0</td>
<td>811</td>
</tr>
<tr>
<td>2014/15</td>
<td>8,253</td>
<td>25,635.5</td>
<td>767</td>
</tr>
<tr>
<td>2015/16</td>
<td>6,151</td>
<td>24,596.5</td>
<td>736</td>
</tr>
<tr>
<td>2016/17</td>
<td>5,714</td>
<td>23,660.5</td>
<td>708</td>
</tr>
<tr>
<td>2017/18</td>
<td>4,693</td>
<td>19,925.5</td>
<td>596</td>
</tr>
<tr>
<td>2018/19</td>
<td>4,872</td>
<td>23,933.0</td>
<td>716</td>
</tr>
</tbody>
</table>

* The enrolment numbers in Table 2, represent the full year of enrolment in industrial response courses. To avoid double-counting, Marine Institute diploma and certificate students taking industrial response courses as part of their programs are excluded.

** Annual training days for each course are calculated by multiplying course enrolment by course duration in days.

*** Annual Full-Time Equivalent (FTE) is calculated by comparing the contact hours of the program with those of a full-time undergraduate student. A full-time undergraduate student at Memorial University is one who is registered for at least nine credit hours per semester for at least two semesters in an academic year. This is a minimum of 234 contact hours per year (13 weeks x 9 credit hours x 2 semesters). In the Industrial Response programs, each training day is seven contact hours. Industrial Response Annual FTE, therefore, is calculated as the total number of training days multiplied by seven and then divided by 234. As an example, a five-day course with an annual enrolment of 100 students is 14.96 Annual FTEs [(5*100*7) / 234] = 14.96.

Growth in Graduate Programs

Vision 2020 identified the enhancement of graduate programs as a major initiative for the Institute. As illustrated in Table 1 above, graduate programming has been the most significant area of enrolment growth at the Institute in the last number of years. Online and research-based master’s students have been the primary source of new students to the Institute, particularly since 2010, when new graduate programs, including the Master of Maritime Management and Master of Technology Management, were introduced. The Institute began offering its first PhD and research-based master’s programs (in fisheries science) in 2017. The School of Ocean Technology and the School of Maritime Studies are in the process of developing their own research-based graduate programs, which are expected to be launched in 2020 and 2021, respectively.
The effect of graduate enrolment on overall enrolment is even more evident when considering the distribution of students within different credentials from 2009 compared to 2019. In 2009, the majority of students (almost 70 percent) were registered in diploma or certificate programs. In 2019, although diploma and certificate students still constitute half of the total student body, graduate students now account for almost 20 percent of students at the Marine Institute.

Figure 3: Growth in Graduate Enrolment

![Bar chart showing growth in graduate enrolment from Fall 2009 to Fall 2019.]

Figure 4: Comparison of Enrolment Percentages by Program Fall 2009

![Pie charts showing enrolment percentages by program for Fall 2009 and Fall 2019.]
2.2 Achievements in Research
Since its establishment, the Marine Institute has been involved in research and development initiatives, with a primary focus on applied research, solving practical problems. Vision 2020 envisioned the Institute expanding our research into new areas of the oceans economy and more fundamental research.

During Vision 2020, the Marine Institute successfully established an Office of Research and Development, including the creation of two positions to support Institute researchers and further collaboration with Memorial’s Office of Research at the St. John’s campus. The Marine Institute’s research activity has more than tripled, peaking at $9 million in 2013/14. We were also successful in securing NSERC funding for the first time, and by 2017, nine of the Institute’s 12 NSERC-eligible researchers had received funding from the agency. In 2019, the Institute had 72 personnel involved in the Institute’s research enterprise.

The Institute also created two new applied research centres: the Centre for Applied Ocean Technology (CTec) in 2007 and the Centre for Fisheries Ecosystems Research (CFER) in 2010. Housed at the Institute’s facility in Holyrood, as noted in Section 2.1 above, CTec is a leader in one of the five primary themes of the oceans economy – oceans technology – and puts into practice the Institute’s principles such as innovation, collaboration, and research. The Centre for Fisheries Ecosystems Research was created to support fisheries development within Newfoundland and Labrador. CFER has been successful in transforming our understanding of the fisheries ecosystems in our waters and aiding in the development of the next generation of leaders in fisheries science.

Since 2017, the Institute has also secured two research chair positions: the Canada Research Chair in Ocean Mapping and the Ocean Choice International Research Chair in Stock Assessment and Sustainable Harvest Advice for Northwest Atlantic Fisheries. A search is currently ongoing for an industrial research chair funded by the Canadian Ferries Association. As well, the Institute has recently signed an agreement with Lockheed Martin on a chair position and is in discussions with other industry groups on additional chair positions.

2.3 Achievements in Engagement
Collaborations with people and groups within and external to the Memorial University and Marine Institute communities is an important part of the Marine Institute’s culture. In Vision 2020, we aimed to improve accessibility to our programs and services, and continue to enhance collaborations with stakeholder groups, including alumni and other Institute stakeholders locally, nationally and internationally.

In 2014/15, we created the Department of Development and Engagement, to oversee the Institute’s engagement with our stakeholders, including alumni, industry partners, Indigenous groups, donors, and the wider community. The Department has been instrumental in building relationships with stakeholders, supporting our business development initiatives and engaging alumni.
The launch of the Marine Institute’s Community-Based Education Delivery (CBED) unit in 2010 has been instrumental in engaging with the broader Newfoundland and Labrador community. CBED delivers industrial training in communities to meet specific needs, and has regional offices in Lewisporte, NL and Iqaluit, Nunavut. Though the Institute had been engaging in community-based training since its establishment in 1964, the creation of CBED enabled the Institute to focus its activities. CBED’s capacities were identified in a Memorial-wide task force report on Indigenization and Indigenous learning. The Institute has been using CBED as a conduit to help develop Indigenous engagement in Labrador and in Nunavut, and it was a substantial contributing factor to Memorial’s success in securing its historic 10-year partnership with Nunavut Arctic College in 2019. This partnership will expand post-secondary programming, increased administrative capacity and promote northern research opportunities, with a goal of promoting and improving education and employment opportunities in Nunavut.

The Institute’s engagement has also been greatly enhanced through the launch of the Journal of Ocean Technology, a scientific periodical designed to cater to all segments of the global ocean technology community. The Journal’s mission is to expand global knowledge and understanding of ocean technologies, to serve as the medium for publishing world-leading research, and to promote innovation that contributes to responsible ocean utilization and management.

As noted in Section 1.2.4 above, the Institute engages with the youth of our province and from around the country through activities like the Youth and the Oceans activities, the MATE ROV competition, and the Model Boat Race. These activities aim to connect students and educators with the opportunities in the oceans sectors, including developing relationships with employers and working professionals, highlight marine-related career opportunities, and promote the development of technical, problem solving, critical thinking, and teamwork skills.

2.4 Achievements in Conditions for Success
The Institute defines conditions for success as the elements required to supplement the other pillars of Vision 2020’s implementation. A number of initiatives in this area are highlighted below:

Multi-campus Model and Organizational Structure Changes
The implementation of a multi-campus model for Memorial University (which was recommended in the Marine Institute’s submission to the Commissioner in the 2004 post-secondary review) has had a significant positive impact on the Marine Institute and Memorial University as a whole. The creation of the multi-campus model and elevating the most senior executive position at the Institute to that of a Vice-President of Memorial (with responsibility for the Marine Institute), clarified the Institute’s role in the broader Memorial University and further enabled the Institute to professionalize its leadership structure, including the creation of three Associate Vice-President positions to lead its primary areas of operation – Administration and Finance, Academic and Student Affairs, and Research and Strategic Partnerships. The Heads of the Marine Institute’s three Schools were also recognized as equivalent to decanal positions elsewhere within the university structure. These changes have grown the Institute’s
credibility and have helped articulate our purpose and contributions to the province’s education system as a whole. There will continue to be refinements to the Institute’s organizational structure as we adjust to the multi-campus model and implement our next Vision.

Infrastructure
Since 2011, a cumulative $25,950,000 has been invested in the Marine Institute’s major capital infrastructure projects with $15,986,000 of these funds coming from industry and other external sources. The major capital infrastructure projects includes: storage facilities and revitalization at the Offshore Safety and Survival Centre, new simulators for the ROV programs at the Ridge Road Campus, and further construction of the facility for the offshore operations simulator and the simulator itself. The Marine Institute also implemented three separate upgrades to the Centre for Marine Simulation’s simulators (including the Hibernia Offshore Operations Simulator) and enhanced the processing capabilities of the Centre for Aquaculture and Seafood Development since the onset of Vision 2020.

Holyrood Marine Base
The Institute’s major infrastructure development since 2004 has been the Holyrood Marine Base (soon to be called ‘The Launch’). The Holyrood Marine Base enables the Institute and Memorial University to undertake critical at-sea, in-water and sub-sea education and training activities. It has increased collaboration with other institutions, agencies and industries. In 2007, the Marine Institute acquired the SEAXX property (a former fish plant) in Holyrood. The Institute and its partners (ACOA, the Provincial Government and Irving Oil) have made significant investments in the past 13 years in the development of the facility, including a 6,000 sq. ft. building (completed in 2010), the construction of a breakwater and marginal wharf (completed in 2017), the development of the water lot (expected completion in 2020), and the development of a storage facility and laydown area (in progress). The Institute received funding from ACOA and the Provincial Government in 2019 to complete the next phase of the project, the construction of a new approximately 35,000 sq. ft. building, that will house shared labs and workshops, community gathering space, industry collaboration space, classrooms and offices. This further development of the Holyrood Marine Base will enable the Institute to continue its engagement with industry on a larger scale. The Holyrood Marine Base will focus on the proof of concept, development, validation and demonstration of the technology development process (Technology Readiness Levels 3-4-5-6). It is expected that the construction of the new facility will begin in 2020.
Section 3: Marine Institute’s Next Vision
3. Marine Institute’s Next Vision

The Marine Institute's Vision 2020, has guided the Institute since 2005, was scheduled to conclude in 2020. To prepare for this, in the winter of 2018 the Marine Institute began the process of developing its next vision and the first five-year implementation plan. The development process has been supported by the consulting group, Higher Education Strategy Associates (HESA), as well as Steering and Planning Committees.

HESA’s first task was a comprehensive internal and external review, including a detailed assessment of Vision 2020 to identify the progress toward achieving the goals and objectives outlined in that plan, and identify any outstanding items that are still relevant and should be included in the Institute’s next Vision. HESA concluded that the implementation of Vision 2020 has been successful, with 85% of the 90 individual action items identified in the 2015 implementation plan already accomplished or on-track to be accomplished. HESA also completed a comprehensive environmental scan that details the operating environment and sectors of importance for the Marine Institute in the future. Both the review of Vision 2020 and the environmental scan documents are available at: https://www.mi.mun.ca/vision/

Using the Institute’s mission to foster economic development in strategic sectors of the Newfoundland and Labrador economy, particularly the fisheries and offshore, and to enable Newfoundlanders and Labradorians to participate in the marine industry nationally and internationally as our starting place, the information collected through the internal and external consultations, review of Vision 2020, and the environmental scan were collated into the next Vision for the Marine Institute:

*To guide Newfoundland and Labrador to the world through global leadership in applied oceans education and research.*
To support the next vision, which will take us to 2041, we have developed a strategic framework to guide the Marine Institute through the first five years to 2024. The strategic framework provides structure to the Marine Institute’s immediate ambition to position ourselves as the catalyst for innovation at the heart of Atlantic Canada’s oceans economy. The implementation plan for the vision will be reviewed after the five-year cycle, and a plan for the next five years will be created.

To realize the vision, the Marine Institute will establish a solid foundation in our people and technology, and enhance our core functions and services: applied academics, knowledge generation, and industrial solutions. The Marine Institute will embrace a holistic approach to implementing our plans, taking special consideration of our culture, ongoing internationalization efforts, and purposeful mission-based planning process.

**Foundations**

Our people and technology are the foundations of the Marine Institute’s success. A number of goals have been identified as a part of the strategic framework to support the continued strength of these foundational elements:

- **People**
  - *Leadership succession*: develop and implement a leadership succession and replacement process to ensure the Marine Institute’s smooth transition to the next decade.
  - *Mission-oriented staffing*: develop and execute a targeted human resources strategy, at the heart of which are the principles of mission-oriented staffing, to ensure that hiring for the future is based on our new vision, central mission, and culture.
  - *Diversity*: develop strategies and undertake concerted efforts to modernize and diversify our workforce to ensure that the Marine Institute evolves to better reflect the needs of the industries it serves and the people it trains and educates.

- **Technology**
  - *Responsibility*: manage our technological and capital infrastructure through a centralized responsibility function, which will also oversee the development of a capital renewal plan and ensure adherence to the financial commitments in the plan.
  - *Budgeting*: allocate a dedicated budget to acquire the technological and capital infrastructure that will enable the organization to respond to changes in the global oceans economy over the next 20 years. A dedicated budget envelope of 10% of total operating costs will be allocated exclusively for technology and capital infrastructure. The Marine Institute will provide 5% from our own revenues and will seek the other 5% from external sources.
  - *Capital plan*: develop a technology and capital infrastructure plan to guide the expenditure of dedicated funds. The plan will include a detailed inventory identifying the life expectancy of major assets and the degree to which they are mission critical, as well as medium- and large-scale capital acquisition schedules.
Core Functions

The heart of the Marine Institute is reflected in the strategic framework through our core functions: knowledge generation, applied academics, and industrial solutions. Together, they speak to the Marine Institute’s identity as an academic institution and are the building blocks of our contribution to Newfoundland and Labrador going global in the oceans economy.

These building blocks are, in effect, the essence of the Marine Institute: what we do, who we are, and what makes us special. They also reflect one of the Marine Institute’s key unique features: our comprehensiveness. As a holistic educational institution, we combine academics, research, and industrial partnerships to better serve our mission.

- Knowledge Generation
  - Graduate research: continue our aggressive pursuit of graduate research capacity in our areas of core strength including the establishment of a PhD program in each School, and the recruitment of three additional Research Chairs (for a total of six).
  - Research inclusion: embark on a well-considered culture shift to ensure the collective and inclusive contribution of applied research to the institution’s knowledge generation.
  - Data management and climate change: define our role in data and digitization and climate change in the global oceans economy. We will develop strategies that address the anticipated need for:
    - Data collection, management, and analysis competencies
    - Climate change adaptation, mitigation, and resilience research

- Applied Academics
  - Curriculum review: lead broad discussions about what it means to deliver an applied oceans education in the 21st century, which includes cross-cutting technical skills, intercultural and human competency (soft skill) development.
  - International delivery: evaluate how the Institute can deliver its programs internationally, through online and blended learning objectives and innovation.
  - Academic program integration with Memorial: undertake a concerted effort to align our credit hour system with that of the rest of Memorial University for seamless integration and laddering potential for students.

- Industrial Solutions
  - Convening agent: build the frameworks necessary to gather business and academics working on the oceans economy at the Marine Institute. We will use these meetings to become a leader in knowledge dissemination to facilitate greater research and collaboration within Atlantic Canada’s marine industries.
  - Foresight intelligence: develop the capacity to track and predict emerging trends in the global oceans economy that will pave the way for enhanced entrepreneurship and competitiveness in the province and across the region.
Mission-Oriented Planning
The strategic framework includes elements of the Marine Institute’s management and organization functions that are needed to effectively articulate the Marine Institute’s story and solidify its expanding global footprint.

- **Internationalization**: develop an internationalization plan that addresses inconsistencies with the overall responsibility for internationalization within the organization’s structure. We will also evaluate and/or redefine MI International’s current mandate and role within the broader Marine Institute community, while establishing guidelines for the organization’s international consultancy activities.
- **Finances**: develop a long-term financial plan that will continue to diversify our income streams. The plan will identify strategies to position the Marine Institute to attract further investment. The Marine Institute will also develop guidelines to support whole-of-organization business development opportunities.
- **Advancement**: develop a comprehensive strategic advancement plan to engage alumni as part of the broader Marine Institute community.
- **Enrolment**: develop a comprehensive strategic enrolment management plan that responds to the continued evolution and diversity of our student population, including international students, graduate students, and lifelong learners.
- **Communications**: develop a comprehensive, sustainable, and measurable marketing and communications plan for local, national, and international audiences, as well as a specific research and development communications plan to support the Marine Institute’s innovation initiatives and efforts.

3.1 Creating an Enabling Environment
The oceans are an integral part of Newfoundland and Labrador’s cultural and economic heritage, and a critical part of its future. The province’s most important asset to capitalize on that future is the Fisheries and Marine Institute of Memorial University.

The previous section outlined our Vision for the Marine Institute of the future, one that will guide Newfoundland and Labrador to the world through global leadership in applied oceans education and research. We believe that this is a compelling vision, one that will shape our goals, guide our decisions and solidify our reputation for ocean-related excellence.

The Institute is committed to attaining this Vision over the next 20 years. It will require intense work on our part to achieve, but we are eager to get started. Achieving the Vision will also need an enabling environment in which to nurture the Institute’s development. Key elements of this enabling environment include:

- **Memorial University**

The Marine Institute has been a part of Memorial University since 1992. The Marine Institute has thrived within Memorial, particularly since the creation of the multi-campus model and elevating the most
senior executive position at the Institute to that of a Vice-President of Memorial (with responsibility for the Marine Institute), as noted above. Being a part of Memorial and having the ability to offer undergraduate and graduate degrees has fundamentally changed the Marine Institute and has been a significant contributor to our recent successes. It has enabled us to grow our program mix, particularly on the graduate level, and significantly increase our knowledge generation (research and development) activity. We have also been able to maintain our flexibility and ability to respond to our industry partners needs for training, research and projects by maintaining administrative and research services on our own campus. This decentralization of services is critical to maintaining our role in providing solutions to industry.

Despite these significant benefits, there are further refinements to this model that would support the continued development of the Marine Institute within Memorial University. Though we have grown our undergraduate and graduate programming, much of the administration of these degrees, such as the activities associated with admission and graduation are carried out on the St. John’s campus. Moving the administration of our degrees to the Marine Institute would enable us to be more responsive to our students’ needs, with all aspects of the students’ experience carried out at the campus they will be studying at. It will also be critical to maintain the level of administrative and knowledge generation (research and development) services (such as finance, human resources, information and communications technology, career integrated learning, student recruitment and others) at the Marine Institute. Further centralization of these services will impact our nimbleness by slowing our response time and impeding our ability to support our students, industry partners and other stakeholders.

Enabling Environment: Being a part of a multi-campus Memorial University that includes increased responsibility in the administration of degrees and continued responsibility for administrative and research activities.

• **Mandate**

The mandate of the Marine Institute as outlined in Article 67 of the Memorial University Act is: *The university shall, through the Fisheries and Marine Institute established under this section and in accordance with the direction of the board and the senate,*

(a) *provide degree, diploma, certificate and other programs in the areas of fisheries and marine science and technology;*

(b) *provide for the upgrading and enhancement of the fisheries and marine labour force, in cooperation with the colleges...;*

(c) *provide for the sharing of facilities between the Fisheries and Marine Institute, the university and the various colleges...; and*

(d) *provide for applied research and technology transfer.*

It is this mandate that enables the unique character and culture of the Marine Institute as a marine polytechnic that offers a full range of programming (from short-courses to doctoral degrees) in the oceans industries, and engages in knowledge generation (research and development activities) and industry solutions. This mandate relates directly to the oceans and the oceans economy, and given the
importance of the oceans to the province, it positions the Institute as the province’s most important asset to capitalize on that future.

**Enabling environment:** Continuance of the Marine Institute’s marine/oceans mandate in programming, applied research and technology transfer in Newfoundland and Labrador.

- **Governance**

Prior to joining the University in 1992, the Marine Institute was governed by a Board of Governors, and since that time it has governed by Memorial University’s Board of Regents and Senate in a bicameral system. Article 68 of the Memorial University Act also provides for the establishment of an Industry Advisory Committee for the Marine Institute:

1. *The Board of Regents shall establish an industry based advisory committee to advise the Fisheries and Marine Institute respecting fisheries and marine related programs offered at the Fisheries and Marine Institute.*

2. *The Board shall appoint to the advisory committee established under subsection (1) not less than 11 nor more than 15 members to consist of:*

   a. the Deputy Minister of Fisheries or the representative of the deputy minister;
   b. a full-time student at the Fisheries and Marine Institute;
   c. a representative of the administration of the Fisheries and Marine Institute;
   d. 8 persons from the fishing and marine industries or related organizations; and
   e. those other persons that the board may determine.

3. *The Board shall designate 1 of the members appointed under subsection (2) as chairperson of the advisory committee and another member as vice-chairperson of the advisory committee.*

4. *The Board shall establish the terms of appointment of members of the advisory committee so that there is continuity in membership of the advisory committee.*

It would be of benefit to both the Marine Institute and Memorial as a whole, if there was some overlap in membership of the Industry Advisory Committee and the Board of Regents to promote information sharing, develop insight into various issues and build relationships.

**Enabling environment:** Appoint the Chair of the Marine Institute’s Industry Advisory Committee as a member of the Board of Regents.

- **Infrastructure and Technology**

Infrastructure and technology are critical foundational elements of an institute of applied oceans education and research such as the Marine Institute. When the Ridge Road campus was built in the 1980s the designers were successful in planning for not only what the Institute was at the time, but what it would become in the future. Including building elements such as the flume tank, the fish processing pilot plant, aquaculture facility and a suite of new technology gave the Institute the credibility to move into the future. Our infrastructure has been augmented throughout the years
through investments in the Offshore Safety and Survival Centre, the Safety and Emergency Response Centre, Holyrood Marine Base, simulation capabilities and a host of new equipment and technology. Today, much of our infrastructure is between 25-35 years old. This infrastructure, technology and equipment needs to be continually renewed and new infrastructure built if the Institute is to continue to be one of the world’s leading oceans institutes. As a part of its new Vision, the Institute will allocate a dedicated budget (10% total operating costs, with 5% from our own revenues and the other 5% from external sources) to acquire the technological and capital infrastructure that will enable the organization to respond to changes in the global oceans economy. Though this funding will help, the Institute has more significant needs in this area than can be addressed with this allocation alone. Some of the Institute’s infrastructure, technology and equipment needs include:

- Transfer of Ridge Road (including the Engineering Technology Centre) and OSSC campus facilities, including operational funding and deferred maintenance, from the Department of Transportation and Works
- Implementation of Ridge Road campus master plan
- Deferred maintenance
- Technology renewal
- Access to an appropriate research vessel
- Renewal of the fire field at SERT
- Further development of the Holyrood Marine Base

**Enabling Environment:** Transfer of the Ridge Road campus (including the Engineering Technology Centre) and OSSC facilities to the Marine Institute, including operational funding and deferred maintenance.

**Enabling Environment:** Establishment of a multi-year technological and capital infrastructure development fund for the Marine Institute that will support our own efforts in this area. The fund would be used to purchase/build new infrastructure, technology and equipment and leverage funding from other programs and industry.

- **Funding**

Though the Marine Institute’s grant has seen significant growth since the last Post-Secondary Review, these funds have been largely directed funds allocated with specific purposes, such as collective bargaining and salary step increases, fringe benefits, and directed areas of growth (the School of Ocean Technology and graduate programming, for example). In addition, the Institute’s grant from the Provincial government has been cut by approximately $3.2 million dollars since 2014/15. These cuts have been largely addressed through attrition, that is, not replacing positions that are left vacant through retirements or resignations. As a result, in many cases, operational decisions are based on the employees who choose to leave rather than what might be best for the Institute. The Marine Institute employed many highly skilled individuals whose expertise was lost through this attrition process. Coupled with the ending of Provincial Government funding for initiatives such as SmartBay and CFER, as well as supporting deferred maintenance, ageing infrastructure and technology and addressing the impact of the downturn in key industry sectors, managing our way through these issues has been challenging. The Institute and Memorial University have also been impacted by decreases in matching
funds for research, which was formerly administered by the Research and Development Corporation. Without this matching funding, it can be challenging to secure leveraged funding from Federal Government and Tri-council programs.

*Enabling Environment*: Maintain a Marine Institute funding envelope within the annual grant to Memorial University.
Section 4: Responses to Questions Posed by the Post-Secondary Review Committee
4. Responses to Questions Posed by the Post-Secondary Review Committee

4.1 Effectiveness: Is the public post-secondary system meeting the needs of Newfoundland and Labrador, and are there opportunities to do more?

The public post-secondary system in the province offers a diverse array of program options for learners at all program levels. Individuals in our province can engage in community-based education, technical training, undergraduate and graduate education. Our province is rich in knowledge and skills-based education and training across a variety of disciplines.

Though the system has the courses and programs to meet the needs of the provincial population, at times, learners struggle to successfully move or transfer between campuses and institutions. There are opportunities for all provincial post-secondary institutions to improve our institutional and campus transfer processes, the vetting of Prior Learning Assessments, as well as articulating laddering opportunities for learners.

Over the last decade, all provincial post-secondary institutions have made efforts to improve communication with the eligible student populations and demonstrate the opportunities for learning in our province. On the other side of this, the province could more readily embrace the learning opportunities available and acknowledge the power and expertise in our post-secondary system. We are world leaders in post-secondary education and that should be more actively celebrated by the province.

Lastly, the provincial post-secondary system could benefit from more strategic integration with the high school system. Working with the high school system, in a more structured way, on curricular development and career education could create a clear path for the progression of high school students to post-secondary opportunities.

4.2 Sustainability: What is reasonable in terms of the size, scope and structure of the public post-secondary education system and its capacity for sustainability?

The Marine Institute is Canada’s foremost fisheries and marine institute, and the most comprehensive marine institute in North America. Though the Institute may have comparator institutions for its academic programs, research activities and support for industry, as a whole, the Marine Institute stands alone. One of the Institute’s greatest strengths and differentiators is our mandate to focus on the oceans and oceans industries. A number of our programs, including diploma programs in ocean mapping, underwater vehicles, and remotely operated vehicles, and upcoming graduate programs in applied oceans technology (ocean mapping) are unique to the Marine Institute and not offered at any other post-secondary institutions in the country. The unique nature of our programs will continue to help us attract students, not only from Newfoundland and Labrador, but around the country and internationally. The Institute is also unique in the comprehensive and flexible support that we bring to our industry and research clients in the area of the oceans. As referenced above, though there are a
number of specialized post-secondary institutions around the world that are involved in various aspects of the oceans industries, it is only at the Marine Institute that all these elements are brought together. The Institute also plays an important role in rural economic development in the Province. Our operations in Holyrood and Stephenville bring students, researchers and industry partners to these communities for courses, training and project work. Our Community-Based Educational Delivery (CBED) unit brings training opportunities to students in their own communities (both in Newfoundland and Labrador and in parts of Northern Canada). Our researchers have worked on various projects in the oceans all around our Province, and our industry centres have worked with clients from around the Province and around the world.

The Marine Institute has a strong value proposition, with a worldwide reputation in the oceans industries, and in sectors such as aquaculture and fisheries. We provide industry-leading training and academic programming, and offer a breadth of programming that allows us to develop the operation and technical skills of the future marine workforce. The diversity of our research enterprise allows the Institute to account for fluctuations in individual marine sectors and continue to serve the collective oceans industry.

As noted in Section 3.1 above, there are a number of requirements to create an environment that would enable the sustainability and even growth of the Marine Institute in the province. These include being a part of a multi-campus Memorial University, maintaining our marine/oceans mandate, stronger linkages between the Marine Institute’s Industry Advisory Committee and the Board of Regents, and improvements and investments in infrastructure and technology. These factors are necessary to ensure that the Marine Institute can achieve its vision to guide Newfoundland and Labrador to the world through global leadership in applied oceans education and research.

4.3 Accountability: What is the optimal model for the province’s public post-secondary system to deliver high quality education?

The issues of accountability, autonomy and academic freedom are challenges that universities and provinces across the country are currently tackling. In a recent article in the Canadian Journal for Higher Education, Eastman et al. (2018) stated that, “a key consideration in university governance is how institutions can maintain relative autonomy – in other words, how they can respond effectively to the expectations of governments, other external stakeholders, and/or markets and thereby secure resources, while sustaining conditions and capacity for knowledge production and dissemination. On the one hand, […] universities need to operate in an environment in which faculty members exercise academic freedom and in which academic expertise and considerations inform decision-making. On the other hand, […] they must contribute to the social and economic development of society, meet students’ needs and expectations, and be responsive to external stakeholders” (p. 68). For

---

Newfoundland and Labrador, the optimal model for its post-secondary system is one that will enable its institutions to balance autonomy and academic freedom with the expectations of its external stakeholders.

The Marine Institute provides the Province with a very good return on its investment. This is evident from a number of different measures, outlined below, which may or may not be applicable to the other post-secondary institutions in the Province.

**Quality and Accreditation**
The Marine Institute’s quality management system is registered to the ISO 9001:2015 standard. The Institute is one of only a few educational institutions in the country to achieve this certification. This means that the Institute is judged by independent auditors against international standards of quality excellence in internal operations and interaction with clients (including students).

The Marine Institute’s programs are accredited by a number of national and international accrediting bodies, including but not limited to: Canadian Technology Accreditation Board (CTAB), International Hydrographic Organization (IHO), Transport Canada, and Standards of Training Certification and Watchkeeping (STCW) International certification from the International Maritime Organization (IMO). These accrediting bodies evaluate the programs to ensure that they meet the required standards.

**Outcomes**
We are very proud of the success of our graduates. When they leave the Institute, they go on to have good jobs, rewarding careers and contribute to the province and the country. With a Marine Institute education, they can work anywhere in the world, and live at home in Newfoundland and Labrador. At one time, the Department of Education (now the Department of Advanced Education and Skills) measured the outcomes for post-secondary graduates in the Province in a publication called “Career Search”. This document was a very useful tool for all post-secondary education institutions to track the outcomes of graduates.

The Marine Institute has begun to collect our own information on graduate outcomes through a survey conducted every two years, beginning in 2016. The most recent survey, conducted in Fall 2018, had a survey population of 1,649 graduates with a 29% response rate. The survey showed that 90% of respondents were working full-time (greater than 30 hours per week) and 91% of those employed were working in an area that they considered to be either directly or somewhat related to their education/training from the Institute. 90% of respondents were either very satisfied or satisfied with their investment of time in their program of study and 84% are either very satisfied or satisfied with their financial investment in their program of study. We are proud of these results. The next survey of our graduates is expected to be administered in Fall 2020.

**Industry Solutions**
As noted in Section 1.2.3 above, the Institute’s relationship with our industry partners is one of our defining characteristics, and the provision of industrial solutions is one of the characteristics that
distinguish the Institute as a critical economic asset in the province. We offer a full spectrum of programming from industrial courses to graduate degrees, provide technology transfer, undertake research, and foster public-private collaborations, bridging the gap to support the successful transition from research to technology commercialization.

4.4 Accessibility: How can the province’s public post-secondary education system best ensure opportunities for all to achieve greater diversity, increase accessibility and support more inclusiveness?

Post-secondary education is a critical function and resource for Newfoundland and Labrador. The system is a social and economic driver of the province, providing meaningful educational opportunities for our people. The post-secondary system can also be a mechanism to strategically expand the population by offering and facilitating significant learning opportunities for Canadians and international learners.

Diversity in the context of the post-secondary system is as broad as the characteristics of the learner: age, gender, sexual identity, racial and cultural background, as well as geographic dispersion. Ensuring that a diverse population can benefit from the rich post-secondary system in the province can be achieved with robust enrolment planning. Well-structured enrolment planning can facilitate access for marginalized communities and those students with fewer post-secondary opportunities due to geographic disparities in the province. Goal setting regarding the required size of the post-secondary system can also encourage dialogue and planning within institutions to recruit and retain learners from outside Newfoundland and Labrador.

Support of an inclusive culture begins at enrolment. Institutions need to ensure that learners not only have access to opportunities but that they develop a connection with their program of study, the institutional community, and the province. This sense of belonging is complex and can be fostered with engagement across the system. “Fit” or a feeling of belonging in a program can and should be developed whether a learner has chosen a short course, technical program or PhD. Inclusion also comes with a respectful acknowledgement of the diversity in the group.

At the Marine Institute, we have developed a perspective on enrolment management that embraces the principles of career development and exploration, linking youth engagement to our recruitment initiatives as well as maximizing the opportunity for program laddering. Still, we can do more to connect with the other post-secondary institutions in the province.

Cultural and diversity awareness is also critical to building an awareness and importance of diversity to the provincial economy. A significant effort in this regard is currently underway across the post-secondary system, however, it is crucial to continue to identify it as a priority.
Appendix A – Marine Institute Schools and Centres

School of Fisheries
The School of Fisheries delivers education and training programs to students interested in entering the aquaculture, fishing, environmental and food industries. Academic programs offered by the School range from industry certifications to diplomas of technology, advanced diplomas, post-graduate certificates, master's degrees and PhDs.

The School of Fisheries' relevance to the aquaculture, fishing and food production industries it serves is largely due to an insistence on training programs and industrial research activities that complement each other. Within the School, Community-Based Education Delivery (CBED) is responsible for most of the industrial training while the industrial centres: the Centre for Aquaculture and Seafood Development (CASD); the Centre for Fisheries Ecosystem Research (CFER); and the Centre for Sustainable Aquatic Resources (CSAR) carry out industrially relevant research.

Community-Based Education Delivery
CBED takes the lead role for the School of Fisheries in the organization, facilitation and delivery of training courses and programs in communities throughout Newfoundland and Labrador and Nunavut (both in person and online). The unit collaborates with industry and government in supporting key education and training priorities. CBED’s major areas of training delivery include fish harvesting, food processing, aquaculture and environmental, as well as international collaboration on fishing sector projects.

Centre for Aquaculture and Seafood Development
CASD is recognized for its applied scientific and technical expertise, facilities and commitment to clients. CASD offers a complete range of services for seafood processing and aquaculture industries in the areas of applied research, product and process development, technology transfer, advisory services and education and training. CASD provides a suite of technical capabilities, expertise for addressing industry needs, and participates in research and development efforts for future growth and diversification.

Centre for Fisheries Ecosystems Research
CFER plays a vital role in the future of fisheries in Newfoundland and Labrador by addressing the need for increased capacity in fisheries science research, enabling the province to better participate in federal and international fisheries management decision making. Research led by CFER provides a better understanding of fish stocks and the productivity of Newfoundland and Labrador’s marine ecosystem.

Centre for Sustainable Aquatic Resources
CSAR promotes the sustainable development of aquatic resources and the protection of marine and freshwater environments. It conducts applied research and development, as well as education and training to conserve and protect aquatic resources and habitats using an integrated, multi-disciplinary approach involving scientists, resource managers, harvesters and other stakeholders. CSAR pursues client-oriented research and technology transfer project work through strategic partnerships and
collaborative ventures with private industry, government, and community groups on a local, national and international scale.

*School of Maritime Studies*

The School of Maritime Studies has a long history of providing training for the ocean industries; a number of the academic programs in the School, including diplomas of technology in nautical science, marine engineering, and naval architecture, have been in place since the Marine Institute was founded.

Today SMS prepares students to pursue careers in the marine transportation industry; undertakes research and applied technology transfer initiatives; provides industrial response training; and responds to technological and public policy issues affecting the marine transportation industry. The School offers industry certifications, technical certificates, diplomas of technology, bachelor's degrees, and master's degrees.

Applied research and training activities in SMS are undertaken by the Centre for Marine Simulation, the Offshore Safety and Survival Centre, the Safety and Emergency Response Training Centre, and the Ocean Safety Research Unit.

*Centre for Marine Simulation*

Centre for Marine Simulation (CMS) is a research and training facility which provides a comprehensive suite of marine simulation capabilities. It assists the maritime and offshore industries in mitigating the risk of accidents, in accelerating training and improving performance, and in testing new equipment designs. The Centre’s particular areas of expertise include the modeling and simulation of harsh maritime environments; human performance in moving environments, small craft simulation, simulation of offshore oil and gas operations, and waterway risk analysis.

*Offshore Safety and Survival Centre*

The OSSC has been recognized nationally and internationally for providing safety, survival, and emergency response training of the highest standards, offering training programs approved by Transport Canada and recognized by international certification agencies. It provides this training to the companies and individuals engaged in industries such as shipping, offshore petroleum, fishing, emergency response, firefighting, and aviation. The OSSC also works closely with industry, researchers and industry associations to improve safety technologies and practices and can design customized courses to meet the specific training needs of its clients.

*Safety and Emergency Response Training Centre*

SERT was established to respond to the need for a facility to train air crash firefighters in Atlantic Canada and to provide land-based firefighter training. The Centre offers training courses in aviation, marine and industrial safety and emergency response. SERT responds to the safety training needs of industries and individuals throughout Atlantic Canada, Western Newfoundland, and Labrador.
Ocean Safety Research Unit
The OSRU was established to provide knowledge required for informed debate and better, defensible decision-making by designers, regulators, operators and trainers. The OSRU undertakes applied research with collaborators and for clients at the local, national and international levels, including developers, manufacturers, operators, academics and regulators. In particular, OSRU has strength in the planning, conduct and analysis of full-scale field trials, including sea trials on different types of vessels ranging from life rafts and lifeboats to rigid hull inflatable rescue craft, offshore service and supply vessels and large scale passenger ships such as ferries and cruise ships.

School of Ocean Technology
SOT develops and delivers education, training, and applied research and development programs in various aspects of ocean technology that meet the needs of the ocean sector (industry, academia and government) in Canada, and beyond. Academic programs delivered by the School cover a range of certifications including short industry response courses, technician diplomas, diplomas of technology, bachelor’s degrees and master’s degrees, all with a focus on the marine sector. New and developing academic programs offered through the School of Ocean Technology are unique in content and application.

Applied research activities associated within SOT are undertaken by the Centre for Applied Ocean Technology (CTec).

Centre for Applied Oceans Technology
CTec is currently focused on applied research and development in the areas of Ocean Mapping and Ocean Monitoring. The guiding principles of CTec applied research efforts are to: respond to the evolving technology needs of key ocean industries (fisheries, marine transportation and offshore oil and gas); work collaboratively with the ocean technology industry; and provide work experience and employment opportunities for students and graduates.

CTec collaborates with ocean industries and others on the development and application of technology for the practical benefit of all sectors of the maritime community. The overriding goal is to enhance the safety, efficiency, sustainability and profitability of maritime pursuits through the application of technology as a bridge between ‘knowing’ and ‘doing.’
Appendix B – Marine Institute Programs List

- Diplomas of Technology
  - Marine Engineering
  - Marine Engineering Systems Design
  - Nautical Science
  - Naval Architecture
- Diplomas of Technology/Bachelors of Technology
  - Marine Environmental Technology
  - Ocean Mapping
  - Underwater Vehicles
- Technician Diplomas
  - Remotely Operated Vehicles
- Technical Certificates
  - Bridge Watch
  - Fire Rescue
  - Marine Diesel Mechanics
- Bachelor’s Degrees
  - Maritime Studies (Maritime Management)
  - Maritime Studies (Safety Management)
  - Technology (Engineering Technology and Applied Science)
  - Technology (Health Sciences Technology)
- Advanced Diplomas
  - Food Safety
  - Sustainable Aquaculture
  - Water Quality
- Post-Graduate Certificates
  - Quality Management (Online only)
- Graduate Diploma
  - Marine Studies (Fisheries Resource Management)
  - Applied Ocean Technology (Ocean Mapping) (approval pending for Fall 2020 offering)
- Master’s Degrees
  - Marine Studies (Fisheries Resource Management) (Online only)
  - Marine Studies (Marine Spatial Planning and Management)
  - Maritime Management (Online only)
  - Technology Management (Engineering and Applied Science Technology) (Online only)
  - Master of Science in Fisheries Science (Fisheries Science and Technology) (M.Sc.)
  - Master of Science in Fisheries Science (Stock Assessment) (M.Sc.)
  - Applied Ocean Technology (Ocean Mapping) (approval pending for Fall 2020 offering)
  - Master of Science in Maritime Studies (Safety and Survival) (approval pending)
- Doctor of Philosophy (PhD)
  - Fisheries Science
- Maritime Studies (approval pending)

More information on our programs can be found at: https://www.mi.mun.ca/programsandcourses/