

researchNS

Research Nova Scotia

Semi-Annual report to the
Minister of Labour and Advanced Education

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Stefan Leslie
CEO, Research Nova Scotia
1660 Hollis St., Suite 905
Halifax, NS B3J 1V7

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Executive Summary

This semi-annual report covers the activities of the Research Nova Scotia Corporation (RNS) for the period 1 April 2019 to 30 September 2019.

Since April 1, RNS has been focused on structure and governance, ensuring the delivery of commitments of previous organizations, and preparing the strategic direction. Over the next six months, our focus will be on strategy development with ongoing engagement with our Board of Directors and the greater research community.

RNS assumed the legacy commitments of the former Research and Innovation Trust, the Health Research Foundation, and the Research Nova Scotia Trust, all of which ceased operations on 31 March 2019. These commitments continue to contribute to improved health, social, and economic outcomes for Nova Scotians.

As the strategic plan and terms & conditions for the Research Opportunities Fund are in development, the impact of research managed by RNS is attributable to the three legacy categories. To illustrate research impact, this report applies an interim RNS framework to three projects that represent each legacy category: The Ocean Tracking Network; Advanced Coastal Mapping to Support Hydrodynamic Modelling; and Accelerating the Discovery of New Antibiotics to Combat Drug-resistant Human Pathogens. Each impact summary demonstrates how supporting research activity and building research capacity contributes to informed decision-making that results in improved health as well as economic and social prosperity.

Since April 1, RNS has funded a total of 33 projects totalling \$3,490,947.66. In addition, RNS invested a total of \$702,500 in future researchers through its Scotia Scholars^{OM} Awards program. Funds were allocated to 36 students at Acadia University, Dalhousie University, Mount Saint Vincent University and Saint Mary's University for Masters and/or Doctoral level awards. An Undergraduate Scotia Scholars^{OM} competition is taking place at Acadia University, Cape Breton University, Mount Saint Vincent University, and Saint Francis Xavier University in Fall 2019.

The financial forecast for 2019/20 anticipates a positive balance of \$25.346 million at year end, the vast majority of which is restricted for use as research funding. Assuming the continuation of the LAE and DHW grants in 2020/21, at \$2.175 million and \$4.621 million, respectively, RNS will have a total 2020/21 operating budget of approximately \$32.142 million. Discussions have not concluded on the distribution of those two grants as it relates to the Fund, other forms of research support, and coverage of RNS operating costs. The Corporation expects to pay out approximately \$3 million for existing funding commitments in FY 2021, in addition to new funding decisions.

As expected for a new organization, Year 1 (2019/20) is focused on developing a strategy to support, organize and coordinate the funding of research in Nova Scotia, and reviewing all the legacy activities of the previous organizations. Year 2 (2020/21) will begin strategy implementation, with the introduction of new and updated programs and opportunities. Year 3 (2021/22) will conclude the start-up phase, and RNS will use lessons learned during years 1 and 2 to adjust operations as needed for continued operational improvement.

Activity Overview

The Corporation began operations on 1 April 2019. The focus of activities over the first six months centered on three main areas:

1. Establishing the structure and governance of the Corporation: the inaugural CEO began in September 2019, replacing the interim CEO; the senior leadership structure was developed and a Chief Operating Officer was identified; staff from the previous organizations continued to adjust with multiple departures, and; the Board met to set initial Corporation direction.
2. Ensuring the delivery of commitments of the previous organizations: as per the agreement with the provincial government, for Year 1 (2019/20), the legacy programs of the Health Research Foundation and the Research Innovation Trust continue to operate; funding commitments made to research projects were honoured, and; appropriate monitoring and oversight were undertaken.
3. Preparing for direction for the new Corporation: work began on developing the roadmap for a strategic approach to support Nova Scotia research, and the terms and conditions for the use of the Research Opportunities Fund. Substantial engagement occurred with partners and colleague organizations in the Nova Scotia research ecosystem, including meeting with the leadership of post-secondary educational institutions, private industry, ACOA, Innovacorp, NSBI, Springboard Atlantic, Halifax Partnership, OERA, ONSIDE, the federal tri-councils (NSERC, CIHR and SSHRC), CFI, provincial departments (LAE, Business, Aboriginal Affairs), and members of the research community at the PSEs.

The first six months has established the structure of the Corporation; the next six months will focus on strategy development and establishing priority programs.

The research community and our partners have been generous with their time, eager to contribute their thoughts, and enthusiastic about the benefits of a fully operational Research Nova Scotia Corporation.

Board of Directors

The current members of the Research Nova Scotia Board are:

- Dr. Alice Aiken (Chair), Vice-President, Research and Innovation, Dalhousie University
- Dr. Mary Bluechartd (Vice Chair), President and Vice-Chancellor, Mount Saint Vincent University
- Mr. Don Bureaux, President, Nova Scotia Community College
- Mr. David Dingwall, President, Cape Breton University
- Ms. Denise LeBlanc, Director General, Aquatic & Crop Resource Development, National Research Council
- Dr. Tom Marrie, Deputy Minister, Department of Health and Wellness
- Mr. Bernie Miller, Deputy Minister, Department of Business
- Mr. Duff Montgomerie, Deputy Minister, Department of Labour and Advanced Education
- Dr. Nicholas Nickerson, Chief Scientist and Co-Founder, Ecosense
- Dr. Jeffrey Norrie, Chief Science Officer, Breathing Green Solutions
- Mr. Allister Surette, President, Université Sainte-Anne
- Dr. David Woolnough, retired

Our Impact

Research supported by RNS contributes to improved health, social and economic outcomes for Nova Scotians.

As the strategic plan and terms and conditions for the Research Opportunities Fund are in development, all research currently managed by RNS is attributable to the three legacy categories: the Research and Innovation Trust, the Health Research Foundation and the Research Nova Scotia Trust.

For this report, we have evaluated impact based on the research impact

framework established by the Canadian Academy of Health Science (CAHS) and the Canadian Health Services and Policy Research Alliance (CHSPRA). This framework was developed first for health research but is applied more broadly to other research spheres. It demonstrates how supporting research activity and building research capacity contributes to informed decision-making that results in improved health as well as economic and social prosperity.

The interim RNS framework considers our influence across the following broad categories of impact:

1. Advancing knowledge;
2. Building capacity;
3. Informing decision-making;
4. Health and wellbeing; and
5. Broader health, social and economic impacts.

We have highlighted below a project in each of RNS's three legacy categories, demonstrating ongoing impact at a variety of funding levels across different types of research. In addition, RNS has produced videos highlighting the work and impact of two researchers who received funding from the Trust. These can be found at:

www.researchns.ca/2019/08/19/acadia/

www.researchns.ca/2019/10/28/stfx/

Project: The Ocean Tracking Network
Making an Impact by Funding Infrastructure

Principal Investigator: Sara Iverson
Institution: Dalhousie University
RNS funding source: NSRIT Legacy stream
RNS funding contribution: \$3,625,000
Leveraged funding: \$25,707,089
Sector: Ocean Science
Number of jobs supported: 20
Number of training opportunities: 153
Funding Agency: Canadian Foundation for Innovation (CFI)

The Ocean Tracking Network (OTN) is a global partnership built on Canadian technology that tracks aquatic animals, documents their survival and movements, and correlates these to changing environmental conditions. This research and technology development partnership shares costs, resources, expertise and data internationally. OTN emphasises training Highly Qualified Personnel (HQP) and providing opportunities for international HQP collaboration and exchange as a key element of sustainability. Through its global oceans research program, OTN is developing the next generation of ocean scientists, engineers, and policy makers to lead the vital work of conserving marine and aquatic species in the face of shifting ecological systems.

Research Nova Scotia's financial contribution was essential for the OTN to leverage infrastructure funding from the Canadian Foundation for Innovation and operate in Nova Scotia.

Impact

Since receiving RNS funding, The OTN reported the creation of 20 HQP jobs and 153 HQP training opportunities. By promoting the hiring and training of HQP in fields essential for sustainable development of the oceans, OTN contributes to Nova Scotia's ability to adapt to changing ocean environments and deal with pressing environmental issues such as sustainable development, human impact on oceans and the effects of climate change.

By building research capacity in areas such as physical oceanography; climatic, oceanographic and statistical modeling; technology development, and; ocean governance, OTN is increasing opportunities for Nova Scotia researchers to build upon existing knowledge to conduct research that leads to new discoveries. Research results can then be used to inform decisions in Nova Scotia's academic, NGO, government, industry and private sectors.

Furthermore, OTN has led a variety of stakeholder collaborations and consultations that have influenced decision making amongst local, national and international industry partners, which have had economic and social benefits for Nova Scotia. For example, OTN seeks opportunities to engage with and support local businesses and makes its marine infrastructure available to Nova Scotian technology companies to test and refine prototypes. Economic benefits for Nova Scotia are also derived from OTN being global in scope. International teams travel to Nova Scotia, purchase goods and services from our economy while they are here, and return to their home countries where they continue to purchase and use our products.

OTN benefits society through the provision of sound scientific knowledge to support decision making in fisheries management, sustainable development of our oceans, and marine conservation plans and policies. OTN's international scale also affords our province the opportunity to impact social wellbeing by making important contributions to UN Sustainable Development goals such as;

- decent work and economic growth;
- investments in industry,

- innovation and infrastructure;
- climate action; and
- conservation of life below water.

Finally, OTN has partnered with local First Nations communities including Unama'ki Institute of Natural Resources (UINR) and the Mi'kmaw Conservation Group (MCG) to support strategic planning for the Network. OTN envisions this partnership as having direct social and economic benefits to First Nations stakeholders through tracking culturally significant species in relation to environmental changes.

Through funding infrastructure needed for OTN to succeed, Research Nova Scotia is driving research activity that advances knowledge and builds capacity to conduct and use research in Nova Scotia, which in turn contributes to a healthy local economy. By facilitating local cross-sector collaborations, OTN is supporting an evidence-informed and collaborative approach to identifying challenges, priorities and ultimately solutions to issues that are relevant to Nova Scotia and Canada and which have an international impact.

Project: Advanced Coastal Mapping to Support Hydrodynamic Modelling
Making an Impact by Informing Decision-making

Principal Investigator: Tim Webster

Institution: OERA / NSCC

RNS funding source: RNS Trust

RNS funding contribution: \$40,000

Leveraged funding: \$25,707,089

In-kind contributions: \$5,300

Sector: Coastal management

Number of jobs supported: 6

Number of training opportunities: 4

Partners: Canadian Association of Petroleum Producers, Eastern Canada Response Corporation

The Atlantic coast is made up of a variety of shorelines that may be vulnerable to contamination in the event of an offshore oil spill. Variable currents, changing water levels, shoals, and exposed conditions make effective spill response difficult for tidal inlets and presents risks to the health and safety of first responders. In Phase I, NSCC's Applied Geomatics Research Group collaborated with Eastern Canada Response Corporation (ECRC) to investigate how high-resolution imagery, topo-bathymetric LIDAR, and hydrodynamic modelling could be used to improve spill response planning and reaction in near coastal environments. The NSCC has successfully completed the first year of this two-year project. Dr. Webster presented results ahead of schedule and demonstrated its potential application as a spill response tool to his industry partners.

Funding from the RNS Trust was used to leverage contributions from industry partners (BP and Shell) for an expanded Phase II project. Building on Phase I work, the second phase further tested the applicability of LIDAR and

hydrodynamic modelling as a predictive tool for oil spill response by examining a much larger area with a more complex shoreline on Nova Scotia's south shore.

Impact

The results will allow ECRC to more effectively contain and recover oil in the near shore marine environment, before it makes landfall. This in turn results in cost savings while reducing health and safety risks. The Advanced Coastal Mapping project demonstrates Research Nova Scotia's investment in research that influences decisions across multiple sectors affecting the wellbeing of Nova Scotians, and impacting the UN Sustainable Development Goals including:

- responsible consumption and production;
- climate action;
- life on land and below water; and
- sustainable cities and communities.

Research results from this project inform decision-making in industry, research, and government sectors.

Industry: The project provided proof-of-concept evidence that subsea mapping combined with hydrodynamic modelling can be used to predict the behavior of a near shore oil spill, allowing for more effective spill clean-up. Such evidence is useful for informing clean-up of oil spills by enabling improved oil spill planning and spill response in the near coastal environment. The project provided rich knowledge by providing both detailed evidence on near shore elevation and aquatic and terrestrial vegetation. This evidence has been used by industry partners to predict where spill response material should be pre-positioned to minimize response time and maximize recovery potential.

Research: Results of the coastal mapping project are also useful for advancing and informing research decisions. While gathering data on terrestrial vegetation was not the intention of the study, the data produced has potential to support research programs related to coastal land environments in addition to aquatic environments. Results of this study also indicate that contaminants do not enter

sensitive coastal inlets unless they are released very close to the mouth of the inlet despite the large currents observed in the inlet channel. There is potential to invest further in understanding this phenomenon thereby advancing predictive knowledge related to spill response.

Government: Research findings can be further used to meet knowledge needs of multiple levels of government to inform decisions on aspects of oil spill planning and response related to resource allocation, regulation, policy, and intervention programs.

This project has also produced evidence that can influence decisions related to several determinants of health including environmental determinants, determinants related to living conditions for residents in coastal communities, and determinants associated with working conditions for oil spill responders. Finally, by initiating collaborations and opportunities to use technology to identify and document historical aspects of Nova Scotia's First Nations this project has contributed to determinants of health related to social and cultural wellbeing and thereby our province's social prosperity.

Project: Accelerating the Discovery of New Antibiotics to Combat Drug-resistant Human Pathogens

Making an Impact by Building Research Capacity and Leveraging Research Infrastructure

Principal Investigator: Clarissa Sit

Institution: Saint Mary's University

RNS funding source: NSHRF Legacy Establishment Grant

RNS funding contribution: \$150,000

Sector: Health

Number of jobs supported: 3

Number of training opportunities: 3

Amount funded from other sources: Salary support for undergraduate, and graduate supports from SMU Faculty of Graduate Studies (\$4,000) and a Teaching Assistantship (\$4,000).

Antibiotic-resistant bacteria pose a major threat to human health globally. In Nova Scotia, two antibiotic-resistant strains that can be transmitted between patients are present in our local hospitals. These two strains are known as methicillin-resistant *Staphylococcus aureus*, or MRSA, and *Clostridium difficile*, or C. diff. MRSA can enter the bloodstream via wounds and incisions, leading to a dangerous systemic infection, and C. diff can cause severe diarrhea and dehydration through a series of recurring gut infections. In news media, these bacteria are commonly referred to as “hospital superbugs.”

The transmission of these bacteria is of such concern that the Nova Scotia Health Authority actively tracks the healthcare-associated infections (HAIs) caused by these two pathogens. Rates of HAIs have swung dramatically in our hospitals since 2013 and have been reported to rise as high as 8.62 new cases per 10,000 patient days, a rate significantly higher than the Canadian benchmark of 5.10. Of

great concern is that nearly every HAI-causing bacterium or fungus has become more difficult to treat, highlighting the urgency for this research to support a healthy population.

The primary objective of this research is to accelerate the discovery of new antibiotics to treat MRSA and C. diff infections, as well as to target multidrug-resistant bacteria and fungi in general. Ultimately, the goal is to contribute to improving the healthcare of Nova Scotians by developing better treatments for infections from hospital superbugs.

Impact

As the primary funder of this project, RNS is supporting a healthy population and strengthened health-care system in Nova Scotia, while building research capacity and leveraging investments in research infrastructure from national funders.

This project focuses on building capacity in Nova Scotia for a robust and sustainable program of research on this globally relevant issue. The project lead is teaching trainees to use high-resolution mass spectrometry to find new and promising ways of treating antibiotic resistant superbugs. In so doing, this project contributes to ensuring that prior investments in research infrastructure (i.e. a mass spectrometer jointly funded by CFI and the RNS Trust in 2017) will fuel future research endeavours and optimise returns on investment

With its focus on capacity building, the research project promotes trainee scientific communication, and skills in directing research. One trainee on the project won two regional student awards this past year.

By funding research that ensures the continued use of innovative technology, RNS is leveraging national investments to build capacity and contribute to a sustainable research environment in Nova Scotia. RNS is also impacting local research capacity, which is essential for advancing knowledge, making methodological advances, and the cross-fertilization of ideas. These are essential components for research excellence and continued advancement of a sustainable local research ecosystem. Building capacity also provides a strong knowledge

base that allows for existing resources to be used to catalyze research for potential new discoveries. For example, the results of this project hold great promise for informing health industry decisions related to the development of new drug products and for addressing challenges related to infections acquired in health-care environments. Finally, the results of this project will be used as the basis for applying to external funding sources such as the Canadian Institutes of Health Research or the Bill and Melinda Gates Foundation, thereby attracting outside funding to the province and contributing to economic growth in the research sector.

Projects Approved by the Corporation

Over the last six months, RNS supported several new research projects through its legacy programs. The research and capacity building programs of the former Nova Scotia Health Research Foundation were offered in 2019 and the final round of projects approved by the Research Nova Scotia Trust were awarded in April.

From 1 April 2019 to 30 September 2019, the following commitments were made:

Program	Type	# Funded	Total Investment
RNS Trust	Projects approved in late March but not funded until April	10	\$1,688,588.00
Establishment (Health)	NSHRF Legacy	11	\$1,623,319.66
Developmental / Innovative (Health)	NSHRF Legacy	12	\$179,040.00
		33	\$3,490,947.66

Appendix 1 details each project approved by the Corporation during the reporting period, including the following information on each research project:

1. name of the lead applicant,
2. name of the lead institution or organization,
3. name of the project,
4. amount of funding approved,
5. research sector,
6. estimated number of jobs in Nova Scotia that will be supported by the funding awarded to the project,

7. estimated number of training opportunities for students and others in Nova Scotia that will be supported by the funding awarded to the project,
8. information about any funding that the project received from other sources, including the following:
 - the name of each source,
 - the amount received from each source and whether it was in the form of cash or an in-kind contribution,
 - details of any in-kind contribution.

In addition, RNS invested a total of \$702,500 in future researchers through its Scotia Scholars^{OM} Awards program. Scotia Scholars^{OM} supports trainees at the undergraduate, Masters and PhD levels to work on a specific research project with faculty mentors. Awards range from \$5,000 to \$47,500 and the funding term can run from one to four years.

As of September 30, funds were allocated to 36 students at Acadia University, Dalhousie University, Mount Saint Vincent University and Saint Mary's University for Masters and/or Doctoral level awards. An Undergraduate Scotia Scholars^{OM} competition is taking place at Acadia University, Cape Breton University, Mount Saint Vincent University, and Saint Francis Xavier University in Fall 2019.

Financial Forecast

The following section includes the following:

1. the current balance sheet for the Corporation, and the financial position of the Research Opportunities Fund. This latter table provides the current balance in the Fund and the amount anticipated to be paid from the Fund over the next 6 months;
2. the amount spent on operations from April to September 2019, and the amount anticipated to be spent on operations over the next 6 months.

Balance Sheet for the Research Nova Scotia Corporation
For the period ending September 30, 2019

	Sep 30, 2019
ASSETS	
Current Assets	
Cash and Cash equivalents	\$ 35,267,790
Accounts Receivable	\$ 5,143,697
Prepays	\$ 2,798
Total Current Assets	\$ 40,414,285
Fixed Assets	
Capital Assets	
Computer Equipment	\$ 26,132
Office Equipment	\$ 2,844
Leasehold Improvements	\$ -
Fixtures and Furniture	\$ 9,485
GMS	\$ 33,255
Total Capital Assets	\$ 71,715
Other Assets	
Investments Fair Market Value (adj)	\$ (17,289)
Accrued Interest Receivable	\$ 2,895
Restricted Fund	\$ 5,332,772
Total Other Assets	\$ 5,318,378
TOTAL ASSETS	\$ 45,804,378
LIABILITIES & EQUITY	
Liabilities	
Current Liabilities	
Grants Payable	\$ 18,057,990
Accounts Payable	\$ 5,924
Other Current Liabilities	
Deferred Revenue	\$ 23,978,287
Accrued Liabilities	\$ 23,235
GST/HST Payable	\$ (55,492)
Total Current Liabilities	\$ 42,009,943
Total Liabilities	\$ 42,009,943
Equity	
Net Income	\$ 3,794,435
Total Equity	\$ 3,794,435
TOTAL LIABILITIES & EQUITY	\$ 45,804,378

Research Opportunities Fund Statement of Financial Position Fiscal 2019-2020

	Research Opportunities Fund	Projections	TOTAL
	Apr - Sep 19	Oct-Mar 19	2019-2019
Income			
Trust Funds	\$ 26,132,489	\$ -	\$ 26,132,489
Total Income	\$ 26,132,489	\$ -	\$ 26,132,489
Expense			
Research Funding (ROF)	\$ 2,402,213	\$ 5,408,802	\$ 7,811,015
Total Expense	\$ 2,402,213	\$ 5,408,802	\$ 7,811,015
Net Income	\$ 23,730,276	\$ (5,408,802)	\$ 18,321,474

Statement of Financial Position
as of September 30, 2019

	Budget	Total Actuals	Projections	Total Actuals & projections	% of Total Budget
	FY2019-2020	Apr - Sep 19	Oct-Mar 20	Apr '19-Mar '20	%
Income					
ACOA Grant	\$ 3,000,000	\$ -	\$ -	\$ -	0%
LAE Grant	\$ 4,428,000	\$ 2,253,000	\$ 2,175,000	\$ 4,428,000	100%
DHW Grant	\$ 4,621,000	\$ 2,310,500	\$ 2,310,500	\$ 4,621,000	100%
Trust Funds	\$ 30,814,000	\$ 31,060,533	\$ -	\$ 31,060,533	101%
Business Unit	\$ 1,400,000	\$ 2,670,252	\$ 143,000	\$ 2,813,252	201%
Interest Income	\$ 525,000	\$ 331,509	\$ 380,000	\$ 711,509	136%
Total Income	\$ 44,788,000	\$ 38,625,794	\$ 5,008,500	\$ 43,634,294	97%
Expenses					
Grants and Awards					
* Research Funding	\$ 34,747,000	\$ 5,840,429	\$ 5,408,802	\$ 11,249,231	32%
* Health Innovation	\$ 3,000,000	\$ -	\$ -	\$ -	0%
* Health Research & Student Award	\$ 2,821,453	\$ 2,520,157	\$ 301,296	\$ 2,821,453	100%
Total Grants and Awards	\$ 40,568,453	\$ 8,360,586	\$ 5,710,098	\$ 14,070,684	35%
Programs and Services					
* Business Unit	\$ 1,099,000	\$ 2,067,724	\$ 52,000	\$ 2,119,724	193%
* Knowledge Program	\$ 224,000	\$ 11,089	\$ 212,911	\$ 224,000	100%
* Health Research Programs	\$ 201,000	\$ 1,451	\$ 199,550	\$ 201,001	100%
Total Programs and Services	\$ 1,524,000	\$ 2,080,263	\$ 464,461	\$ 2,544,724	167%
Overhead					
* Administration	\$ 561,850	\$ 146,845	\$ 415,005	\$ 561,850	100%
* Salaries and Benefits	\$ 1,538,697	\$ 522,023	\$ 561,842	\$ 1,083,865	70%
* Communications	\$ 62,500	\$ 6,616	\$ 55,884	\$ 62,500	100%
* Information Technology	\$ 78,500	\$ 25,217	\$ 35,783	\$ 61,000	78%
Total Overhead	\$ 2,241,547	\$ 700,700	\$ 1,012,630	\$ 1,706,715	76%
Total Expenses	\$ 44,334,000	\$ 11,134,934	\$ 7,187,189	\$ 18,322,123	41%
				\$ -	0%
Net Ordinary Income	\$ 454,000	\$ 27,484,245	\$ (2,178,689)	\$ 25,305,555	
Net Other Income	\$ -	\$ 40,466	\$ -	\$ 40,466	
				\$ -	
Net Income	\$ 454,000	\$ 27,524,711	\$ (2,178,689)	\$ 25,346,021	

* Multi-year grant which will be paid in FYs 2021 and 2022

Proposed Budget Next Fiscal Year

The RNS Corporation is in the process of strategic planning, from which an operating plan and budget will be developed.

The financial forecast for 2019/20 anticipates a positive balance of \$25.346 million at year end, the vast majority of which is restricted for use as research funding. We further assume the continuation of the LAE and DHW grants in 2020/21, at \$2.175 million and \$4.621 million, respectively, which will result in a total operating budget of approximately \$32.142 million. Discussions have not concluded on the proportion of those two grants to be devoted to the Fund, to other forms of research support, and to cover Corporation operating costs.

Based on engagement with partners and the greater research community, there are multiple research and infrastructure funding opportunities on the horizon, and RNS expects that a significant portion of available funds will be committed during the next fiscal year. Most will be long-term commitments, with expenditures occurring over multiple years. The Corporation expects to pay out approximately \$3 million for existing funding commitments in FY 2021, in addition to new funding decisions.

Apart from unspent funds, RNS depends on an annual allocation from the LAE and DHW budgets, and from any additional one-time contributions from the fiscal framework to the Fund. To stabilize the planning and budgeting process, discussions are underway to formalize the annual departmental (LAE and DHW) contributions. In the future, RNS will engage with the provincial government on introducing greater certainty on the Fund's budgeting process.

Operating Plan (3-Year)

As expected for a new organization, in Year 1 (2019/20), RNS is focused on developing a strategy to support, organize, and coordinate the funding of research in Nova Scotia, and reviewing all the legacy activities of the previous organizations. In Year 2 (2020/21), RNS will begin strategy implementation, with the introduction of new and updated programs and opportunities. Year 3

(2021/22) will conclude the start-up phase, and we will use lessons learned during years 1 and 2 to adjust operations as needed for continued operational improvement.

The Corporation anticipates activities in five broad areas:

1. Funding research: the granting of money from the Fund to support research in Nova Scotia, including matching funds for federal research and infrastructure grants, scholarships to qualified student researchers, grants to early career researchers, etc.
2. Services: the provision of services for which RNS is best placed to deliver, and which furthers the objectives of the RNS Corporation Act. Most or all such services would be provided fee-for-service on a revenue-neutral to moderately positive basis. Current examples include provision of evaluation services, and contracted grant management.
3. Convening: the use of funds to support activities that increase the research opportunities in Nova Scotia, bringing together and linking organizations, defining issues, and promoting a strategic approach. For example, working with a federal funding council on new research funding opportunities targeted to priority research areas.
4. Support: providing support to third-party organizations for services or activities that further the objectives of the RNS Corporation Act. A current example is the support provided to the Integrated Health Research and Innovation Strategy (IHRIS).
5. Overhead: funds required to support the RNS Corporation itself (salaries, O&M, capital assets). Because of the nature of the expenditure type, overhead is a relatively fixed cost of approximately \$2.2 million per year.

At this time, the Corporation has considerable flexibility in allocating between these five areas, although most expenditures will continue to be in the funding areas. The Board will be presented with a recommended allocation in due course.

Capital Plan (5-Year)

The Corporation does not currently have a capital plan

APPENDIX 1: Funding Applications Approved by RNS

April 1 - September 30, 2019

							Other Sources of Funding			
Project Title	Principal Investigator	Institution/ Organization	Amount Funded	Sector	# of Jobs Supported	# of Training Opportunities	Partners	Cash	In-Kind	Details re: in-Kind
Health - Establishment: NSHRF legacy program. Funding up to 3 years and up to \$50,000 per year										
Indigenous Youth-Driven Participatory Action Health Research: Re-Visioning Indigenous Youth Health and Wellbeing in the Halifax Regional Municipality	Dr. Amy Bombay	Dalhousie University	150,000.00	Department of Psychiatry	12	3				
Regulation of natural killer cells by mitochondrial damage-associated molecular patterns	Dr. Jeanette Boudreau	Dalhousie University	150,000.00	Microbiology & Immunology, Pathology	1.5	1				
Defining the role of peroxisomes as new potential therapeutic target in Inflammatory Bowel Disease.	Dr. Francesca Di Cara	Dalhousie University	149,256.20	Department of Microbiology and Immunology	0.5					
Ion-channel TRPM2-mediated oxidative-stress tolerance in triple-negative breast cancer	Dr. Yassine El Hiani	Dalhousie University	150,000.00	Department of Physiology and Biophysics	1.5					
Validation of a comprehensive assessment of media use by preschool-aged children in Nova Scotia	Professor Caroline Fitzpatrick	Université Sainte-Anne	149,755.22	Faculty of Arts and Sciences	3.5	10				
The neural and behavioural effects of mouse models of bacterial and viral prenatal infection.□	Dr. Tamara Franklin	Dalhousie University	130,000.00	Department of Psychology and Neuroscience	2					
PC-Patient Empowerment Program: A randomized intervention for reducing mental health issues among men undergoing curative prostate cancer treatment.	Dr. Gabriela Ilie	Dalhousie University	145,929.28	Department of Community Health and Epidemiology	5		Dalhousie Medical School Foundation			
Translating clinical biomechanics and rehabilitation Research to Improve Arthritis Guidelines and Education (TRIAGE)	Ms. Rebecca Moyer	Dalhousie University	149,994.00	School of Physiotherapy	1.2					
Intraoperative margin assessment in head and neck cancer surgery	Dr. Matthew Rigby	Dalhousie University	150,000.00	Department of Surgery – Division of Otolaryngology Head and Neck Surgery	1.5					
Predicting Early Progressive Kidney Disease in Type 1 Diabetes by Clinical and Epigenetic Signatures	Dr. Ferhan Siddiqi	Dalhousie University	148,624.80	Department of Medicine	3.2					
PLEY-School: Evaluation of an early-elementary school-based outdoor loose parts intervention for its impact on the health of children	Dr. Michelle Stone	Dalhousie University	149,760.16	Division of Kinesiology, School of Health and Human Performance	4					

Project Title	Principal Investigator	Institution/ Organization	Amount Funded	Sector	# of Jobs Supported	# of Training Opportunities	Partners	Cash	In-Kind	Details re: in-Kind
Health - Developmental / Innovative: NSHRF legacy program. Funding for 1 year, up to \$15,000										
Digital Point-of-care Clinical Documentation in a Busy Emergency Department: An AI based Dictaphone using Intelligent Speech Recognition	Dr. Syed Sibte Raza Abidi	Dalhousie University	15,000.00	Faculty of Computer Science	0.5					
Developing an evaluation framework for prescription monitoring programs in Canada	Dr. Mark Asbridge	Dalhousie University	14,200.00	Department of Community Health and Epidemiology						
Development and validation of a three-dimensional culture system for modeling the prostate cancer microenvironment	Dr. John Frampton	Dalhousie University	14,986.00	School of Biomedical Engineering	0.25					
The impact of whole body vibrations on the developing embryo	Dr. Tamara Franz Odendaal	Mount Saint Vincent University	15,000.00	Department of Biology	1	1				
Examining victims' needs in the forensic mental health context	Dr. Jamie Livingston	Saint Mary's University	15,000.00	Department of Criminology	0.25					
Paging Dr. Google: Availability and Reliability of Online Evidence-Based Treatment Information about Attention Deficit Hyperactivity Disorder.	Dr. Sara King	Mount Saint Vincent University	15,000.00	Faculty of Education	0.5					
Establishing a current state assessment of healthy eating practices across early learning environments: A foundation to mobilize knowledge-to-action	Dr. Jesse-Lee Mclsaac	Mount Saint Vincent University	14,854.00	Faculty of Education and Department of Child and Youth Study	1.5					
Current Management and Health Care Quality for Patients with Knee and Hip Osteoarthritis	Ms. Rebecca Moyer	Dalhousie University	15,000.00	School of Physiotherapy	0.2					
Uncovering the mechanisms by which aerobic fitness mitigates stress-induced cognitive decline	Dr. Heather Neyedli	Dalhousie University	15,000.00	School of Health and Human Performance	2.46					
Developing on-cell nuclear magnetic resonance (NMR) spectroscopy to characterize ligand-receptor interactions	Dr. Jan Rainey	Dalhousie University	15,000.00	Department of Biochemistry & Molecular Biology	0.5					
Chemerin as a Mediator of the Obesity-Breast Cancer Linkage	Dr. Christopher Sinal	Dalhousie University	15,000.00	Department of Pharmacology	0.5					
Quantification of neuronal activity and transcription to identify uncoupled neuronal clusters to determine etiology of neuropsychiatric disorders	Dr. Deniz Top	Dalhousie University	15,000.00	Department of Pediatrics	0.35					

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RNS Trust: approved by the RNS Trustee prior to March 31, 2019 but implemented after 1 April 2019.										
Community Active Sport Training and Learning (CoASTaL) Lab	Dr. Bettina Callary	Cape Breton University	\$ 48,908	Experiential Studies in Community and Sport		75	CBU, CFI	\$ 73,364		
Synthetic Influenza Vaccine Infrastructure	Dr. David Kelvin	Dalhousie University	\$ 250,000	Health	4	8	CFI, Dalhousie, Fisher Scientific, Qiugen and Zeiss	\$ 301,037	\$ 87,021	For the in-kind contributions from suppliers, written quotes were received and are on file. The supplier in-kind will be confirmed/secured at the time of purchase.
Functional characterization of RNA granules in cellular stress responses and innate immunity	Dr. Denys Khaperskyy	Dalhousie University	\$ 275,000	Health	8	10	CFI, Amnis, Bio-Rad, Dalhousie Medical Research Foundation, GE, MilliporeSigma, VWR	\$ 425,000	\$ 160,171	For the in-kind contributions from suppliers, written quotes were received and are on file. The supplier in-kind will be confirmed/secured at the time of purchase.
Epigenetic Regulation of Learning and Memory	Dr. Jamie Kramer	Dalhousie University	\$ 160,000	Physiology and Pharmacology	1	8	CFI, Agilent, Apple, Bio-Rad, Computata Systems, Mandel, Ontario Research Fund*, VWR, Zeiss	\$ 160,000	\$ 96,549	Vendor in-kind was provided at purchase time.
Using a Co-learning Approach to Create Collaborative Community-led Solutions to Improve Indigenous Children's Ear, Oral and Mental Wellness for Healthy Development	Dr. Margot Latimer	Dalhousie University	\$ 50,123	Health	1.5	1.5	CIHR, IWK Health Centre Project Grant	\$ 124,877		
Social Interaction and Youth Mental Health	Dr. Sandra Meier	Dalhousie University	\$ 107,021	Health	3	8	CFI, Dalhousie, Noldus, SR Research Ltd.	\$ 180,323	\$ 26,004	For the in-kind contributions from suppliers, written quotes were received and are on file. The supplier in-kind will be confirmed/secured at the time of purchase.
Persuasive and Adaptive Systems Infrastructure	Dr. Rita Orji	Dalhousie University	\$ 139,788	Computer Science	15	17	CFI, ANC, Aspen	\$ 139,788	\$ 277,309	For the in-kind contributions from suppliers, written quotes were received and are on file. The supplier in-kind will be confirmed/secured at the time of purchase.

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Mobile and Software-defined Network Infrastructure	Dr. Qiang Ye	Dalhousie University	\$ 89,788	Computer Science	12	48	CFI, Aspen Systems Inc., Cisco, Dell	\$ 89,788	\$ 85,828	<p>For the in-kind contributions from suppliers, written quotes were received and are on file.</p> <p>The supplier in-kind will be confirmed/secured at the time of purchase.</p>
Pilot scale study of potable water using ultrafiltration technology in the Shelburne African Nova Scotian community	Dr. Eitenne Mfoumou	NSCC	\$ 42,000	Engineering	3	7	SSHRC, NSCC, Rural Water Watch, SEED, Acadia University	\$ 119,125	\$ 25,300	<p>NSCC will provide in-kind contribution of \$12,000 with the use of the Advanced Manufacturing Lab and the Water Resources facilities.</p> <p>RWW will provide in-kind assistance in environmental/community planning and sustainability as it relates to mineral resource development, valued \$4,500.</p> <p>Acadia University will provide in-kind assistance valued \$4,800 (80 hours at \$60/hr) through the participation of Dr. Martin Tango in the project, working on the community's training curriculum development.</p> <p>SEED will provide ongoing assistance with community outreach over the course of the project; the dollar value of their time in the form of in-kind contribution is valued \$4,000 (200 hours @ \$20/hour).</p>

Project Title	Principal Investigator	Institution/ Organization	Amount Funded	Sector	# of Jobs Supported	# of Training Opportunities	Partners	Cash	In-Kind	Details re: in-Kind
Validation and Integration of Genomics Solutions for Offshore Oil Exploration in Nova Scotia and Beyond	Dr. Todd Ventura	Saint Mary's University	\$ 525,960	Oceans	1	8	Genome Canada, NSDoEM, OERA, SMU, National Resources Canada/GSC, Mitacs	\$ 2,078,916	\$ 3,875,039	NSDoEM - Funding for offshore data acquisition, sediment sampling and three vessel/crew hires (\$2,275,000); geochemical analysis (\$575,450); and integration, analysis and ArcGIS mapping (\$55,544). OERA - In-kind funding is for geochemical analysis, integration, analysis, ArcGIS mapping and dissemination. SMU - Development of lipidomic bioassays. Natural Resource Canada/GSC - Core support crew, scientists, 2018 vessel time and AUV. Mitacs - Support for two Mitacs interns
Totals			\$ 3,490,948		92.41	205.5		\$ 3,692,218	\$ 4,633,221	