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Canadian
Coast Guard

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Canadian Coast Guard
Safety First, Service Always

INVESTMENT PLAN 2010/11–2014/15



Canada

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MESSAGE FROM THE COMMISSIONER

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It is an honour to present this, the first Integrated Investment Plan (IIP) of the Canadian Coast Guard (CCG), representing a new approach to investment planning within the Agency. The CCG has been working to strengthen its strategic and long-term governance approach for investment planning. My predecessor, George Da Pont, led this great organization for close to five years. Among his many achievements before his departure in late June was to establish the IIP; I wholeheartedly support the course this initial plan sets out for the organization.

The IIP is aligned with federal government direction calling on departments and agencies to ensure that their investment decisions reflect the highest priorities, contribute to strategic decision making and governance, and ensure value for Canadians.

Among our key initiatives, we have revised the Fleet Renewal Plan and identified the needs and priorities for the CCG Fleet over a 30-year horizon, recognizing that it is the primary platform for CCG program delivery. To ensure successful delivery on this important initiative,

we have put in place an organization dedicated to delivering these complex vessel procurement projects. On a more immediate horizon, the CCG Business Plan 2010-2013 identifies the operational priorities and objectives towards which the CCG will strive over the next three years. One such priority is to gain a better understanding of the condition of our shore-based assets.

This Integrated Investment Plan builds on, and is a companion to, these planning initiatives. It recognizes that to support the delivery of programs to Canadians and meet the CCG's national and international commitments, investment in vessels and shore-based infrastructure must be targeted and strategic.

Our planned investments are reflective of the priorities identified in the Business Plan; however, under the investment planning lens, our clients' needs are considered over a longer term horizon. Without sustained investment in the Agency's asset base, our ability to deliver on our mandate erodes over time.

As we move forward with our planned investments, CCG needs to carefully consider the value of maintaining old assets alongside new ones. We have struggled with our ability to divest old technology, which reduces the benefits we realize from new technology. Nevertheless, the investments proposed in this plan are carefully chosen to maximize capabilities within available resources.

Integrated investment planning is a critical activity that ensures our ongoing ability to deliver the highest quality of service to Canadians. We look forward to building on the lessons learned from this first iteration of the Integrated Investment Plan to ensure effective allocation of our resources to the highest priorities of the Canadian Coast Guard and its clients.

Marc Grégoire
Commissioner, Canadian Coast Guard

INTRODUCTION

The Canadian Coast Guard's (CCG) first Integrated Investment Plan (IIP) lays out the Agency's planned investments over the 2010/11-2014/15 timeframe.

The investment in our Asset Base set out in this plan is targeted to address the most urgent program requirements of the Agency, which will have a direct impact on the quality and extent of CCG service delivery. For this planning cycle, CCG has identified over \$1.7 billion in investments with multiple funding sources in support of continued program delivery.

This is the first plan which demonstrates the results of a paradigm shift within CCG, where integrated planning now occurs in various areas of the organization. We have moved the focus of our planning process from assets to client and program requirements. By focusing on these outward facing requirements, we are better positioned to consider alternatives to asset ownership; alternatives such as acquiring services. While this new investment approach ensures that funding is directed to the highest priorities, the current asset reinvestment rate is not high enough to ensure that CCG's critical assets can be replaced at the end of their operational life. The result of insufficient recapitalization is the fact that with each year that passes, the risk associated with our asset base increases.

The CCG Integrated Investment Plan is intended to be a valuable management tool, against which performance can be measured across CCG. The CCG plan is an expanded version of the Canadian Coast Guard material found in the Investment Plan for Fisheries and Oceans Canada (DFO) that is approved by Treasury Board every three years.

The CCG Integrated Investment Plan is divided into four sections:

- 1) **Investment Planning Context** sets the stage for our proposed investment decisions by outlining:
 - Who We Are and What We Do
 - The Assets We Use to Support Our Programs
 - Our Investment Requirements
 - Investment Funding available to CCG
 - How We Make Investment Decisions

- 2) **Investment Decisions** specifies the investment vision of the Canadian Coast Guard for the next five years and beyond by describing:
 - How We Will Invest Our Resources: 2010/11 to 2014/15
 - How We Will Address Risks Related to the IIP
 - How We Plan to Measure Our Performance Relative to the IIP
 - How We Will Invest Our Resources: Looking Beyond 2014/15

- 3) **Investment Details** provides a full list of our planned investments over the next five years.

- 4) **Conclusion** assesses the outcomes of this first planning cycle using CCG's Integrated Investment Planning approach.

In addition, there are a number of appendices that contain detailed information to support a full understanding of the decisions included in the plan.



Photo: D. Porter

1.1 WHO WE ARE AND WHAT WE DO

The Canadian Coast Guard (CCG) has a direct and important impact on the lives of Canadians. We help ensure the safe use of Canadian waterways, and we facilitate the smooth functioning of the Canadian economy.

A nationally recognized symbol of safety, CCG serves on three oceans, the St. Lawrence River and Great Lakes, and other major waterways. Often CCG is the only federal presence in many remote, Aboriginal, and Arctic communities. Operating along the longest coastline in the world and in some of its most difficult weather conditions, CCG operates 24 hours a day, every day of the year.

CCG addresses its mandate through the delivery of complementary programs that achieve results for Canadians. CCG's programs are:

Aids to Navigation

Marine Communications and Traffic Rescue

Search and Rescue

Maritime Security

Lifecycle Asset Management Services

Waterways Management

Icebreaking

Environmental Response

Fleet Operational Readiness

Canadian Coast Guard College

A full description of these programs can be found on the CCG website at www.ccg-gcc.gc.ca and in the CCG Business Plan.

We serve clients in all sectors of the Canadian economy: the general public, commercial shippers, ferry operators, fishers, recreational boaters, coastal communities, port authorities and other government departments and agencies. For example:

- We provide services related to aids to navigation, icebreaking, search and rescue, pollution response, and marine communications and traffic management to commercial fishers, commercial shippers, ports, and recreational boaters.
- We respond to federal maritime priorities and natural or man-made emergencies. We provide support for various activities mandated under the Federal Emergency Response Plan and are involved both nationally and internationally in planning and exercises related to environmental response and search and rescue.
- We support DFO programs by providing vessels and maritime professionals to support science activities and to help manage and protect fisheries resources. Internal clients include DFO Fisheries Management, DFO Oceans Management, and DFO Science.
- We are a visible symbol of federal presence and provide the capacity to assert Canadian sovereignty in the Arctic. We provide essential icebreaking services that enable shipping to move safely and efficiently through ice covered waters in the Arctic throughout the summer, and deliver food, cargo, and fuel to remote sites where commercial services are unavailable.
- We support the non-military activities of other government departments and agencies by providing vessels, aircraft, marine expertise, and other maritime services, including support to maritime security activities. Clients for these services include the Department of National Defence, the Department of Foreign Affairs and International Trade, Environment Canada, Health Canada, Natural Resources Canada, the Natural Sciences and Engineering Research

Council of Canada, Public Safety Canada, the Royal Canadian Mounted Police, the Canada Border Services Agency, and Transport Canada.

- A portion of CCG's work has an international dimension. Because our maritime interests are shared with other countries, we work with related organizations at the international level to advance our common objectives. We participate in several international fora, providing expert advice on coast guard operational issues, and sharing best practices. We also work closely with the U.S. Coast Guard and other national Coast Guards, to coordinate activities that cross international boundaries, such as Search and Rescue.

1.2 THE ASSETS WE USE TO SUPPORT OUR PROGRAMS

In order to ensure the delivery of essential services, CCG manages a substantial number of physical and technical assets including a fleet of small, and large vessels; helicopters; land assets and other water-based assets, such as fixed and floating aids to navigation and communication towers; a fleet of vehicles, land-based cranes and forklifts; program-specific information systems; and assets and facilities used in support of CCG's training needs at the Coast Guard College. Investment in CCG's asset base is directly related to the overarching requirement to maintain effective capacity to deliver core Coast Guard programs and services, driven by:

- The need to adjust to economic, demographic and climate factors (e.g. increased shipping traffic in core areas, increased activity in Canada's Arctic).
- The need to take advantage of technological innovation (e.g. migration to electronic aids to navigation).

1.2.1 DESCRIPTION

The CCG asset base is made up of 9,617 individual assets with values greater than \$10,000. The assets can be divided into two broad categories:

- Program Infrastructure Assets – CCG manages \$1.6 billion in shore-based assets in support of the

Aids to Navigation, Marine Communication and Traffic Services and Life-Cycle Asset Management programs, as well as the Coast Guard College. These assets consist of land and non-vessel water based assets, fixed and floating aids to navigation, communication towers, cranes, vehicles and program specific systems in addition to the facilities used in support of training needs of the Agency.

- Fleet Assets – The CCG Fleet consists of 116 vessels, 989 small craft and 23 helicopters. These assets are used to support the programs and commitments of the Government of Canada through the CCG, the DFO and through other Departments.

CCG's Program Infrastructure includes facilities that are used every day to keep mariners safe in Canadian waters, including: fixed aids to navigation, foghorns, communication centres, Differential Global Positioning System (DGPS) markers and navigation buoys.

CCG's Fleet includes a wide range of vessels, varying in size from heavy icebreakers that operate in Canada's Arctic and keep the St. Lawrence Waterway open year-round to shipping traffic, to small rigid-hulled inflatables that carry out rescue and patrols on inland waterways.

Program Infrastructure Assets are essential to the delivery of CCG services. They can be subdivided into the following categories:

- **Aids to Navigation (AToN):** These assets are devices or systems provided to assist mariners in determining their position and course, to warn of dangers or obstructions, or to advise them of the location of the best or preferred route. These assets include short-range fixed aids (e.g., lighted fixed aids, daybeacons, ranges, fog signals, and sectors lights), short-range floating aids (i.e., buoys) and long-range electronic aids (e.g., Differential Global Positioning Systems and Loran-C stations).
- **Waterways:** Waterways management assets include waterways used by shipping and equipment used for conducting environmental assessments, managing channel dredging, performing channel monitoring surveys, the life cycle management of channels. Also included as waterways assets are ice cover control structures and equipment related to water level/depths.
- **Marine Communication and Traffic Services (MCTS):** These assets are used by 22 centres that deliver MCTS and associated peripheral sites grouped into five regions. MCTS has management and control responsibilities for communications equipment, other equipment for surveillance and trade support, and some real property. Typical MCTS centres have equipment such as communication, messaging, broadcast, and vessel traffic systems. They also utilize Direction Finding Systems, Digital Select calling systems, and antenna systems.

- **Search and Rescue (SAR) Services and Environmental Response (ER) Services:** SAR and ER assets are used as part of CCG's services to make Canadian waters as safe and clean as possible by providing search and rescue resources and keeping the marine environment safe by monitoring and cleaning spills. The SAR assets include packages of specialized search and rescue equipment identified for various types of vessels and specialized rescue and first aid equipment for Rescue Specialists as well as specialized small craft. The ER assets include spill containment booms, skimmers, barges and other pollution control equipment.
- **Lifecycle Asset Management Services (LCAMS):** LCAMS' heavy equipment is common equipment used to support multiple programs on the shore. This includes assets such as forklifts and cranes. Investments in this category are managed by the Equipment and Other Moveable Assets (EOMA) COE.
- **Canadian Coast Guard College (CCGC):** College assets are used by the College to support all training activities for CCG personnel. These assets include, for example, simulators, small craft and ER equipment. Investments in this category are managed by the Fleet COE.

The Fleet Asset Base has four components: larger vessels, small vessels, small craft, and helicopters.

- **Large Vessels:** The large vessel fleet consists of 39 vessels. The units range from heavy-duty icebreakers to inshore multi-tasked vessels, and air cushion vehicles. The largest vessels have an operational life up to 45 years, while other vessels in this category have operational life spans approximately 25 years.
- **Small Vessels:** The small vessel fleet consists of 77 vessels which are below 33m in length (eg. 47 foot Search and Rescue lifeboats). Small vessels have an operational life expectancy of 15 to 20 years.
- **Small Craft:** CCG also operates approximately 989 small craft, which have operational life expectancies ranging from 5 to 10 years.
- **Helicopters:** CCG operates 23 rotary wing aircraft. These aircraft have an expected operational life of 25 years.

Additional details regarding CCG's asset base are included in Appendix A.



Photo: M. Mitchell, PA Region

1.3 OUR INVESTMENT REQUIREMENTS

1.3.1 CONDITION OF ASSETS

CCG has a number of significant investments in progress, particularly in the Fleet category. These investments will significantly improve the condition of the vessel fleet as new assets are delivered over this planning cycle and beyond. Since 2005, the Government has provided \$1.4 billion for up to 14 new large vessels, including a new Polar Icebreaker. These are the first significant investments in the Canadian Coast Guard's large vessel fleet in more than 20 years.

CCG's small vessel fleet has a healthier age profile due to the fact it has benefited from regular investments over time. The regular investments in the small vessel fleet are attributable to the lower cost to replace these assets.

Despite these investments, the level of investment in CCG's asset base falls below a long-term sustainable level. Investments over time have not kept pace with the aging asset base over its operational life. Our shore based

Program Infrastructure assets are particularly affected since they have not benefited from new funds to the same degree as the Fleet.

CCG's asset base has a total historical cost of just under \$2.1 billion; however, the estimated replacement cost is over \$14.0 billion (constant dollars – the cost if the assets were all replaced in 2010). The wide discrepancy between acquisition cost and replacement cost can be explained primarily by the long asset operational life of many of CCG's assets which has been assured through exceptional care and maintenance. For example, 100% of the large vessel fleet is older than 15 years, with certain vessels dating back to the 1960s. Because raw material and labour costs have changed significantly since these vessels were built, and since the technology expected to be part of modern vessels (e.g. navigation systems) has increased exponentially, the replacement cost of CCG assets has grown as shown in the following table.

Table 1: Historic Cost, Depreciated Value, Replacement Cost and Operational Life of CCG Assets

Asset Category	# of Assets	Historic Cost (\$000)	Depreciated Value (\$000)	Estimated Replacement Cost * (\$000)	Estimated Service Life (years)
Program Infrastructure					
Aids to Navigation	4,734	150,140	48,537	859,573	7 – 15
Waterways Management	18	450	69	856	12 – 30
Marine Communication and Traffic Services	1,828	149,243	58,184	495,473	10 – 25
Search and Rescue	128	5,289	2,084	7,933	10
Environmental Response	858	42,821	5,943	89,923	10
Icebreaking Services	30	2,249	81	3,935	10
Life-Cycle Asset Management	739	31,097	7,282	46,645	10 – 25
CG College	154	7,748	132	12,396	10 – 25
Fleet					
Vessels – see Tables 17 & 18	112	1,528,122	415,074	11,722,200	20 – 40
Air-Cushioned Vehicles	4	40,268	15,243	165,500	20
Helicopters	23	35,455	2,146	502,400	25
Other Assets	989	61,041	18,693	100,000	10 – 20
Total	9,617	2,053,923	573,468	14,006,834	

* Notes:

- The Estimated Replacement Cost figures are provided in “constant” dollars – the cost if the assets were all to be replaced in 2010. The actual dollars that need to be expended over CCG's planning horizon (30 years) will be higher as a result of inflation.
- The distribution of the Fleet Vessels by asset type and size can be found on Tables 17 and 18 of the appendices.

The depreciated value of CCG's asset base is only 4.1% of the estimated replacement cost. Specifics regarding the results of investments that have occurred in the previous planning cycle are described on the following pages.

1.3.2 RESULT OF PREVIOUS INVESTMENTS

1.3.2.1 Program Infrastructure Assets

CCG's shore-based Program Infrastructure has endured the deterioration of its physical condition and the technological obsolescence of its assets. To help alleviate the worsening state of its assets, in 2003, the CCG received additional funding through the National Capital Spending Plan (NCSP). The \$47.3M annual funding received through the NCSP was distributed between shore-based infrastructure assets which received \$27.3M annually, with the remaining \$20M allocated to the refurbishment of the vessel fleet. In 2007, this allocation changed to \$22.3M and \$25M respectively. The additional funding received through the NCSP enabled the CCG to begin to address the advanced state of deterioration of its shore asset base.

Since the inception of the NCSP, CCG has implemented refurbishment and replacement capital projects to bring its shore-based assets back to baseline condition.

Although the number of assets in poor condition has been reduced, there are many more assets and site deficiencies that need to be addressed.

The average age and deteriorating physical condition of the asset base will have an impact on the reliability and performance of CCG's assets. The cost to operate and maintain the asset base is continually escalating. Effective cost management is further strained by the increasing need to manage both old and new assets. Often CCG has to maintain old technologies for its clients while investing in new technologies. This means that often CCG cannot fully realize the benefits and efficiencies afforded by new technologies.

Work has been conducted to address the highest risk assets on a priority basis leading to a reduction in the risk of failure and related service disruptions, and a reduction in potential liability risks. Past investments have also focused on addressing codes and standards, health and safety issues, and ensuring due diligence is performed. Most importantly CCG has managed to ensure the continued provision of services.

Despite these investments, the CCG shore-based infrastructure continues to deteriorate. Although the number of assets in poor condition has been reduced, many more assets/sites remain to be fixed. Significant strategic investments will be required for some years to enable the CCG to move forward effectively. As a first step towards the rehabilitation of the asset base, CCG will develop a more detailed inventory of the condition of its shore based assets.

1.3.2.2 Fleet Category

In order to provide the required services to Canadians, CCG needs a highly adaptable fleet that is safe, reliable, cost effective and efficient at delivering a wide variety of programs and services, both now and in the future. The current CCG large vessel fleet, in its age and deteriorating condition, is struggling to provide existing mandated service and lacks the flexibility and capacity to adapt to evolving requirements.

From the mid-1980s until the mid-2000s there were no significant investments in the large vessel fleet. As

a result, over half the large vessel fleet has exceeded its operational life and all vessels are past the half-way point in their recommended operational life. The age and condition of the large vessel fleet has resulted in escalating maintenance costs which will continue to increase as vessels age. Over the last five years, CCG has seen a 64 percent increase in refit and maintenance costs. The reliability of the fleet has also suffered as increased breakdowns occur and mandated programs become more difficult to deliver. Over this same period, CCG vessels spent a total of 26,692 days in maintenance and refit with breakdowns accounting for 20 percent or 5,408 days. While CCG has become more proactive in scheduling maintenance and in planning refits to avoid service disruptions and potential breakdowns, long-term sustainability of the existing vessels remains a critical issue. At a certain point, no intervention can keep a vessel in operation.

The small vessel fleet has fared more positively than the large vessel fleet due to the relative affordability of small vessel investments. A major component of CCG's small vessel fleet is the 47 Foot Motor Life Boat. Since 1995, thirty-one new 47 Foot Search and Rescue Lifeboats were acquired to modernize the Coast Guard's Search and Rescue (SAR) capability. These vessels were acquired through various funding sources, including: Program Integrity; the recent Economic Action Plan (EAP), Coast Guard's own A-base funds and the Lifeboat Replacement Program.

Program Integrity, which sunset in 2004-05, provided \$47.5 million over five years to lessen the "Rust Out" of the vessel fleet. This funding was subsequently replaced by \$12 million annually in ongoing funding for the vessel fleet through the Transformational Plan, which was designed to restore the federal government's ability to deliver critical programs. More recently, \$175 million was provided to CCG under EAP, enabling improved life-cycle maintenance for existing vessels and the replacement of many small vessels.

Since the implementation of the Fleet Renewal Plan (described below in Section 2.4.2) in 2005, CCG has embarked upon a series of major vessel procurement projects to address the most urgent requirements of the fleet. The Fleet Renewal projects are ongoing and the new vessels remain to be delivered.



To respond to the deteriorating condition of the large fleet and to bridge gaps until new vessels are delivered, CCG had to conduct costly Vessel Life Extensions (VLEs) in an attempt to keep aged vessels operational and sustain program delivery. VLEs are not considered to be part of the standard vessel life-cycle management process but more of an emergency means to prolong the life of a vessel to meet program demands until a replacement can be acquired. The preferred life-cycle management practice is to conduct Mid-Life Modernizations (MLMs) on vessels half-way through their operational lifecycle. In future, through the implementation of the Fleet Renewal Plan and of the investments proposed in this Investment Plan, CCG hopes to minimize future VLEs and return to MLMs in order to ensure long-term cost-effective life-cycle management of the Fleet.

As part of its regular business planning CCG is updating its Fleet Renewal Plan to cover the period from 2010 to 2040 in order to provide a solid foundation for building the Government of Canada's civilian fleet of the future, which must be multi-capable, adaptable and sustainable to meet the projected operational readiness and service delivery demands of clients and Canadians in general.

1.4 INVESTMENT FUNDING AVAILABLE TO CCG

CCG receives its investment funding through a variety of sources. For this planning cycle, the funding sources include:

- **A-Base Major Capital Funding** – CCG is provided with an annual Major Capital (Vote 5) Budget for investment in the Agency's infrastructure.
- **External Funding Sources** – when investment needs arise that exceed the annual Major Capital budget, CCG pursues special project-based funding from Cabinet.

- **Economic Action Plan** – as a part of the Government of Canada's response to the Global Financial Crisis of 2008-09, CCG received special funding that was intended to generate economic activity as well as bring benefits to Canadians through the delivery of CCG programs. This funding was allocated on an exceptional basis and applies only to the first year of the planning cycle of this Investment Plan.

The following table summarizes CCG's funding profile across funding sources for the 2010/11 to 2014/15 planning horizon.

Table 2: Total CCG Investment Budget, FY 2010/11 to FY 2014/15 (Thousands of Dollars)

	2010-11	2011-12	2012-13	2013-14	2014-15	TOTAL
A-Base	129,400.0	129,400.0	129,400.0	129,400.0	129,400.0	647,000.0
Major Crown Projects	60,571.1	201,435.7	235,170.2	167,155.8	250,675.0	915,007.8
Economic Action Plan	93,000.0	-	-	-	-	93,000.0
Navareas	-	-	2,013.6	813.6	-	2,827.1
Budget Adjustments:						
A-Base Carry Forward	6,097.0	-	-	-	-	6,097.0
Major Crown Project Carry Forward	3,127.5	-	-	-	-	3,127.5
Loan to Real Property (BIO Building)	(5,000.0)	2,500.0	2,500.0	-	-	-
Total Budget	287,195.6	333,335.7	369,083.8	297,369.4	380,075.0	1,667,059.4



Photo: MA Region

The loan to DFO's Real Property COE is related to a decision to consolidate CCG's Dartmouth Base Operations at the Bedford Institute of Oceanography (BIO). This loan to Real Property will be returned to CCG in future years.

Further description/analysis of each funding source is included in the following pages.

1.4.1 A-BASE MAJOR CAPITAL

CCG receives \$129.4M per year as its Vote 5 A-Base allocation, for a total of \$647.0M over the next five fiscal years.

The allocation of the A-Base Vote 5 funding is outlined in the following table:

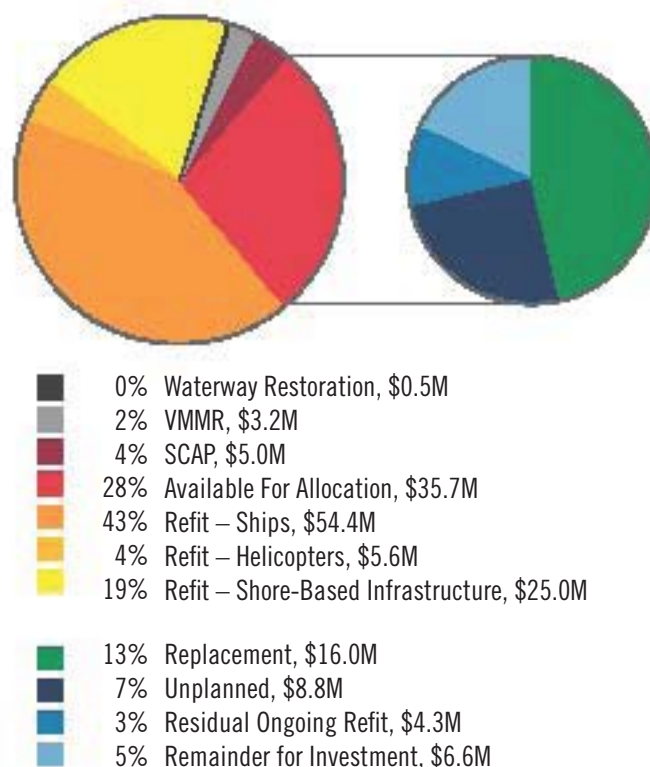
Table 3: CCG A-Base Investment Budget, FY 2010/11 to FY 2014/15 (Thousands of Dollars)

	2010-11	2011-12	2012-13	2013-14	2014-15	TOTAL
A-Base Budget Envelopes:						
Refit - Ships	54,400.0	54,400.0	54,400.0	54,400.0	54,400.0	272,000.0
Refit - Helicopters	5,600.0	5,600.0	5,600.0	5,600.0	5,600.0	28,000.0
Refit - Shore Based Infrastructure	25,000.0	25,000.0	25,000.0	25,000.0	25,000.0	125,000.0
Waterway Channel Restoration	515.0	3,815.0	3,815.0	3,815.0	3,815.0	15,775.0
Vessel Maintenance Management	3,200.0	6,500.0	6,500.0	6,500.0	6,500.0	29,200.0
Small Craft Replacement	5,000.0	5,000.0	5,000.0	5,000.0	5,000.0	25,000.0
Contribution to MCP - MSPV	-	6,096.7	8,403.3	-	-	14,500.0
Residual for Decision	35,685.0	22,988.3	20,681.7	29,085.0	29,085.0	137,525.0
Total A-Base	129,400.0	129,400.0	129,400.0	129,400.0	129,400.0	647,000.0

CCG's annual Vote 5 A-Base budget 2010/11 allocation of \$129.4 million is largely committed to maintaining the key assets required to deliver program and services, leaving little funding available for new investment initiatives or for major expenditures such as Vessel Life Extensions.

The following chart shows how CCG Vote 5 funds are consumed by pre-existing expenditure commitments:

Chart 1: CCG FY 2010/11 A-Base Investment Budget Usage



Note: The expenditures outlined in Chart 1 (above) total to CCG's A-Base Vote 5 budget of \$129.4M for 2010-11 and not to the total planned spending outlined in Table 6. The difference between the A-Base budget and the total planned spending for 2010-11 is the annual over-programming which is described in section 2.1.1 of this document.

Of CCG's Vote 5 A-Base budget allocation, 72% is committed to existing spending envelopes such as: vessel refit; helicopter refit; shore-based infrastructure refit; Waterway Restoration; Vessel Maintenance Management Requirements (VMMR), and the Small Craft Acquisition Program (SCAP). Most of the envelopes are not adequately funded to cover all required expenditures. As such, the work that is undertaken within the envelopes has to be prioritized to ensure that the most urgent and important items are addressed.

Of the remaining budget (\$35.7M or 28% of the Vote 5 A-base) that is available for decision, additional refit requirements and the costs associated with unplanned ship breakdowns, leaves only \$16M to replace the existing capability and capacity of CCG assets that are past their life-cycle with newer technology assets, and \$6.6M for investments in assets that will provide CCG with new and expanded capabilities. This very minimal funding source represents the only available funds from the Vote 5 A-Base budget to replace and update our aging asset base which is required in order to address the growing needs of CCG's clients and stakeholders.

While CCG was the beneficiary of significant Economic Action Plan (EAP) funding in 2009/10 and 2010/11 that allowed the Agency to complete several priority investments, the Agency's ability to undertake future investment initiatives will be limited in future years when EAP funding is no longer available.

1.4.2 EXTERNAL FUNDING SOURCES

The Agency has sought Cabinet approval for additional funding for investments that are not affordable within the major capital funding allocation of the Agency (known as B-Base funds).

CCG received \$2.2M of additional funding from the Federal Budget 2010 to provide navigational safety information services for two newly created navigational areas (NAVAREAs) in the Arctic Ocean.

A more significant example of additional funding is related to the acquisition of the new Polar-class icebreaker which will cost approximately \$800.0M. This single project would consume CCG's entire A-base major capital allocation for more than the five-year planning period if it were not funded separately. This funding is provided on a one-time basis.

Over the planning horizon of this Investment Plan, CCG will receive additional funding of \$915.0M to renew a portion of its large vessel fleet. Without the external funding, these projects would otherwise have been unaffordable. Table 4 outlines the additional funding that will be managed by the Major Crown projects group.

Table 4: CCG Major Crown Projects, FY 2010/11 to FY 2014/15 (Thousands of Dollars)

	2010-11	2011-12	2012-13	2013-14	2014-15	TOTAL
Major Crown Projects	60,571.1	201,435.7	235,170.2	167,155.8	250,675.0	915,007.8
A-Base Contribution to MCP - MSPV	-	6,096.7	8,403.3	-	-	14,500.0
Major Crown Project Carry Forward	3,127.5	-	-	-	-	3,127.5
Total	63,698.6	207,532.4	243,573.5	167,155.8	250,675.0	932,635.3

Notes:

- \$14.5M from CCG's Vote 5 A-Base budget will be transferred to the Major Crown Projects group to enable the purchase of a ninth Mid-Shore Patrol Vessels (MSPV). Without the additional A-Base funding of \$14.5M, the original MSPV funding of \$212.5M would have only allowed the purchase of eight MSPV.
- The Major Crown Projects group will also manage an additional \$12M of EAP funding in 2010-11. These funds will be used to procure five "47-Foot" Motor Lifeboats.

The funding outlined in Table 4 will be allocated to five Major Crown Projects. These strategic investments are described as follows:

- Mid-Shore Patrol Vessels (MSPV) – TEC \$227M
 - 9 new MSPV are being constructed to replace existing capacity provided by vessels nearing the end of their operational life. As part of the Fleet Renewal Plan, these are not one-for-one replacements, but rather a number vessels determined by program requirements and Government of Canada decisions and priorities. Five of the MSPV will be used primarily to support Fisheries and Oceans Canada conservation and protection programs in the Maritimes, Quebec and Pacific Regions. The other four vessels will be used in a joint program with the Royal Canadian Mounted Police to enhance the maritime security along the Great Lakes - St. Lawrence Seaway system. The first vessel should be ready for service in 2011. All nine vessels will be delivered by 2013.
- Offshore Oceanographic Science Vessel (OOSV) – TEC \$144.4M
 - The OOSV project will acquire a replacement vessel for the Canadian Coast Guard's largest science vessel – *CCGS Hudson* built in 1963. Its replacement is critical to fulfillment of the Department's science mandate as well as those of other government departments and agencies. The OOSV Project is currently in the definition and design phase and delivery of the vessel is anticipated for 2013.
- The Offshore Fisheries Science Vessels (OFSV) - TEC \$244M
 - The OFSV project will acquire three (3) OFSV for the Canadian Coast Guard (CCG) Fleet. The OFSV will replace three (3) ageing Coast Guard ships on the East and West Coasts of Canada that provide a platform from which critical scientific research and ecosystem-based management can be performed. The OFSV Project is currently in the definition and design phase and all vessels are expected to be delivered by 2015.

- Polar Icebreaker – TEC \$800M
 - In 2008, the government took the decision to replace Coast Guard's most capable Arctic icebreaker, *CCGS Louis S. St-Laurent*, built in 1969, and to decommission it in 2017. Budget 2008 provided \$720 million for the procurement of a new Polar Icebreaker, which is being designed with greater icebreaking capabilities than the one it is replacing, allowing it to operate for longer periods in the Arctic. This new vessel will allow the Coast Guard to more efficiently continue its work to strengthen and protect Canada's sovereignty in the Arctic.
- Air Cushion Vehicle (ACV) – TEC \$27.3M
 - The new ACV will replace *CCGS Penac* at the Canadian Coast Guard Sea Island Hovercraft Base in Richmond, British Columbia. It will provide for ongoing Search and Rescue coverage in the area, allowing the CCG to continue fulfilling its mandate and maintain current levels of service. A contract for the construction of the ACV will be awarded in 2010-2011 with delivery expected in late 2012.

Note that some of the investments have an implementation timeline of longer than the 5-year planning horizon of this investment plan. For example, the Polar Icebreaker project was initiated in 2009/10 and will continue until 2019/20. The \$929.5M Major Crown Projects budget figure above reflects only the funds that have been allocated for the years within the five-year investment planning horizon covered by this document.



Photo: NCC

1.4.3 ECONOMIC ACTION PLAN FUNDING

The Economic Action Plan (EAP) funding has provided a welcome short-term infusion of investment funding which achieved the double benefit of generating economic benefit for Canada and addressing some of CCG's outstanding investment requirements that were not affordable within CCG's available funding envelope.

Budget 2009/10 provided the Canadian Coast Guard with \$175M of EAP funding, spread over two fiscal periods. The bulk of the EAP funding, \$112M, was targeted at CCG's large vessel fleet. There were five Vessel Life Extensions (VLEs) that were carried out

on vessels in poor condition that were nearing the end of their planned lives. CCG will use the extended operational life of these ships to bridge through to the planned large vessels replacements in the Fleet Renewal Plan.

The EAP funding also enabled \$38M worth of planned refit work on the remainder of the Fleet's large vessels. The refit and repair work consists of general repair, refit, maintenance and updating obsolete systems aimed at improving the reliability of CCG program delivery. The remainder of the EAP funding was used to work expedite acquisition of much needed small vessels and small craft.

Table 5: CCG Economic Action Plan Investment Budget, FY 2010/11 to FY 2014/15 (Thousands of Dollars)

	2010-11	2011-12	2012-13	2013-14	2014-15	TOTAL
Economic Action Plan	93,000.0	-	-	-	-	93,000.0

Notes:

- In 2009-10 CCG transferred \$8M of EAP funding to Small Craft Harbours in a one-year loan agreement. This amount is being transferred back for 2010-11 and is included in the figure above.
- See detailed EAP spending in Table 20 (in Section 3.2.1.5 of this document)

As required by the Economic Action Plan, these funds are to be spent in 2009/10 and 2010/11. Details of the EAP projects are included in Appendix E – CCG Detailed Project Descriptions.

1.5 HOW WE MAKE INVESTMENT DECISIONS

In 2008, the Commissioner of the Canadian Coast Guard directed the organization to improve the integration of its planning activities across the Agency. The transition from Long-Term Capital Planning to Investment Planning necessitated by a new Treasury Board policy provided an additional impetus to review the planning approach in use for investments at CCG.

In response to the new TBS policy, the Agency has moved the focus of its investment planning from “assets” to “program requirements” by implementing a Capability Gap Analysis which identifies program needs in terms of the assets or acquired services available to meet those needs. By focusing on program requirements and assessing our current and future capability to deliver those programs, we now look at alternatives to “one-for-one asset replacement” in a more formal way. This ensures continued innovation in program delivery where it makes sense.

There has been a much greater emphasis placed on a better understanding of the condition of CCG assets. A systematic survey program is being put into place for the fleet and shore-based assets. Shore-based asset and vessel condition surveys will allow CCG to better understand its maintenance and reinvestment issues, a fundamental component in effective decision making. Thus far, condition surveys have been completed for fleet assets and are integral in updating the CCG’s Fleet Renewal Plan. Work progresses on the condition surveys of the shore-based assets, and this work will be integral to the remediation of our critical Program Infrastructure.

Prior to the current planning cycle, CCG’s Long-Term Capital Planning was conducted according to the DFO planning process. Under that process, CCG led two Centres of Expertise (COEs) for planning investments: Fleet COE and Equipment and Other Moveable Assets COE. These COEs were created to focus on the unique capital investment requirements that result from having very different categories of assets in the Agency’s asset base. In previous planning cycles, this approach has

proved extremely effective in addressing the planning needs of CCG. The COEs have developed deep, unique and specialized expertise in their respective fields, so it makes sense to continue this structure into the future. (CCG’s Organization Structure as it relates to Investment Planning is described in Appendix B.)

In this Investment Plan CCG has updated its planning approach to include greater integration between the COEs at key decision points. In the past, each of those COEs submitted long-term capital plan content to DFO for inclusion in the Departmental plan.

However, the plans of the two COEs were not specifically integrated to provide a CCG-wide picture of investment plans and requirements, and this approach did not facilitate making trade-offs between investments across COEs. That integration is now in place.

The plan is still developed with integration into the DFO plan in mind. CCG’s proposed investments have been submitted for consideration to TBS in the context of the DFO Investment Plan. However, the CCG Integrated Investment Plan is expected to be more useful as a management document within CCG than the two separate plans completed in years past, and will ensure that projects in both COEs make the most sense for the Canadian Coast Guard Agency.

A detailed description CCG’s Integrated Investment Planning Framework is included in Appendix C.

The new TBS *Policy on Investment Planning – Assets and Acquired Services* marks a transition from focusing on “assets and the investments required to replace them” to “programs and the investments required to sustain them” and creates an explicit link between capacity to deliver a project and project risk. CCG’s strong track record and continuous improvement mindset with respect to project management and project delivery means that the Agency is well-prepared to adapt to the new requirements. CCG views the new policy in a positive light as it reinforces improvements already in development within the organization.

2.1 How We Will Invest Our Resources: 2010/11 TO 2014/15

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Our proposed investments are grouped according to the broad categories of assets in use at CCG: Fleet and Program Infrastructure. Fleet investments are further divided between regular investments and procurement of major vessels because of the magnitude of the investments required to procure new vessels. The planned investments are summarized in the following table:

Table 6: CCG Planned Investments, FY 2010/11 to FY 2014/15 (Thousands of Dollars)

	2010-11	2011-12	2012-13	2013-14	2014-15	TOTAL
Total Budget	287,195.6	333,335.7	369,083.8	297,369.4	380,075.0	1,667,059.4
Planned Spending Overview						
Program Infrastructure						
Refit - Shore Based Infrastructure	27,656.7	25,500.0	25,000.0	26,001.0	25,000.0	129,157.7
A-Base	23,370.7	25,500.0	25,000.0	26,001.0	25,000.0	124,871.7
Residual Ongoing Projects	4,286.0	-	-	-	-	4,286.0
Waterway Channel Restoration	900.0	3,815.0	3,815.0	3,815.0	3,815.0	16,160.0
A-Base	900.0	3,815.0	3,815.0	3,815.0	3,815.0	16,160.0
System Infrastructure	28,999.8	21,504.0	28,637.4	29,092.6	38,827.0	147,060.8
Navareas	-	-	2,013.6	813.6	-	2,827.2
Investment	15,860.6	10,581.0	6,154.8	3,390.0	1,926.0	37,912.4
Replacement	13,139.2	10,923.0	20,469.0	24,889.0	36,901.0	106,321.2
Total Program Infrastructure	57,556.5	50,819.0	57,452.4	58,908.6	67,642.0	292,378.5
Vessel Fleet						
Refit - Ships	75,963.3	59,900.0	54,400.0	54,400.0	54,400.0	299,063.3
Economic Action Plan	14,673.3	-	-	-	-	14,673.3
A-base	54,400.0	54,400.0	54,400.0	54,400.0	54,400.0	272,000.0
Unplanned Requirements	6,890.0	5,500.0				12,390.0
Refit - Helicopters	7,050.0	5,600.0	5,600.0	5,600.0	5,600.0	29,450.0
A-base	5,600.0	5,600.0	5,600.0	5,600.0	5,600.0	28,000.0
Unplanned Requirements	1,450.0	-	-	-	-	1,450.0
Vessel Maintenance Management	3,200.0	6,500.0	6,500.0	6,500.0	6,500.0	29,200.0
A-base	3,200.0	6,500.0	6,500.0	6,500.0	6,500.0	29,200.0
Small Craft Replacement	15,654.0	5,000.0	5,000.0	5,000.0	5,000.0	35,654.0
Economic Action Plan	9,254.0	-	-	-	-	9,254.0
A-base	6,400.0	5,000.0	5,000.0	5,000.0	5,000.0	26,400.0
Small Vessel Replacement	34,921.0	10,060.0	8,578.5	24,000.0	26,207.0	103,766.5
Economic Action Plan	31,458.0	-	-	-	-	31,458.0
A-Base	2,000.0	3,700.0	-	-	-	5,700.0
Scheduled Replacement	1,463.0	6,360.0	8,578.5	24,000.0	26,207.0	66,608.5
Vessel Life Extension	26,030.7	-	1,200.0	-	-	27,230.7
Economic Action Plan	25,614.7	-	-	-	-	25,614.7
Unplanned Requirements	416.0	-	1,200.0	-	-	1,616.0
Vessel System / Tech. Upgrades	1,568.7	1,300.0	1,164.0	-	-	4,032.7
Investment	179.2	-	-	-	-	179.2
Replacement	1,389.5	1,300.0	1,164.0	-	-	3,853.5
Total Vessel Fleet	164,387.7	88,360.0	82,442.5	95,500.0	97,707.0	528,397.2

	2010-11	2011-12	2012-13	2013-14	2014-15	TOTAL
Procurement of Major Vessels						
Vessel Procurement	48,938.4	194,336.7	230,690.3	156,466.7	241,175.0	871,607.1
Project Management	7,077.1	6,822.3	6,716.2	5,081.1	4,000.0	29,696.5
Core Capacity	6,455.6	6,373.4	6,167.0	5,608.0	5,500.0	30,104.2
Economic Action Plan	12,000.0	-	-	-	-	12,000.0
Total Procurement of Major Vessels	74,471.1	207,532.4	243,573.5	167,155.8	250,675.0	943,407.8
Total Planned Spending	296,415.3	346,711.4	383,468.4	321,564.4	416,023.9	1,764,183.5

Implementation of the investments proposed in this Integrated Investment Plan is an important step in the ongoing effort towards addressing the condition of CCG's asset base. The reinvestment in our Asset Base

set out in this plan is expected to maintain or improve the condition of capital assets, which will have a direct impact on the quality or reliability and extent of CCG service delivery and the associated ongoing operating and maintenance costs. The Government's investment in

Strategic Project - Polar Icebreaker

Large multi-taskable icebreaker to be used solely for sustained operations in the Arctic Archipelago for 3 seasons each year. It will deliver icebreaking, safety and navigation services, and support science research, enforcement, security and sovereignty activities. It is able to operate in more difficult ice conditions than the class of heavy icebreakers they replace. Polar Icebreakers will enable operations simultaneously in both Eastern and Western Arctic.

renewal of the Canadian Coast Guard fleet and shore-based infrastructure will ensure its continued capability to carry out its mandate of saving lives, supporting maritime security, protecting fisheries, enhancing maritime safety, facilitating marine commerce, enforcing Canadian sovereignty, supporting marine scientific research, and protecting the marine environment.

Strategic Project - Mid-Shore Patrol Vessels

Medium-size vessel with a fast response capability to support to marine security, fisheries enforcement and search and rescue in the Great Lakes, St. Lawrence River and Gulf and in all coastal areas up to 120 nautical miles offshore.

A detailed listing of proposed investments by category appears in Section 3 – Investment Details. Appendix E also provides more detailed descriptions for representative

investments and outlines the investments being made on CCG's behalf by the Real Property COE within DFO. While CCG provides significant input into the decision-making process, the decisions are ultimately made by Real Property and as such are included in Appendix E for information.

2.1.1 OPTIMIZING OUR CAPITAL INVESTMENTS

Experience has consistently shown that despite best efforts, external factors often lead to project delays. Experience has also shown that due to the nature of our operations there is a relatively long lead time for implementing capital projects. As a result of these two factors, along with the desire to minimize capital budget (Vote 5) lapses, CCG's Investment Management Board has decided to over-program its capital vote.

The level of over-programming is determined by CCG's Investment Management Board (IMB) based on a number of factors including CCG's experience with the various types of planned projects, communication with industry, communication with Public Works and Government Services Canada (PWGSC), and internal capacity to implement the proposed investments. This approach is used to ensure that the Agency is proactive in the management of its capital budget and has high-priority investments ready to absorb in-year slippage that inevitably occurs on large investment projects. The level of over-programming is revisited annually in light of proposed investments so that the level of over-programming represents a balance of the risk of lapsing funds and the risk of having to delay expenditures to not exceed budget.

For the 2010/11-2014/15 planning cycle, planned expenditures compare to budgets as shown in the following table:

**Table 7: Over-Programming in the CCG Investment Budget, FY 2010/11 to FY 2014/15
(Thousands of Dollars)**

	2010-11	2011-12	2012-13	2013-14	2014-15	TOTAL
Total Budget	287,195.6	333,335.7	369,083.8	297,369.4	380,075.0	1,667,059.4
Total Planned Spending	296,415.3	346,711.4	383,468.4	321,564.4	416,024.0	1,764,183.4
Total Under (Over) Programming	(9,219.7)	(13,375.7)	(14,384.6)	(24,195.0)	(35,949.0)	(97,124.0)
Over-programming as a % of A-Base	7.1%	10.3%	11.1%	18.7%	27.8%	-

Table 7 represents an optimized level of over-programming that is reflective of CCG's experience over the previous planning cycle and is designed to ensure maximum investment benefits and results for Canadian taxpayers.

CCG's efforts to manage slippage in its Major Capital budget have also been aided by CCG's participation in Treasury Board's Pilot Project on Non-Lapsing Appropriations for Capital Management. The Non-Lapsing Capital Appropriations pilot project has helped CCG improve the management of its capital budget and projects by increasing the flexibility to better manage the cash profile of CCG projects. It has enabled CCG to be more proactive in the implementation of its project delivery by extending the carry-forward timeline to a point that allows more strategic and planned resource management. This in turn enables more effective cash utilization and a higher return on investment. The participation in the pilot project has sharpened existing capital management processes which are now better suited to prioritize and identify risks within the capital

program more effectively. During the two years of the Pilot's implementation, CCG feels that there were no adverse challenges and /or issues identified as a result of the carry-forward authority. As such, CCG is strongly in favour of the continuation of this program.

In the event that the Non-Lapsing Capital Appropriations pilot project does not continue into 2010-11 and beyond, CCG will face increased project management constraints and the risk that portion of the overall Vote 5 project slippage could not be carried forward to the subsequent fiscal period. Given the nature of CCG assets and the associated complexity of the maintenance of replacement of the specialized asset base, CCG is exposed to greater risks of external project delays and set-backs that could result in year-end project slippage. Also, given the high dollar value of the ongoing Major Crown projects, there is increased risk that the materiality of project slippage may exceed the 5% carry-forward limit that would be reintroduced as a result of the elimination of the non-lapsing capital authority.

2.1.2 ACQUIRED SERVICES

CCG's Investment Planning Framework does not result solely in investments in assets. As part of its planning process, CCG considers different delivery options for the delivery of its programs. In some cases, it is determined that acquired services are the best delivery alternative and provide the best value to Canadians as opposed to the acquisition of additional assets.

In this planning cycle there are five significant examples where investments in acquired services were chosen over investments in assets:

1. Buoy Tendering;
2. Ice Reconnaissance;
3. Helicopter Operations;
4. Channel Surveying; and
5. Canadian Coast Guard Auxiliary.

Buoy Tendering Contracts

Buoy tendering is a program where CCG contracts with private companies to place Aids to Navigation in waterways based on our levels of service. CCG owns the Aids and determines where they are to be placed. The Agency has buoy contracts in all regions, and continues to assess the relative cost and effectiveness of external service providers relative to provision of the service by CCG's Fleet.

Ice Reconnaissance

Ice Reconnaissance is a key activity of the Icebreaking Program where CCG contracts with Environment Canada to collect information about ice on Canadian Waterways using Transport Canada's multi-tasked aircraft in the National Aerial Surveillance Program. Information gathered under this service is combined with other CCG-gathered information in order to provide ice routing and information services for mariners and for CCG's Icebreaking services.

Helicopter Operations

The Canadian Coast Guard owns a fleet of 23 helicopters, but the Agency contracts with Transport Canada to operate these aircraft. All activities are related to the actual operation of the aircraft, with the exception of tasking, are managed by Transport Canada. This includes the provision of pilots and maintenance of aircraft.

Channel Surveying

Channel Surveying is an activity undertaken as part of the Waterways program in all regions. CCG contracts private companies through Public Works and Government Services to survey the main commercial shipping channels on a regular basis and provides information to the users on available depths and obstructions in the channels. The mariners use this information in combination with information about the current water levels in the channel to determine the maximum safe draft for their vessel.

Canadian Coast Guard Auxiliary

In addition to the above acquired services, the Agency also maintains a contribution agreement for the Canadian Coast Guard Auxiliary (CCGA). This is a program under the Search and Rescue program where CCG provides funding to Auxiliary organizations across the country. These organizations consist of private mariners who assist the Canadian Coast Guard in marine search and rescue operations and prevention. Through the support of this program, CCG is able to meet Search and Rescue Service Standards while minimizing the size of its Fleet.

- The CCG Auxiliary consists of 4,300 volunteers.
- They respond to approximately one-quarter of all marine SAR cases in Canadian waters, and are credited with saving approximately 1,000 lives each year.
- In 2008, the CCGA responded to 1,738 SAR taskings, participated in 1,982 training exercises, and volunteered over 258,000 hours.



Photo: B. Parizeau

2.2 ADDRESSING RISKS RELATED TO THE INVESTMENT PLAN

2.2.1 RISKS TO THE SUCCESSFUL IMPLEMENTATION OF THE IIP

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Integrated risk management is being used at CCG in order to systematically manage all levels of risk that may impede the Agency from achieving its intended results. Implementation of the Risk Management Framework for the Investment Plan was intended to help ensure that risks associated with the plan are well-understood and can be addressed in a methodical manner that is consistent with the approach used in addressing risk across all departmental activities.

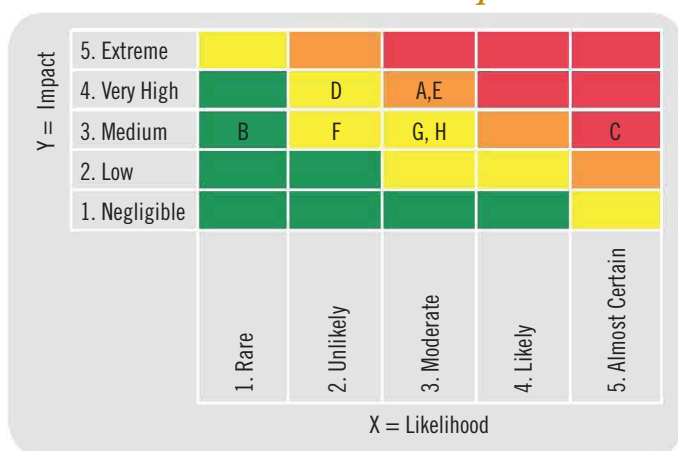
In the CCG Risk Management Framework, each risk is rated by considering the product of the probability of a risk occurring (scored out of 5) and the impact if the risk occurs (also scored out of 5). In this way, the most significant risks are highlighted for management attention including ongoing monitoring of the effectiveness of mitigation strategies. The risks identified in association with the Integrated Investment Plan are:

Table 8: CCG IIP Risk Ratings by Impact and Likelihood

Risk	Risk Name	Impact (/5)	Likelihood (/5)	Total Risk Rating (/25)
A	Insufficient Investment in Asset Base	4	3	12
B	Changing Priorities – Programs	3	1	3
C	Changing Priorities – Assets	3	5	15
D	Resource Availability – Internal	4	2	8
E	Resource Availability – External	4	3	12
F	Over-programming	3	2	6
G	Cost Increases	3	3	9
H	Procurement Delays	3	3	9

The Risks to the successful implementation of the Investment Plan have been plotted on a “Heat Map” to indicate the potential of the identified risks to prevent the successful implementation of the IIP:

Chart 2: CCG IIP Risk Heat Map



On balance, the risks associated with the Investment Plan are considered to be manageable as a result of the mitigation measures in place and as a result of the regular oversight of risks by CCG’s Investment Management Board. Failure in key mitigation areas, for example the updated Fleet Renewal Plan, may result in significantly higher risk for the CCG.

The most significant risks on this list are risks: A (Insufficient Investment in Asset Base); C (Changing Priorities – Assets); and E (Resource Availability – External).

- **Insufficient Investment in Asset Base** - There is concern that given the existing budget CCG will be unable to procure and maintain its asset base, in a timely fashion, to deliver mandated services. While the inevitable trend towards lower fleet reliability has been moderated by more aggressive and carefully managed maintenance and refurbishing programs, and through

new acquisition decisions, “rust-out” remains a serious risk to CCG and DFO objectives. There is concern that current recapitalization plans will not replace assets in a timely manner, and that the condition of land based assets, such as fixed aids, may be worsening at an even faster rate than fleet assets, thereby also significantly contributing to the level of risk. This risk is mitigated by the Agency’s long-term planning efforts, namely the Fleet Renewal Plan and the Shore-based Infrastructure Renewal Plan. By articulating a concrete, long-term plan for the lifecycle management of the Agency’s assets, CCG is able to put forth an integrated storyline and rationale for additional capital funding requirements (over and above the annual A-base Vote 5 allocation).

- **Changing Priorities – Assets** refers to the potential for unexpected breakdowns of CCG Assets which necessitate a review of investment priorities. This risk is mitigated by the management and oversight of CCG’s investment portfolio by the Investment Management Board (whose role is described in Appendix B – CCG Organization Structure and Governance). If a breakdown of an asset necessitates the initiation of a previously-unplanned investment, IMB engages project managers across the country to identify projects with expenditures that can be pushed into the next fiscal year to allow timely implementation of the emergency investment.
- **Resource Availability – External** refers to supply limitations that occur due to the specialized nature of the assets required by CCG. This risk is mitigated by strong ties within the organization to the Marine and Shipbuilding industries in Canada, and through CCG’s participation in the National Shipbuilding Procurement Strategy with the Department of National Defence.

All of the risks and their associated mitigation strategies are described in greater detail in Appendix G.

2.2.2 INDIVIDUAL PROJECT RISKS

In the context of the Investment Plan, each proposed investment is subject to a risk assessment as part of the investment identification and prioritization steps in the Integrated Investment Planning Framework (see Appendix C). The following risk dimensions are evaluated for each proposed investment:

- Risk to Mandate Outcomes
- Reputation/Image Risk
- Environmental Risk
- Risk to Asset Integrity
- Financial Risk
- Health and Safety Risk
- Regulatory Risk

The risk assessment and mitigation measures for each CCG investment are available in the Investment Summary Note documentation for each proposed investment. Like the risks for the overall Investment Plan, these risks will be monitored on an ongoing basis by Project Managers with reports to CCG’s Investment Management Board on an exception basis.



2.3 MEASURING OUR PERFORMANCE RELATIVE TO THE INVESTMENT PLAN

Performance management will form a key element of the approach to help ensure that the investment plan achieves its intended results. IIP performance management is conducted under the direction of CCG's Investment Management Board (IMB). Investment Planning performance at CCG will be managed on two levels:

- Project Management Effectiveness
- Investment Planning Results

2.3.1 PROJECT MANAGEMENT EFFECTIVENESS

CCG has a strong track record of very rigorous monthly project progress reporting. On a monthly basis, IMB reviews the budget, scope, timeline and risks associated with every planned and ongoing investment within the Agency. Projects showing issues on any of these dimensions are required to report to IMB regarding the causes, mitigations and proposed solutions on a project-by-project basis. In this way project issues are identified as early as possible and highlighted to Senior Management for attention, decision and remedial action.

2.3.2 INVESTMENT PLANNING PROCESS RESULTS

On an annual basis, the CCG Resource Management and Financial Allocations team (which is responsible for the preparation of the IIP) conducts debriefing sessions with Integrated Investment Planning process participants and stakeholders, and revise the process as necessary to ensure that it is meeting the planning needs of the Agency.

Process effectiveness will also be assessed through targeted performance indicators that will be reported to IMB. The measures are designed to inform senior management as to whether the Investment Plan is achieving intended effects by demonstrating both internally and externally: good governance, stewardship, accountability, sound decision-making, and effectiveness of planning activities.

The following table contains the performance measures for assessing the investment plan's effectiveness and efficiency:

Table 9: CCG IIP Results Performance Measures

Dimensions	Measures	Sources
People	• Are the right stakeholders involved? • Is there a clear governance structure? • Is the governance structure transparent and accountable? • Are the necessary resources in place for IP Management?	IMB, COEs, Integrated Business Management Services (IBMS), DFO counterpart.
Process	• Is the planning process straightforward and well understood? • Is there a mechanism in place to identify inefficiencies and promote lessons learned?	IMB, COEs, IBMS
Data/Tools/ Systems	• Is the data useful for decision-making? (accurate, reliable, relevant, timely) • Does CCG have the necessary tools to support the IP process?	IMB, COEs, IBMS
Investment Planning Effectiveness	• What percentage of investments were made according to plan?	IMB, COEs, IBMS

This two-tier Performance Management Framework is expected to be a significant contributor to the Agency's ongoing successful track record for project delivery and planning. By using this approach, CCG ensures rigorous oversight of the Agency's continued performance and effectiveness in Investment Planning and investment decisions.

2.4 HOW WE WILL INVEST OUR RESOURCES: LOOKING BEYOND 2014/15

The Canadian Coast Guard must ensure that it is in a position to provide the services required by its stakeholders now and in the future. Given the changing environment within which the CCG and its stakeholders operate, this means adopting a forward looking approach to planning for the CCG services to be provided over the coming 20 to 30 year period.

2.4.1 PROGRAM ASSETS

In keeping with advancements in technology and the needs of our user groups and stakeholders, CCG has rolled out a number of technically advanced systems over the past 10-15 years. Unfortunately, as the new services are being introduced, older more traditional technology is left in place for a variety of reasons. The result is that CCG carries an ever larger inventory of assets that compete for the limited maintenance and reinvestment budget. This in turn does not allow CCG to liberate enough funding to make additional investments in newer technology.

In order to begin addressing this issue, CCG has adopted the Fixed Aids Management Framework. The aim of this framework is to gradually reduce the number of Complex Aids to Navigation that use old technology while increasing the number of Simple Aids to Navigation that use new technology. CCG currently has approximately 500 Complex Aids which tend to be more costly to build and maintain without any added benefit in terms of service delivery. By reducing this number, CCG will be able to realize efficiencies in our service delivery model, which will lead to added benefits for Canadians in other areas.

Over the next two years, the Agency will also develop a Long-term Plan for Shore-based Infrastructure modeled on the Fleet Renewal Plan. This Plan will bring a similar level of rigour to planning for shore-based infrastructure over a long-term planning horizon (20-30 years) as we have for our fleet assets.

At one end of the spectrum, the assets currently in service may only require refurbishment or replacement with technologically updated equipment in order to enable the CCG to continue to offer the same service over time (e.g. Communication Control System

replacement). At the other end of the spectrum, the assets currently in service may have to be totally replaced by new assets that will enable the CCG to provide the new services that are required by its stakeholders (e.g. Differential Global Positioning System navigation tools).

CCG will also face the requirement to retire assets that have been used to provide a service that it has been decided will no longer be provided or to retire assets that no longer enable the CCG to respond to the new requirements of its stakeholders (e.g. LORAN-C).

The establishment of the Shore-Based Infrastructure Renewal Plan should ensure that the condition of the Agency's shore-based assets will stabilize over time and ensure the continued successful delivery of CCG's programs that are supported by this infrastructure.

2.4.2 FLEET ASSETS

Long-term planning for CCG's vessel and helicopter fleet is accomplished by regularly updating the Fleet Renewal Plan (FRP). CCG is currently preparing the next phase of the FRP, named the 2010 FRP. The 2010 FRP is based on seven key principles:

- Canadian Coast Guard vessels and helicopters are Government of Canada assets and comprise the Government of Canada's only national civilian fleet.
- The size and mix of the fleet is determined by program requirements and Government of Canada decisions and priorities – the FRP is not a vehicle for program enhancement and expansion.
- The fleet will be multi-taskable to the greatest extent possible.
- The fleet will be built in classes and will comprise the smallest number of classes possible.
- The Plan is based on appropriate life-cycle management to obtain the full expected operational life of the vessels and to improve life-cycle cost.
- Cost estimates for vessels are based on a robust and indicative methodology that will have independent validation.
- Implementation of the plan has to be sustainable, affordable and provide value for money.

The 2010 FRP addresses the long term fleet requirements, the vessel capabilities and the fleet mix needed for the next 30 years. In developing and updating the plan, Canadian Coast Guard assessed the likely factors that would impact on the type of vessels and helicopters required to deliver programs in the future. This is of critical importance because the new large vessels will be in service for up to 45 years and there is little doubt that over that timeframe, there will be changes to program priorities and requirements. The aim of the Fleet Renewal Plan is not to replace vessels one-for-one, but to replace vessel capacities in a logical and sensible way that takes into consideration a wide range of factors and the selection of vessels specifically designed to meet the tasks they are required to perform.

The 2010 FRP is also built around the premise that vessels will be multi-taskable rather than single-purpose. This means that future vessels will be designed and equipped to adapt to more than one function over their operational life in order to maximize their use. It will also make it easier to re-assign the vessels geographically if needed.

Currently, Canadian Coast Guard operates and maintains over 30 configurations of vessels and four types of helicopters. Through the FRP, Canadian Coast Guard will continue to reduce the number of vessel and helicopter classes. Ultimately, this will be more cost effective for crew training and maintenance and will consequently increase efficiency by making it easier to reassign vessels and redeploy crews.

The overall objective of the 2010 FRP is to have more capable, multi-taskable vessels built in a standard class structure, for more efficient management, operation and maintenance, with the ability to adapt to changing program requirements over the long operational life of the vessels. The Fleet Renewal Plan provides a solid foundation for building the Government of Canada's national civilian fleet for the future. The investments selected in this year's Integrated Investment Plan are aligned with the long-term vision for the Fleet in the Fleet Renewal Plan.



Photo: NL Region

(3) INVESTMENT DETAILS

3.1 LIST AND DESCRIPTION OF INDIVIDUAL INVESTMENTS

This section provides the details supporting the summary investment table presented in Section 2.1 above. The Investments are presented here as they are in the summary table, divided by category of assets, with Fleet further subdivided into regular investments and major vessel procurement.

3.1.1 PROGRAM INFRASTRUCTURE INVESTMENTS

The investments outlined below continue CCG's ongoing philosophy of attempting to maintain assets in baseline condition while keeping pace with technological change. These investments will enable the ongoing delivery of programs for the duration of the investment planning horizon (five years).



Photo: C&A Region

Table 10: CCG IIP Program Infrastructure Investments, 2010/11-2014/15 (Thousands of Dollars)

Program Infrastructure	
REFIT – SHORE BASED INFRASTRUCTURE	
A-BASE	
MAINTelligence Infrastructure Refurbishment - Refurbish and standardize the MAINTelligence automated application system, which serves as the repository for the inventory information necessary to enable the national life cycle management of the Coast Guard's vessel-based assets. MAINTelligence is currently operating on 52 CCG vessels and at the CCG College.	
Very High Frequency (VHF) Radio Refurbishment - Refurbish to baseline condition the MCTS very high frequency (VHF) radios, in all regions, that are obsolete or at risk of failure.	
MCTS Communication Towers Refurbishment (Phase 2) - Refurbish to baseline condition those MCTS communication towers identified as the highest priority in April 2006. The towers identified are those that do not meet current operational requirements or are at high risk of failure due to rust-out and overloading.	
MCTS Communication Towers Refurbishment (Phase 3) - Refurbish to baseline condition those MCTS communication towers identified as the highest priority. The towers identified will be those that are at high risk of failure in the near future due to rust-out and overloading.	
Arctic Telecommunication Refurbishment - Bring the Arctic Telecommunications network/infrastructure back to baseline condition, by replacing obsolete HF, MF, VHF, UHF, and satellite communications equipment.	
MCTS Communications Systems Refurbishment (Phase 2) - Refurbish communications systems and associated infrastructure, including MF-HF receivers and transmitters, VHF-DF antenna systems and satellite links, radars, UPS, and test infrastructure in all regions. It also includes consolidating the Prince Rupert Microwave Network by adding two microwave sites and includes four microwave links.	
MCTS Communication Sites Refurbishment (Phase 2) - Refurbish existing MCTS communication sites used by CCG across Canada to baseline condition. Work includes replacing or refurbishing equipment, buildings, trailers, roads, and transmission lines, and replacing fuel tank systems and spill containment structures and physical security to meet national and regional standards.	
MCTS Communication Sites Refurbishment (Phase 3) - Refurbish existing MCTS communication sites used by CCG across Canada to baseline condition. Work includes replacing or refurbishing equipment, buildings, trailers, roads, and transmission lines, and replacing fuel tank systems and spill containment structures and physical security to meet national and regional standards.	
MCTS Transmitter/Communication Systems Refurbishment (Phase 3) - Refurbishment of MCTS transmitters and electronics. Project includes creation of Technical Solution Centres in each region.	
Helicopter Landing Pads at Aids to Navigation Sites - Construct approximately 86 new helicopter landing pads at priority identified sites in Newfoundland and Labrador to ensure safe access to established aids to navigation locations.	
Floating Aids Refurbishment / Modernization (Phase 2) - Replace or refurbish floating aids to navigation and associated equipment to address codes and standards, health and safety, and due diligence.	
Floating Aids Refurbishment / Modernization (Phase 3) - Replace or refurbish floating aids to navigation and associated equipment, in many cases involving new technology.	
Minor Fixed Aids Sites Refurbishment / Modernization (Phase 2) - Replace, remove, relocate, redesign, and/or refurbish many critical short-range fixed aids to navigation and associated site infrastructure in all CCG regions to address high-risk items associated with structure failure and health and safety codes.	
Minor Fixed Aids Sites Refurbishment / Modernization (Phase 3) - Replace, remove, relocate, redesign, and/or refurbish many critical short-range fixed aids to navigation and associated site infrastructure in all CCG regions to address high-risk items associated with structure failure and health and safety codes.	
Major Fixed Aids Sites Refurbishment / Modernization (Phase 3) - Replace, remove, and/or refurbish many of the short-range major structures supporting shore-based fixed aids to navigation. Make a strategic investment in replacing/upgrading navigation aids with modern equipment involving the use of new technology.	
Environmental Response (ER) Equipment Refurbishment - Refurbish the CCG ER equipment by returning the assets back to baseline condition.	
RESIDUAL ONGOING PROJECTS	
Major Fixed Aids Sites Refurbishment / Modernization (Phase 2) - Replace, remove, and/or refurbish many of the short-range major structures supporting shore-based fixed aids to navigation. Make a strategic investment in replacing/upgrading navigation aids with modern equipment involving the use of new technology.	
MCTS Tofino Radar Refurbishment - Replace the existing “dark room” radar displays with digitized daylight displays, and complete other minor renovations and infrastructure modifications to enable daylight operations at the Tofino MCTS centre in the Pacific Region.	
WATERWAY CHANNEL RESTORATION	
Restoration of the Great Lakes Connecting Channels (Phase 1) - Restore the charted depths and safe design width of the Canadian portion of the channels on the Lower Detroit River (e.g. the Livingstone and Amherstburg Channels); Lake St. Clair area (e.g. St. Clair River, South East Bend, and Lake St. Clair channels); and St. Mary's River. This will allow ships on the Great Lakes/St. Lawrence Seaway System unrestricted, safe and efficient passage between the upper and lower Great Lakes.	

PAA	Total Estimated Costs (TEC)	Previous Years' Exp.	2010-11	2011-12	2012-13	2013-14	2014-15	TOTAL
	280,582.5	117,647.8	27,656.7	25,500.0	25,000.0	26,001.0	25,000.0	129,157.7
	259,189.5	100,606.8	23,370.7	25,500.0	25,000.0	26,001.0	25,000.0	124,871.7
LCAM	2,796.5	1,431.8	1,364.7	-	-	-	-	1,364.7
MCTS	17,609.0	15,960.0	898.0	751.0	-	-	-	1,649.0
MCTS	18,698.0	14,070.0	3,837.0	791.0	-	-	-	4,628.0
MCTS	18,084.0	-	-	3,000.0	3,000.0	3,000.0	3,000.0	12,000.0
MCTS	16,684.0	14,234.0	1,352.0	1,098.0	-	-	-	2,450.0
MCTS	17,887.0	7,302.0	3,806.0	3,500.0	1,800.0	1,479.0	-	10,585.0
MCTS	18,624.0	15,928.0	2,696.0	-	-	-	-	2,696.0
MCTS	18,145.0	-	-	2,500.0	2,500.0	3,000.0	2,500.0	10,500.0
MCTS	17,727.0	5,076.0	2,160.0	2,000.0	2,000.0	1,000.0	5,491.0	12,651.0
Aids to Navigation	7,243.0	-	-	-	2,289.0	3,022.0	1,200.0	6,511.0
Aids to Navigation	17,449.0	12,197.0	3,400.0	1,852.0	-	-	-	5,252.0
Aids to Navigation	18,028.0	-	-	2,748.0	3,637.0	4,000.0	3,436.4	13,821.4
Aids to Navigation	18,492.0	14,408.0	3,857.0	227.0	-	-	-	4,084.0
Aids to Navigation	17,459.0	-	-	3,516.5	3,637.0	4,000.0	3,436.3	14,589.8
Aids to Navigation	16,360.0	-	-	3,516.5	3,637.0	4,000.0	3,436.3	14,589.8
ER	17,904.0	-	-	-	2,500.0	2,500.0	2,500.0	7,500.0
	21,393.0	17,041.0	4,286.0	-	-	-	-	4,286.0
Aids to Navigation	18,393.0	14,257.0	4,136.0	-	-	-	-	4,136.0
MCTS	3,000.0	2,784.0	150.0	-	-	-	-	150.0
	19,000.0	-	900.0	3,815.0	3,815.0	3,815.0	3,815.0	16,160.0
Waterways	19,000.0	-	900.0	3,815.0	3,815.0	3,815.0	3,815.0	16,160.0

Table 10: CCG IIP Program Infrastructure Investments, 2010/11-2014/15 (Thousands of Dollars)

Program Infrastructure
SYSTEM INFRASTRUCTURE
Navareas - NAVAREAS are established geographical areas within which to coordinate the broadcast of navigational warnings to mariners and communities.
INVESTMENT
Operational Systems Security Enhancement Project (OpSSEP) - Develop and implement the required Information Technology (IT) Network Security for the two Coast Guard Networks and the local networks on-board CCG Vessels. This will include the required CCG IT security processes, documentation and training.
CCG APS Improvement and Upgrade Project - To upgrade the CCG Automated Performance Solution (CCGAPS); the most critical business management tool available to Coast Guard for the reporting of vessel activities.
Configuration Management & Technical Data Management System (CMTDMS) - Develop and implement a system to support enhanced material acquisition and lifecycle management through a nationally managed information infrastructure
Flight Following System (FFS) - To install a Flight Following System (FFS) on each of the 23 helicopters and 18 helicopter-capable vessels in the CCG Fleet.
Vessel Tracking System - To install a near real time Vessel Tracking System onboard 116 CCG vessels and 100 CCG Small Craft.
Business Data Exchange Improvements for Ships - To equip the Canadian Coast Guard fleet with an improved business data exchange capability between ship to shore and shore to ship.
Asset Management System "Bridge" - To plan, design and implement the information technology infrastructure and application components that will be necessary to integrate the vessel-based asset maintenance information database (MAINTelligence system application) and the shore-based asset maintenance information database (MAXIMO system application). This will provide complete and comprehensive management information regarding the maintenance of both shore-based and vessel-based CCG assets, and will also enable the life cycle asset management program to better deliver its services
CCG Operational Network (OpNet) - Develop and implement a national Canadian Coast Guard Operational Network, including the required CCG IT processes, documentation, and training, as well as the required hardware equipment and related software to operate all of the existing CCG operational systems/applications on one standard national network infrastructure.
Automatic Identification System (AIS) - Implement a national VHF AIS Service and a Long Range Vessel Identification and Tracking Service in Canada to enhance marine security and improve the safety of navigation in Canada.
Very High Frequency/Digital Selective Calling (VHF/DSC) in the St. Lawrence & Great Lakes Basin - Install shore-based Global Marine Distress and Safety System (GMDSS) VHF/DSC at select MCTS Centres and Remote Control Outlets (RCOs) along the Great Lakes (Central and Arctic Region) and the St. Lawrence River (Quebec Region)
REPLACEMENT
iFleet - To upgrade existing obsolete system (1993), increase the security of the system, ensure the provision of timely information, and ensure compliance with Treasury Board policies
CCG College Training Simulators - Replace two of the CCG College's simulators: the Marine Propulsion Plant Simulator and the Blind Pilotage Radar Simulator. Both simulators are beyond the normal 10-year industry standard for hardware and software support.
MariTime System - Upgrade - To upgrade the current MariTime system to link the system to a common core of data that is created for other Fleet systems, and to improve the planning and HR aspect of the system.
MCTS Replacement of Vessel Traffic Operator Support System (VTOSS) in the Pacific Region - A version of the National Integrated Information System on Marine Navigation (INNAV) that includes the interface for the Automatic Identification System (AIS) will be upgraded to incorporate the essential operational functionalities that are required by the Pacific Region. This upgraded version of INNAV, as well as the required new equipment, will be implemented in the Pacific Region only.
MCTS Communications Control System (CCS) Equipment Replacement - Replace the CCS equipment at 22 MCTS Centres, along with the associated consoles, radio remote control equipment at remote sites, and two simulators at the new technical training facilities required at the CCG College in Sydney, NS. Use of latest digital technology will enable multifunction switching and simultaneous communications on different radio frequencies.
MCTS Information Logging System - Replace the outdated Message Data System and automatic message broadcasting system (MDS/NAVTEX) with a new MCTS Logging System at 22 MCTS Centres.
MCTS National Vessel Traffic Management Information System (VTMIS) Replacement - Replace the National Information System on Marine Navigation (INNAV) by a VTMIS that would integrate all Maritime Services-approved capabilities, mandates and data requirements.
Very High Frequency - Direction Finding (VHF-DF) System Replacement - Refurbish to baseline condition the very high frequency direction finding system, in all regions, that are obsolete or at risk of failure. The installation of new sites for additional VHF-DF coverage will comprise the scope of a separate project.
Differential Global Positioning System (DGPS) Replacement - Replace and/or refurbish electronic equipment and site infrastructure at DGPS sites across Canada
Arctic Environmental Response Equipment (ER-HOTO) - Invest in environmental response equipment to ensure the Coast Guard's Arctic Environmental Response capability.
Total Program Infrastructure

– continued

PAA	Total Estimated Costs (TEC)	Previous Years' Exp.	2010-11	2011-12	2012-13	2013-14	2014-15	TOTAL
	224,347.2	39,443.0	28,999.8	21,504.0	28,637.4	29,092.6	38,827.0	147,060.8
MCTS	2,827.1	-	-	-	2,013.6	813.6	-	2,827.1
	68,478.3	27,952.9	15,860.6	10,581.0	6,154.8	3,390.0	1,926.0	37,912.4
LCAM	1,195.5	921.0	-	-	-	-	-	-
FOR	3,472.4	608.7	1,453.6	1,089.6	289.8	-	-	2,833.0
LCAM	10,398.0	1,070.0	803.0	3,000.0	4,000.0	1,525.0	-	9,328.0
FOR	2,803.8	85.6	2,112.4	484.0	-	-	-	2,596.4
FOR	3,604.0	129.6	2,267.9	1,206.5	-	-	-	3,474.4
FOR	4,160.0	755.0	2,005.0	1,400.0	-	-	-	3,405.0
LCAM	1,869.6	-	968.7	900.9	-	-	-	1,869.6
LCAM	7,460.0	-	-	-	1,865.0	1,865.0	1,926.0	5,656.0
Maritime Security	25,000.0	16,500.0	6,000.0	2,500.0	-	-	-	8,500.0
MCTS	8,515.0	7,883.0	250.0	-	-	-	-	250.0
	153,041.8	11,490.1	13,139.2	10,923.0	20,469.0	24,889.0	36,901.0	106,321.2
FOR	4,919.3	2,271.3	1,867.0	781.0	-	-	-	2,648.0
FOR	7,249.0	530.0	6,015.0	704.0	-	-	-	6,719.0
FOR	2,106.4	-	-	-	799.0	854.0	452.0	2,105.0
MCTS	4,703.1	3,599.8	1,103.2	-	-	-	-	1,103.2
MCTS	47,789.0	3,743.0	3,200.0	7,653.0	11,652.0	10,918.0	10,623.0	44,046.0
MCTS	4,611.0	-	300.0	775.0	1,129.0	1,423.0	984.0	4,611.0
MCTS	39,190.0	-	-	-	1,156.0	1,174.0	13,544.0	15,874.0
MCTS	10,000.0	-	-	300.0	4,900.0	4,800.0	-	10,000.0
Aids to Navigation	30,474.0	-	-	710.0	833.0	5,720.0	11,298.0	18,561.0
ER	2,000.0	1,346.0	654.0	-	-	-	-	654.0
	523,929.7	157,090.8	57,556.5	50,819.0	57,452.4	58,908.6	67,642.0	292,378.5

3.1.2 FLEET INVESTMENTS

The Fleet investment list provides a combination of investments designed to ensure the long-term safety and sustainability of the Fleet, including investment in new smaller vessels, investment in a system to better manage the maintenance requirements of the Fleet, investment in tracking systems to pinpoint the location and status of Fleet assets at all times, and Refits and Vessel Life Extensions to keep vessels in service, up to date and operational. Additional investments in larger vessels are described below in the section on Major Vessel Procurement.

Table 11: CCG IIP Fleet Investments, 2010/11-2014/15 (Thousands of Dollars)

Vessel Fleet	
REFIT - SHIPS	
ECONOMIC ACTION PLAN	
Accelerated Vessel Refit (35)	
Accelerated Vessel Refits (various vessels)	
Vessel Refit - Ship repairs required to ensure that the ship will continue to be operationally and technically capable of delivering mandated programs and supporting client needs.	
A-BASE	
Refurbishment - Air Cushioned Vehicles (Phase II & III)	
Refurbishment - Icebreakers (Phase II & III)	
Refurbishment - Light Icebreakers/Major Navaid's Tenders (Phase II & III)	
Refurbishment - Marine Service Vessels (Phase II & III)	
Refurbishment - Patrol Vessels (Phase II & III)	
Refurbishment - Program Boats (Phase II & III)	
Refurbishment - Research Vessels (Phase II & III)	
Refurbishment - Offshore Research Vessels (Phase II & III)	
Capital Refits - NEWFOUNDLAND AND LABRADOR	
Capital Refits - MARITIMES	
Capital Refits - QUEBEC	
Capital Refits - CENTRAL AND ARCTIC	
Capital Refits - PACIFIC	
UNPLANNED REQUIREMENTS	
EAP Project Management (LTCP funded)	
CCGS Pierre Radisson - Major Refit - Refurbishment of the propulsion system to ensure that the vessel remains operational and can meet program requirements.	
REFIT - HELICOPTERS (Repair and maintenance expenditures to maintain helicopter safety and capability, required to ensure that the helicopter fleet can continue to be operational.)	
A-BASE	
UNPLANNED REQUIREMENTS	
ACQUISITION OF PRE-OWNED BELL 212 HELICOPTER	
VESSEL MAINTENANCE MANAGEMENT (Implementation of the Vessel Maintenance Management (VMM) to allow CCG to better manage the challenges associated with operating a diverse fleet of vessels.)	
A-BASE	

PAA	Total Estimated Costs (TEC)	Previous Years' Exp.	2010-11	2011-12	2012-13	2013-14	2014-15	TOTAL (2010 to 2015)
	234,469.1	99,802.1	75,963.3	59,900.0	54,400.0	54,400.0	54,400.0	299,063.3
	38,000.0	24,448.7	14,673.3	-	-	-	-	14,673.3
FOR	38,000.0	-	14,673.3	-	-	-	-	14,673.3
FOR	-	24,448.7	-	-	-	-	-	-
	185,969.1	75,353.4	54,400.0	54,400.0	54,400.0	54,400.0	54,400.0	272,000.0
FOR	6,368.0	2,350.6	433.3	310.0	600.0	600.0	600.0	2,543.3
FOR	28,280.8	7,168.4	3,301.0	3,190.0	3,380.0	3,350.0	3,500.0	16,721.0
FOR	20,128.5	2,988.9	2,687.3	2,000.0	1,078.7	1,650.0	2,153.4	9,569.4
FOR	16,809.6	7,880.3	3,082.7	2,000.0	1,700.0	1,300.0	846.6	8,929.3
FOR	16,580.9	7,380.5	2,242.5	2,100.0	2,000.0	2,000.0	857.9	9,200.4
FOR	17,165.3	2,553.5	728.9	1,300.0	1,565.5	1,500.0	2,342.1	7,436.5
FOR	10,474.8	522.7	435.8	800.0	855.0	800.0	800.0	3,690.8
FOR	19,299.9	1,482.9	888.5	2,100.0	2,620.8	2,600.0	2,700.0	10,909.3
FOR	13,636.3	13,520.3	12,000.0	12,000.0	12,000.0	12,000.0	12,000.0	50,000.0
FOR	9,852.5	7,349.2	8,100.0	8,100.0	8,100.0	8,100.0	8,100.0	40,500.0
FOR	12,070.0	9,411.4	7,600.0	7,600.0	7,600.0	7,600.0	7,600.0	38,000.0
FOR	5,000.0	4,641.0	5,000.0	5,000.0	5,000.0	5,000.0	5,000.0	25,000.0
FOR	10,302.5	8,103.7	7,900.0	7,900.0	7,900.0	7,900.0	7,900.0	39,500.0
	10,500.0	-	6,890.0	5,500.0	-	-	-	12,390.0
	-	-	1,890.0	-	-	-	-	1,890.0
FOR	10,500.0	-	5,000.0	5,500.0	-	-	-	10,500.0
	7,050.0	10,762.2	7,050.0	5,600.0	5,600.0	5,600.0	5,600.0	29,450.0
FOR	7,050.0	6,858.6	5,600.0	5,600.0	5,600.0	5,600.0	5,600.0	28,000.0
FOR	-	-	1,450.0	-	-	-	-	1,450.0
FOR	-	3,903.6	-	-	-	-	-	-
	32,500.0	-	3,200.0	6,500.0	6,500.0	6,500.0	6,500.0	29,200.0
FOR	32,500.0	-	3,200.0	6,500.0	6,500.0	6,500.0	6,500.0	29,200.0

Table 11: CCG IIP Fleet Investments, 2010/11-2014/15 (Thousands of Dollars) – continued

Vessel Fleet								
SMALL CRAFT REPLACEMENT								
ECONOMIC ACTION PLAN								
86 Small Craft: Fast Rescue Craft (FRC), Rigid Hull Inflatable (RHIB) and small work boats.								
Environmental Response Barges								
A-BASE								
SCAP (all regions)								
Residual Ongoing Remainder of Environmental Response Barges								
SMALL VESSEL REPLACEMENT								
ECONOMIC ACTION PLAN								
Near-shore Fishery Research Vessels(2) - Two 22 meter Near-Shore Fishery Research Vessels - Acquisition of two Near-Shore Fisheries Research Vessels to replace the CCGS Opilio and CCGS Calanus II.								
Near-shore Fishery Research Vessels(1) - One 25 meter Near-Shore Fishery Research Vessel - Acquisition of a Near-Shore Fishery Research Vessel to replace the CCGS J.L. Hart								
A-BASE								
Residual Ongoing Remainder of Near-shore Fishery Research Vessels								
SCHEDULED REPLACEMENT								
CCGS Shark - Construct and deliver to Central and Arctic Region a vessel to meet Science Program requirements as a replacement for CCGS Shark.								
CCGS Pandalus III - Construct and deliver to Maritimes Region a vessel to meet Science Program requirements as a replacement for CCGS Pandalus III.								
Specialty Vessel Replacement (CCGS Chevarie) - Acquisition of a newly designed and constructed Specialty Vessel to maintain the level of service required to meet program requirements.								
Near-Shore Fishery Research Vessel Replacement (CCGS Shamook) - Acquisition of a Near-Shore Fishery Research Vessel that can perform the required missions more efficiently and effectively.								
Channel Survey and Soundings Vessels Replacements (CCGS F.C.G. Smith and CCGS GC-03) - Acquisition of two Channel Survey and Sounding Vessels in the Quebec region to help ensure that the CCG can meet operational requirements and established levels of service.								
Mid-Shore Science Vessel (2) - Acquisition of an optimal platform for 2 Mid-Shore Science vessels ("Hydrographic Survey Vessels") that can perform the required missions more efficiently and effectively.								
High Endurance SAR Lifeboats - ARUN (10) - Acquisition of ten high endurance SAR Lifeboats will continue the transition from a variety of outdated vessel classes, by replacing the capability of the ten 'Arun' Class Lifeboats with modern lifeboats.								
VESSEL LIFE EXTENSION (Minimum repairs required to keep ships operational and to sustain program delivery service capability until these aged ships can be replaced.)								
ECONOMIC ACTION PLAN								
CCGS Bartlett								
CCGS Tanu								
CCGS Tracy								
CCGS Limnos								
CCGS Cape Roger								
UNPLANNED REQUIREMENTS								
CCGS John P. Tully - Undertake VLE on a 69m offshore science research vessel that is 21 years old								
CCGS Griffon VLE (PPA)								

PAA	Total Estimated Costs (TEC)	Previous Years' Exp.	2010-11	2011-12	2012-13	2013-14	2014-15	TOTAL (2010 to 2015)
	39,511.0	19,654.2	15,654.0	5,000.0	5,000.0	5,000.0	5,000.0	35,654.0
	24,511.0	8,238.9	9,254.0	-	-	-	-	9,254.0
FOR	14,511.0	8,238.9	4,561.7	-	-	-	-	4,561.7
FOR	10,000.0	-	4,692.3	-	-	-	-	4,692.3
	15,000.0	11,415.3	6,400.0	5,000.0	5,000.0	5,000.0	5,000.0	26,400.0
FOR	15,000.0	10,000.0	5,000.0	5,000.0	5,000.0	5,000.0	5,000.0	25,000.0
FOR	-	1,415.3	1,400.0	-	-	-	-	1,400.0
	164,315.6	10,796.9	34,921.0	10,060.0	8,578.5	24,000.0	26,207.0	103,766.5
	39,985.0	2,878.0	31,458.0	-	-	-	-	31,458.0
FOR	23,898.0	1,251.8	16,710.7	-	-	-	-	16,710.7
FOR	16,087.0	1,626.3	14,747.3	-	-	-	-	14,747.3
	-	-	2,000.0	3,700.0	-	-	-	5,700.0
FOR	-	-	2,000.0	3,700.0	-	-	-	5,700.0
	176,730.6	7,918.8	1,463.0	6,360.0	8,578.5	24,000.0	26,207.0	66,608.5
FOR	5,889.0	3,624.8	350.0	-	-	-	-	350.0
FOR	4,422.6	3,394.0	892.0	-	-	-	-	892.0
FOR	4,400.0	300.0	221.0	1,600.0	2,278.5	-	-	4,099.5
FOR	16,019.0	600.0	-	4,760.0	5,000.0	4,000.0	1,659.0	15,419.0
FOR	26,000.0	-	-	-	500.0	5,000.0	8,048.0	13,548.0
FOR	60,000.0	-	-	-	800.0	15,000.0	15,000.0	30,800.0
FOR	60,000.0	-	-	-	-	-	1,500.0	1,500.0
	106,051.7	53,685.5	26,030.7	-	1,200.0	-	-	27,230.7
	77,700.0	37,871.8	25,614.7	-	-	-	-	25,614.7
FOR	21,990.0	18,448.3	3,540.0	-	-	-	-	3,540.0
FOR	12,558.0	350.0	7,728.9	-	-	-	-	7,728.9
FOR	19,970.0	10,522.1	2,227.9	-	-	-	-	2 227.9
FOR	10,570.0	6,896.3	1,873.0	-	-	-	-	1 873.0
FOR	12,612.0	1,655.1	10,244.9	-	-	-	-	10,244.9
	28,351.7	15,813.7	416.0	-	1,200.0	-	-	1,616.0
FOR	15,790.0	15,433.7	356.0	-	-	-	-	356.0
FOR	12,561.7	380.0	60.0	-	1,200.0	-	-	1,260.0

Table 11: CCG IIP Fleet Investments, 2010/11-2014/15 (Thousands of Dollars) – continued

Vessel Fleet	
VESSEL SYSTEM / TECH. UPGRADES	
INVESTMENT	
CCGS Griffon Main Crane Replacement Major Crane Replacement Project to replace the existing crane used for lifting marine aids and deploying scientific and emergency equipments	
E mail Aboard Ships (final year of project). Deliver the capability for all shipboard personnel on 39 designated vessels to receive personally addressed e-mail from any other person or agency ashore; also provide intranet and Internet access.	
REPLACEMENT	
Halon Systems (final year of project). Acquire and install ozone-safe fire-fighting systems to replace the existing Halon 1301 systems on all CCG vessels within all Coast Guard regions to meet EC regulations by 2010.	
Integrated Navigation Systems Procure and install a Shipboard Universal Automatic Identification System, DGPS, and Electronic Navigational Chart System on selected DFO/CCG vessels.	
Total Vessel Fleet	

PAA	Total Estimated Costs (TEC)	Previous Years' Exp.	2010-11	2011-12	2012-13	2013-14	2014-15	TOTAL (2010 to 2015)
	31,322.9	25,288.4	1,568.7	1,300.0	1,164.0	-	-	4,032.7
	10,709.1	10,517.8	179.2	-	-	-	-	179.2
FOR	1,577.1	1,565.0	-	-	-	-	-	-
FOR	9,132.0	8,952.8	179.2	-	-	-	-	179.2
	20,613.8	14,770.6	1,389.5	1,300.0	1,164.4	-	-	3,853.5
FOR	10,380.0	10,190.5	189.5	-	-	-	-	189.5
FOR	10,233.8	4,580.1	1,200.0	1,300.0	1,164.0	-	-	3,664.0
	667,620.3	219,989.3	164,387.7	88,360.0	82,442.5	95,500.0	97,707.0	528,397.2

3.1.3 MAJOR VESSEL PROCUREMENT

Major Vessel Procurement consists of large investments that are identified separately because the size of these investments are of a different order of magnitude compared with the investments listed in the Fleet Investments category. However, as described in Section 2.4.2, above, Fleet Investments and Major Vessel Procurement Investments represent two parts of a cohesive long-term vision for the CCG Fleet.

Table 12: CCG IIP Program Infrastructure Investments, 2010/11-2014/15

Procurement of Major Vessels	
AIR CUSHION VEHICLE (ACV) This initiative will replace CCGS Penac at the Canadian Coast Guard Sea Island Hovercraft Base in Richmond, British Columbia. It will provide for ongoing Search and Rescue coverage in the area, allowing the CCG to continue fulfilling its mandate and maintain current levels of service.	
MID-SHORE PATRO VESSELS (MSPV) Nine (9) Mid-shore Patrol Vessels will be constructed and delivered for use in CCG's Maritime Security and Conservation and Protection Programs.	
OFFSHORE FISHERY SCIENCE VESSELS (OFSV) This initiative will replace four (4) vessels currently in use by the CCG: CCGS Alfred Needler or CCGS Wilfred Templeman, CCGS W. E. Ricker and CCGS Teleost.	
OFFSHORE OCEANOGRAPHIC SCIENCE VESSEL (OOSV) This initiative will replace one (1) vessel currently in use by the CCG: CCGS Hudson.	
POLAR ICEBREAKER This acquisition was announced in the 2008 Federal Budget to build a new vessel that will support CCG's icebreaking mandate.	
EAP - FIVE (5) 47 MOTOR LIFEBOATS Five (5) "47-Foot" Motor Lifeboats (Cape Class)	
Total Procurement of Major Vessels	

PAA	Total Estimated Costs (TEC)	Previous Years' Exp.	2010-11	2011-12	2012-13	2013-14	2014-15	TOTAL (2010 to 2015)
FOR	27,250.0	-	10,000.0	9,140.0	6,980.0	1,130.0	-	27,250.0
FOR	227,000.0	25,785.4	37,321.1	70,137.2	89,493.5	4,261.8	-	201,213.6
FOR	244,000.0	6,275.0	2,650.0	72,300.0	79,700.0	52,750.0	22,275.0	229,675.0
FOR	144,400.0	994.8	2,600.0	46,505.2	56,400.0	32,500.0	5,400.0	143,405.2
FOR	800,000.0	5,936.0	9,900.0	9,450.0	11,000.0	76,514.0	223,000.0	329,864.0
FOR	20,000.0	8,530.6	12,000.0	-	-	-	-	12,000.0
	1,462,650.0	47,521.8	74,471.1	207,532.4	243,573.5	167,155.8	250,675.0	943,407.8

3.2 INVESTMENTS BY PROGRAM ACTIVITY ARCHITECTURE

Like all Government of Canada departments and agencies, CCG's activities are organized in the context of a Program Activity Architecture (PAA). The CCG PAA is described in the CCG Business Plan available on the Agency's website at <http://www.ccg-gcc.gc.ca/e0005623>.

The planned level of investment in each program activity across the 2010/11 to 2014/15 planning horizon is shown in the following table:

Table 13: CCG IIP 2010/11-2014/15 – Planned Investments by PAA

Asset Category	Expenditures by PAA Sub-Activity	Examples of Expenditures	Forecast Expenditure (Thousands of Dollars)					Total
			2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	
Program Infrastructure	Aids to Navigation	Refurbishing/Modernizing/Replacing shore-based and floating aids to navigation	11,393.0	12,570.0	14,033.0	20,742.0	22,807.0	81,545.0
	Marine Communication and Traffic Services	Upgrading various communication equipment at MCTS Centres and remote sites	19,752.2	22,368.0	30,150.6	27,607.6	36,142.0	136,020.4
	Environmental Response Services	Investing in Environmental Response equipment	654.0	-	2,500.0	2,500.0	2,500.0	8,154.0
	Maritime Security	Investing in critical vessel surveillance and tracking systems	6,000.0	2,500.0	-	-	-	8,500.0
	Waterways Management Services	Restoration of the Canadian portion of the Great Lakes connecting channels	900.0	3,815.0	3,815.0	3,815.0	3,815.0	16,160.0
	Lifecycle Asset Management Services	Investing in a national Operational Network for CCG operational systems/applications	3,136.4	3,900.9	5,865.0	3,390.0	1,926.0	18,218.3
Fleet	Coast Guard Fleet Operational Readiness							
	Acquisition or replacement	Acquiring new vessels	125,046.1	222,592.4	257,152.0	196,155.8	281,882.0	1,082,828.3
	Major repairs, refits, and refurbishments	Refitting and refurbishing vessels and helicopters	86,213.3	72,000.0	66,500.0	66,500.0	66,500.0	357,713.3
	Vessel life extension	Extending vessel life	26,030.7	-	1,200.0	-	-	27,230.7
	System enhancement	Modernizing simulators	17,289.7	6,965.1	2,252.8	854.0	452.0	27,813.6
Total			296,415.4	346,711.4	383,468.4	321,564.4	416,024.0	1,764,183.5

CONCLUSION

In order to better communicate our asset management and investment planning picture in a more holistic and integrated manner, CCG has implemented an initiative to update its planning for capital investments. The new Integrated Investment Planning framework ensures that our investment decisions are based on a full assessment of risk, priority and capability requirements. This Integrated Investment Plan is the culmination of a thorough and complete project prioritization, assessment and allocation process to determine the optimal use of the scarce resources available to the Agency.

The Integrated Investment Plan presents proposed investments, over a five-year period, which are considered affordable, productive, financially sustainable, and essential to CCG. It is important to note; however, that while the investments are financially sustainable (e.g. CCG can afford the downstream O&M expenditures that may result from the investments) the level of investment falls short of that which is required to effectively life-

cycle manage our asset base. While CCG's planning and prioritization framework ensures that funding is directed to the highest priorities, the current reinvestment rate is not high enough to ensure that assets can be replaced at the end of their operational life. CCG is addressing this situation through the creation of renewal plans for its asset base, prepared by the two COEs, to take a long-term view of investment requirements.

This document represents CCG's first application of its new Integrated Investment Planning framework. The Agency expects to learn from the implementation of these policies in the 2010/11 to 2014/15 planning cycle. While the planning process, framework and approach has proven effective in developing our Investment Plan, CCG will continue to optimize its approach in future years and maximize value for money and sound stewardship in Canadian Coast Guard program delivery.



APPENDIX A: CCG ASSET BASE DETAILS

ASSETS BY CATEGORY

The breakdown of the 9,617 assets in the CCG asset base is provided below in Table 14 by category, program area and level of historic cost.

Table 14: Number of Capital Assets, by Level of Historic Cost

Asset Type	Historic Cost btw. \$10K & \$250K	Historic Cost btw. \$250K & \$1M	Historic cost over \$1M	Total Number of Assets
Program Infrastructure Assets				
Aids to Navigation	4,692	30	12	4,734
Waterways Management	18	0	0	18
Marine Communications and Traffic Services	1,758	55	15	1,828
Search and Rescue	128	0	0	128
Environmental Response	846	12	0	858
Icebreaking Services	27	3	0	30
Life-cycle Asset Management	735	2	2	739
Canadian Coast Guard College	151	1	2	154
Sub-Total Program Infrastructure	8,355	103	31	8,489
Fleet Assets				
Vessels (operational)	1	25	90	116
Air Cushioned Vehicles	0	0	4	4
Helicopters	0	6	17	23
Other Assets (ex. Small craft)	951	29	5	985
Sub-Total Fleet	952	60	116	1,128
CCG Total	9,307	163	147	9,617

Please note that this table contains counts of individual assets with acquisition costs of over \$10,000. The Agency has significant additional investment requirements for equipment and material across these programs for items whose acquisition cost is less than \$10,000 (and therefore which fall below the standard Government of Canada definition of an asset). In particular, the Aids to Navigation program has more than 17,000 individual items that require periodic replacement, resulting in significantly higher investment requirements than are

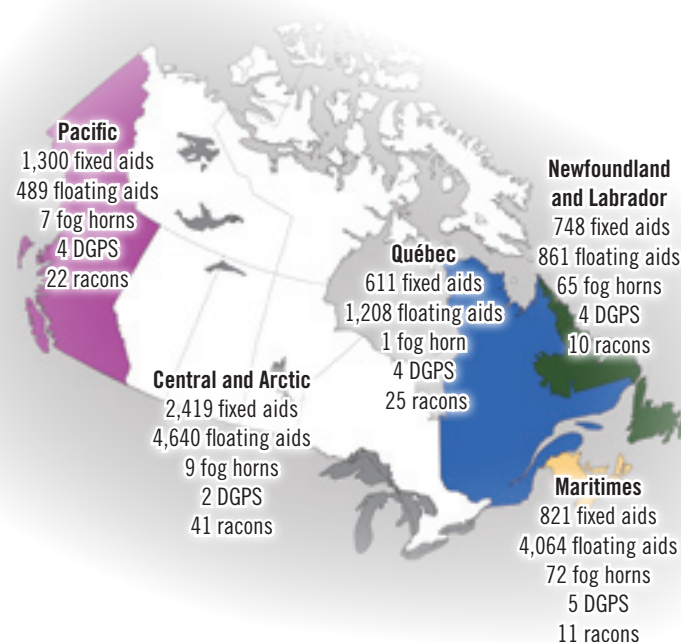
implied by looking only at items valued over \$10,000. The full count of Aids to Navigation assets is reflected in the following table:

Table 15: Full Aids to Navigation Asset Count (including assets below \$10,000)

Aids to Navigation	Fixed Aids	Floating Aids	Fog Horns	DGPS	Racons	Total
Pacific	1,300	489	7	4	22	1,822
Central and Arctic	2,419	4,640	9	2	41	7,111
Québec	611	1,208	1	4	25	1,849
Maritimes	821	4,064	72	5	11	4,973
Newfoundland and Labrador	748	861	65	4	10	1,688
Total	5,899	11,262	154	19	109	17,443

Notes:

- The total of 17,443 Aids to Navigation assets outlined above includes the 4,734 assets from Table 14 (assets above \$10K) plus 12,709 assets that are below \$10K.
- The map below presents a geographical representation of the Aids to Navigation assets.



ASSETS BY REGION

The distribution of assets across the country is given below in Table 16. The CCG's assets are distributed widely across the country, in accordance with the vast amounts of coastlines and waterways in which CCG provides services to Canadians.

Table 16: CCG Asset Count by Asset Type and Location

Region	Fleet	Life-Cycle Asset Management	CCG College	Maritime Services	Total Number of Assets
Newfoundland and Labrador	272	89	0	1,535	1,896
Maritimes	82	172	0	804	1,058
Quebec	191	115	0	1,396	1,702
Central and Arctic	160	209	0	2,171	2,540
Pacific	238	145	0	1,622	2,005
NCR	185	9	154	68	416
Total	1,128	739	154	7,596	9,617

Notes:

- Note that this table contains counts of individual assets with acquisition costs greater than \$10,000
- Fleet's major vessel fleet and helicopters are registered in the NCR and distributed throughout the country based on program and operational requirements.
- The distribution of the Fleet Assets can be found in Tables 14, 17 and 18.

ADDITIONAL DETAIL – FLEET ASSETS

Operational vs Total Assets

While the Canadian Coast Guard Fleet owns 129 vessels, its operational fleet is smaller, consisting of 112 vessels and 4 air cushion vehicles for a total of 116 operational vessels. The other 13 vessels belonging to CCG are:

- Used for training purposes;
- Surplus to requirements and/or past their operational life and awaiting disposal;
- Awaiting significant investment (e.g. repairs) before they can be returned to the Operational Fleet; or
- Held in reserve to back-fill any sudden/emergency vessel failures within the operational fleet.

The following table illustrates the categories of CCG operating vessels.

Table 17: CCG Helicopters and Major Vessel Fleet by Vessel Type

Asset Type	Count
Helicopters	23
Vessels	
Polar Icebreakers	0
Heavy Icebreakers	2
Medium Icebreakers	4
High Endurance Multi-tasked Vessels/ Light Icebreakers	7
Medium Endurance Multi-tasked Vessels	5
Offshore Patrol Vessels	4
Mid-Shore Patrol Vessels	7
Offshore Oceanographic Science Vessels	2
Offshore Fishery Science Vessels	4
Air Cushion Vehicles	4
Special Navais Vessels	2
SAR Lifeboats	38
Hydrographic Survey Vessels	5
Channel Survey and Sounding Vessels	2
Near-Shore Fishery Research Vessels	6
Specialty Vessels	22
Sub-total Vessels	116
Total Helicopters and Vessels	139

Vessel Asset Age Description

The table below illustrates that about 33% of the operational vessels and 5 of the 6 large vessels are over 25 years old. Another 29% are between 15 to 25 years old. According to industry recommendations and CCG accepted standards, the operational life of a major vessel is approximately 30 years while that of smaller units can vary from 15 to 20 years. Although the overall condition of the fleet's smaller assets is acceptable due to recent investments, many of the larger vessels are close to or well beyond their operational life. The latter are in need of replacement and require significant investment.

Table 18: Age of CCG Vessels as of April 1, 2009

Asset Type	Current #	Asset Age		
		Over 25 Years	15 to 25 years	Under 15 years
Helicopters	23	11	12	-
Large Vessel Fleet				
Large ships (over 88m) Operational Life – 30 years	7	7	-	-
Medium Ships (48-87m) Operational Life – 30 years	23	11	12	-
Smaller Ships (33-47m) Operational Life – 15 to 20 years	5	3	2	-
Air Cushion Vehicles Operational Life – 15 to 20 years	4	1	-	3
Total Large Vessel Fleet	39	22	14	3
Small Vessel Fleet				
Small Vessels (under 33m) Operational Life – 15 to 20 years	36	15	12	9
SAR Lifeboats Operational Life – 15 years	41	0	7	34
Total Small Vessel Fleet	77	15	19	43
Sub-total Vessel Fleet	116	37	33	46
CCG Total	139	48	45	46



Photo: NL Region

APPENDIX B: CCG ORGANIZATION STRUCTURE & GOVERNANCE

CCG is a national agency with headquarters in the National Capital Region and five regional offices (Newfoundland and Labrador, Maritimes, Quebec, Central and Arctic, and Pacific), stretching from coast to coast to coast. We are a highly decentralized organization, with the vast majority of our employees located in the regions providing front-line services to Canadians.

The Commissioner is the Chief Executive Officer of the agency, reporting and accountable to the Deputy Minister of Fisheries and Oceans Canada for the performance of the Canadian Coast Guard. The Commissioner has the full authority of an Associate Deputy Minister, with the exception of Section 33 of the Financial Administration Act, reflecting the intention of the Canadian Coast Guard to rely on DFO for comptroller functions. The Canadian Coast Guard Deputy Commissioner - Operations is the Chief Operating Officer of the Agency, reporting to the Commissioner. In 2010, a new position was created entitled Deputy Commissioner – Vessel Procurement. Reporting directly to the Commissioner, the Deputy Commissioner – Vessel Procurement will ensure the effective and efficient delivery of CCG's investment and procurement activities.

OPERATIONAL STRUCTURE

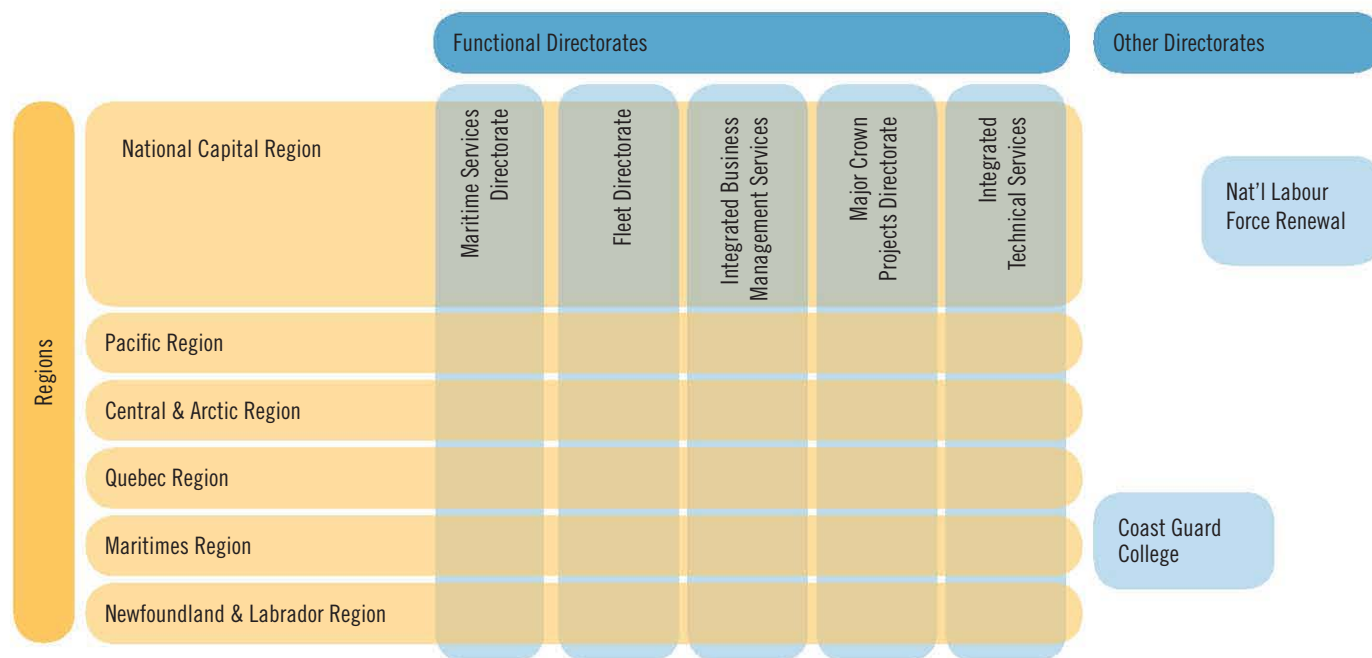
From an operational perspective, CCG is organized in a matrix structure of Directorates with functional expertise led by Directors General supported by regional delivery teams led by an Assistant Commissioner in each region. The operational Directorates within CCG are:

- Fleet Directorate
- Maritime Services Directorate
- Integrated Technical Services Directorate
- Major Crown Projects Directorate
- Integrated Business Management Services Directorate

CCG's Directorates are based in the National Capital Region (NCR) with representation in each region through staff members who report directly to the Assistant Commissioner and functionally to their Directorate in the National Capital Region. The only directorate which does not have regional representation is the Major Crown projects group which is solely located in the NCR.

CCG also maintains two non-operational Directorates that support the activities of the Agency – the Canadian Coast Guard College and the National Labour Force Renewal Directorate. The relationship between CCG Directorates is shown in the following diagram:

Chart 3: CCG Operational Structure



PLANNING ORGANIZATIONS

From an investment planning perspective, CCG has two Centres of Expertise (COEs) to focus on the specialized planning requirements of the Agency. These COEs also form part of the overall DFO governance structure for which the Agency has direct responsibility. In addition to these two COEs, the Agency also relies heavily on the Real Property COE which is managed by the Real Property Directorate in DFO. Together, these three COEs are responsible for the majority of planning for CCG's investment needs.

- **Equipment and Other Moveable Assets (EOMA) COE (CCG)**
The EOMA COE focuses on the Agency's equipment, fixed and floating navigation aids, other moveable assets (excluding vehicles), communication towers and navigational sites that are used in support of DFO's programs. The Director General, Maritime Services is responsible for this COE.
- **Fleet COE (CCG)**
The Fleet COE is responsible for the vessels and helicopters used by CCG, DFO and other government department programs. The Fleet asset base includes ships, ranging in size from large icebreakers to small lifeboats, air-cushioned vehicles and helicopters. The Canadian Coast Guard is the sole provider of federal government civilian vessels (figures do not include non-civilian assets, such as those managed by the Department of National Defence). The Director General, Fleet is responsible for this COE.
- **Real Property COE (DFO)**
The Real Property COE, a non-CCG entity, is responsible for planning investments in all of DFO's real property sites, excluding program infrastructure (e.g., communication towers and equipment, MCTS fixed sites, and communication systems infrastructure, excluding MCTS Centres) and marine navigation services sites (e.g., Loran-C sites, DGPS sites, fixed aids sites, excluding light stations), which are covered under the Equipment and Other Movable Assets COEs. For the Canadian Coast Guard, this means that many lightstations, all bases, depots, warehouses etc. are planned for and managed by Real Property. CCG only has an indirect influence on the planning in this Centre of Expertise.

These planning organizations have developed deep, unique and specialized expertise in their respective fields, and this organization structure has been effective for CCG to meet its planning needs.

IMPLEMENTATION ORGANIZATIONS

While COEs have developed unique and specialized expertise in planning for the requirements of their asset bases, they partner with two Directorates within CCG that execute planned investments:

- **Major Crown Projects**
The Major Crown Projects (MCP) organization within CCG is responsible for the implementation of investments involving Major Crown procurements (as defined by TBS).
- **Integrated Technical Services**
CCG Integrated Technical Services (ITS) is responsible for the ongoing maintenance of CCG's asset base, as well as the implementation of most investment projects not involving Major Crown procurements.

These implementation organizations also provide input into the planning process to ensure that projects are feasible and that internal and external capacity exists to deliver proposed investments. A detailed description of the roles and interactions between planning and implementation organizations is included in Appendix C – CCG Integrated Investment Planning Framework Details.

In addition to the above organizations, each COE also manages a limited number of projects on their own when appropriate. For example, the EOMA COE is managing the Dredging project and the Fleet COE is responsible for managing the iFleet project in the current plan. COEs manage projects on their own mainly when the specialist expertise required to oversee the project is resident in the COE as opposed to the delivery organization.

New Deputy Commissioner Position

Canadian Coast Guard has established the position and functions of the Deputy Commissioner – Vessel Procurement. The position has the primary responsibility within the Coast Guard to design, implement and lead the vessel procurement process for new assets.

Finally, CCG relies on the Real Property COE to implement Real Property projects. In some cases, these projects are managed by Real Property themselves and in other cases Real Property contracts with Public Works and Government Services (PWGSC) to manage their projects.

INVESTMENT PLANNING GOVERNANCE STRUCTURE

The primary body overseeing the development and implementation of the Investment Plan within CCG is the Investment Management Board (IMB). It is a formal committee structured to facilitate Agency-wide capital planning, prioritization and decision-making. The CCG IMB is a decision-making body which establishes the priorities and investment decisions with respect to CCG's capital planning, capital assets and capital funding. The IMB is also responsible for ongoing capital project monitoring and all reallocation decisions that affect the Agency's capital budgets. The main objectives of IMB are:

- Make investment decisions and produce business strategies with regard to the Agency's investment portfolio.
- Review and provide decisions on: all CCG capital investment plans; all project submissions; Treasury

Board submissions involving investment decisions, as well as policy and processes relating to Research and Development and other investment matters.

- Monitor forecasts and expenditures on all capital programs and decide on actions and reallocations where appropriate.
- Provide recommendations with regard to Real Property and IM/IT Investment plans as business partners of Fisheries and Oceans Canada.

The CCG IMB is chaired by the Commissioner with the assistance of the Deputy Commissioner – Vessel Procurement and Deputy Commissioner – Operations and includes representation from regions (Assistant Commissioners), the head of each COE (DG-level), the head of each delivery organization (DG-level), DFO (Senior Financial Manager, DG Real Property), Integrated business Management Services (DG, Director of Resource Management and Financial Allocations, Manager of Resource Management), as well as the Executive Director of the Canadian Coast Guard College. This membership represents the senior/executive decision-making expertise to ensure CCG's assets are allocated, budgeted and managed strategically in order to achieve the *Vision, Mission, Goals and Objectives* of both DFO and CCG.

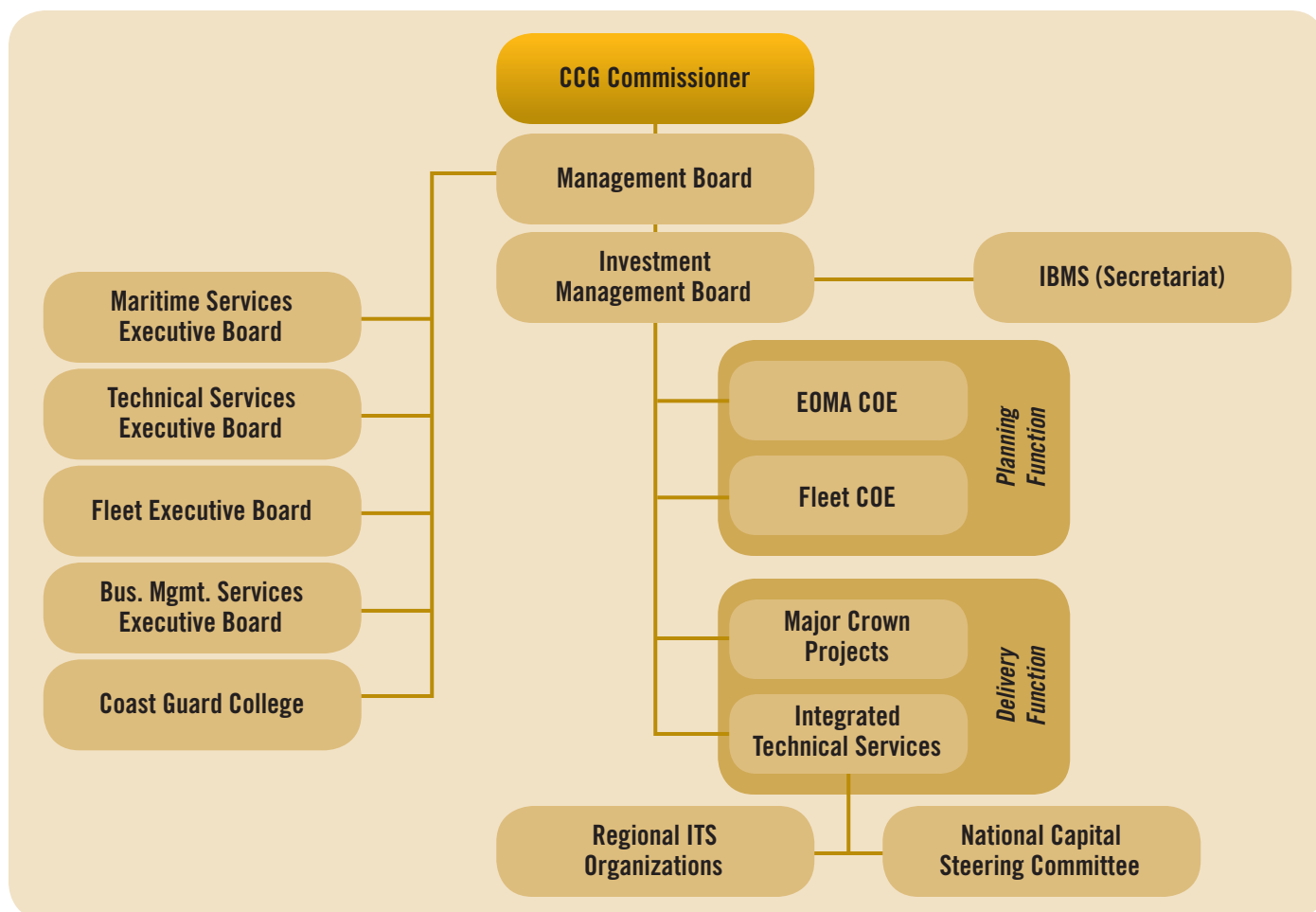


Photo: C&A Region

OVERALL AGENCY GOVERNANCE

IMB fits in to the overall governance framework in place within CCG and DFO as shown in the following diagram:

Chart 4: CCG Governance Structure



The Commissioner of the Canadian Coast Guard is accountable to the Deputy Minister of DFO for the performance of the CCG organization.

Canadian Coast Guard Management Board (MB) is the Agency's senior strategic and operational decision-making body. The Board is chaired by the Commissioner and includes the two Deputy Commissioners, the Director Generals, the Assistant Commissioners, and the Executive Director of the Canadian Coast Guard College as well as the Executive Director of the National Labour Force Renewal Directorate. The senior human resources advisor, the senior legal advisor, the senior financial advisor, the senior communications advisor, and the Executive Advisor to the Commissioner are ex officio members of MB.

IMB supports MB by assuming primary decision-making responsibility on the investment decisions made within CCG.

MB is also supported by a number of permanent and temporary sub-committees. Functional Executive Boards are chaired by the appropriate Director General and function as a national collaborative board to provide functional leadership related to its area of expertise. Each board comprises headquarters and regional representatives and provides program and technical advice to the appropriate Director General and implements the program, policy, and administrative directions and decisions of the CCG Management Board.

MAJOR CROWN PROJECT GOVERNANCE

MCP maintains its own governance process to ensure that investments maximize their value to Canadians. The governance process is outlined below.

Chart 5: Fleet Renewal/MCP Governance

Fleet Renewal (Major Crown Projects) governance focuses on ensuring that the highest value for Canadians is delivered by monitoring costs and aligning projects at all stages of the procurement process

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Ministerial Level

Reporting to Cabinet on the progress against Fleet Renewal Plan.

- The Minister of Fisheries and Oceans reports to Cabinet every five years on the progress against the Fleet Renewal Plan. The progress report will also provide the results achieved and if required any adjustments within the established funding envelope.

Advisory Level

Internal and external input, general oversight and independent advice on Fleet Renewal

- The Strategic Advisory Council provides general oversight on the Fleet Renewal Plan and reviews proposed operational requirements for each vessel before technical specifications. Comprised of the Deputy Minister of Fisheries and Oceans and departments and agencies that use Coast Guard services and vessels.
- CCG will also obtain independent technical advice to challenge the capability requirements for the vessels and/or comment on proposed design solutions.

Internal Controls

Internal controls to manage costs and requirements, projects and ensure reporting.

- A robust cost estimation model is in place and has been verified by independent third-party input. It is used to track financial information for all MCP projects.
- Vessel requirements are subject to ongoing challenge as they are translated into concepts and designs. CCG maintains a multi-disciplinary team approach in completing this validation process.
- CCG is restructuring to ensure clear accountability in planning, scheduling, monitoring and cost control of the Fleet Renewal.



APPENDIX C: CCG INTEGRATED INVESTMENT PLANNING FRAMEWORK DETAILS

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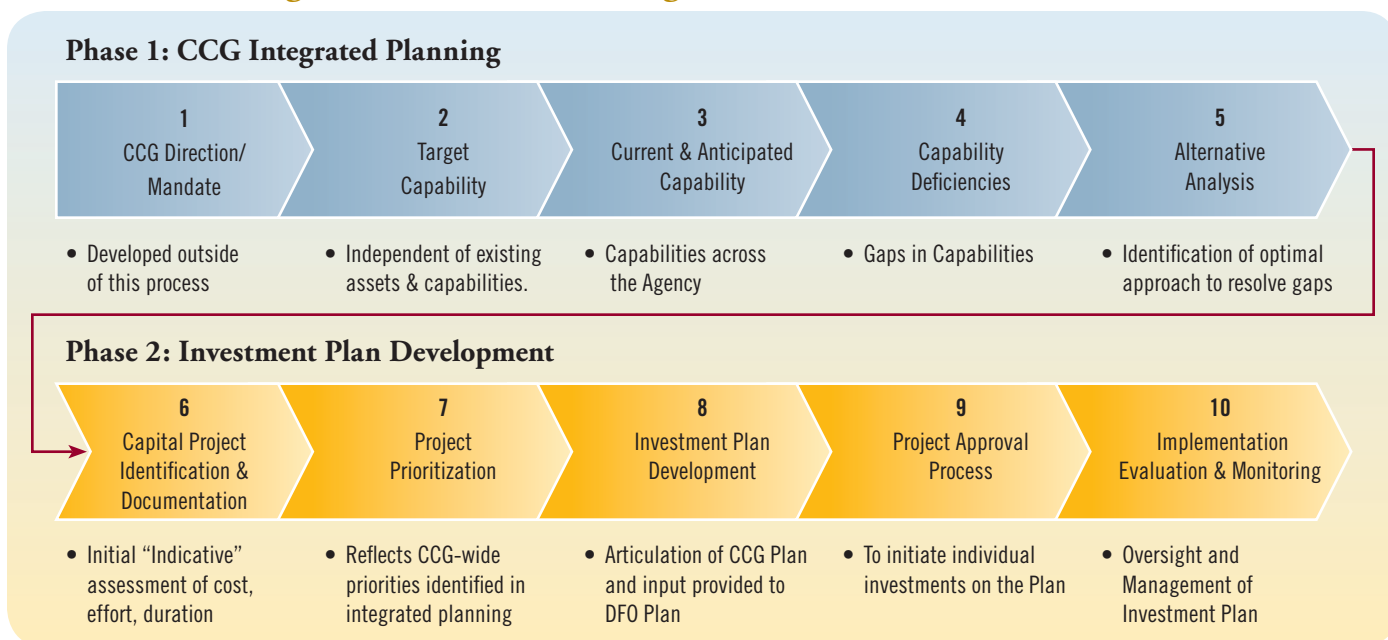
CCG's Integrated Investment Planning Framework was created to guide the Agency through the creation of its first-ever Investment Plan. The framework built upon sound planning practices in place in the past to:

- Align CCG with the requirements on the new TBS *Policy on Investment Planning – Assets and Acquired Services*; and
- Leverage lessons learned from previous planning cycles to improve the level of integration across CCG in the planning process.

A high-level view of CCG's Integrated Investment Planning Framework is included in Section 2.6. This Appendix provides additional detail on the activities undertaken in each step within the Framework.

The following figure depicts the ten steps in CCG's investment planning framework.

Chart 6: CCG Integrated Investment Planning Framework



Each individual step in the framework is described below.

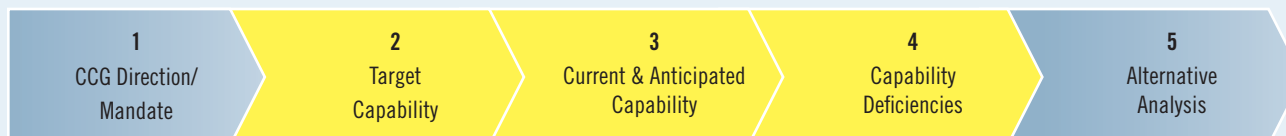
Activity 1: CCG Direction/Mandate



The framework begins with CCG's Direction, Mandate, Strategy and Priorities. The articulation of CCG's direction and mandate provides the context for making CCG's investment decisions. The direction and mandate are enshrined in other documents such as legislation, the Report on Plans and Priorities and CCG's Business Plans. Changes to the Agency's direction, mandate or priorities should never be introduced in the Investment Plan.

Activities 2, 3 and 4: Capability Gap Analysis

Phase 1: CCG Integrated Planning



The next three activities in the approach combine to provide a capability-based analysis to serve as the basis for investment decisions. Capability analysis begins with an articulation of the capabilities that CCG requires to execute its mandate now, and in the future, on a program-by-program basis.

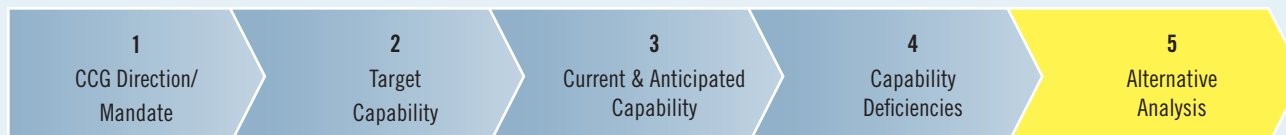
Each program also completes an analysis of current and anticipated capabilities based on:

- the number and condition of existing assets;
- the expected future condition of existing assets;
- already-planned investments to add to the asset base or to extend the life of existing assets; and
- externally acquired services.

The program requirements are compared with current and anticipated capability (from assets and acquired services) to identify any current or future gaps in the Agency's required capabilities. Understanding and articulating the capability gaps of the organization in the short, medium and long term will guide investment as each investment will be expected to address one or more gaps in program capabilities.

Activity 5: Alternative Analysis

Phase 1: CCG Integrated Planning



Alternative analysis is the stage in the process where options to satisfy capability gaps are identified and evaluated. The goal of this activity is to ensure that investment decisions are optimized based on a reasonable suite of options/alternatives which may include:

- One-for-one asset replacement;
- Replace with a different type of asset (technology, configuration, etc.);
- Asset purchase or lease; or
- Have the service provided externally.

The result of the analysis will be a preferred option which will be developed into an investment proposal. As such, Alternative Analysis serves as the bridge between capability and program gaps and investment decisions.

Activity 6: Capital Project Identification & Documentation

Phase 2: Investment Plan Development



Once a preferred option is identified to address a capability or program gap, a project proponent is identified and tasked with preparing an Investment Summary Note (ISN) to document sufficient detail about the proposed investment for project prioritization and the allocation of funding. The ISN contains key details about the project such as:

- Project description and rationale;
- Size and timing of investment required;
- Identification and evaluation of risks associated with the investment; and
- Provisional project prioritization score (to be discussed below).

Note: ISNs can be prepared at any time during the year by project proponents, but they are collected and reviewed together annually as a part of Project Prioritization.

Activity 7: Project Prioritization

Phase 2: Investment Plan Development



The objective of project prioritization is to determine which investments will be made in light of the scarce resources available to the Agency. Prioritization takes place in three stages:

Stage 1 – “Pure” project prioritization

“Pure” prioritization is completed at the COE level and focuses on articulating the true requirements and priorities of the Agency. The goal of pure prioritization is to rank projects in order of priority in the absence of internal or external constraints.

Project proponents use CCG’s Priority Ranking Framework to assign each project a score on eight criteria across three categories that permit the collection of information needed by Investment Management Board to make effective investment decisions. The categories and criteria are:

Category	Criterion
Asset Condition Category	Asset Condition Survey
Program Requirements Category	Capability Gap Analysis/ Future Program Direction
	Risk to Program
	Government Priority
	Impact on CCG Clients
Administrative Category	Financial Impact of Project
	Timing/Window of Opportunity
	Cross-Functional Benefit of the Project

Once projects are scored using the Priority Ranking Framework, they are compiled, circulated for comment within CCG, and reviewed on an organization-wide basis.

While the “Pure” prioritization list cannot on its own determine how CCG will spend its capital funds in any given year, it is a valuable tool to articulate the gap between funding levels and funding requirements as well as the Agency’s investment priorities.

Note – the Investment Project Priority Ranking Framework is designed to be a Decision Support Tool for CCG management. The purpose of this prioritization framework is to collect the information required to make the best investment decisions for CCG. It is not intended to be a mechanical determinant of project priority or to decide which projects get funded without the application of judgment.

Stage 2 – “Practical” project prioritization

Practical prioritization determines which of the organization’s priorities will be funded based on the application of constraints such as internal capacity to deliver the project, contracting lead times and industrial capacity as well as financial constraints. CCG’s Integrated Technical Services (ITS) and Major Crown Projects (MCP) groups are involved to integrate internal and external capacity to deliver on the proposed

investments; Integrated Business Management Services (IBMS) is involved to outline the financial constraints facing the Agency.

Practical prioritization takes place at a cross-functional meeting that includes the key internal stakeholders for CCG's investment plan. The purpose of this meeting is twofold:

- Serve as a peer review within CCG of each COE's proposed investments (including the priority ranking scores assigned to the investment).
- Integrate the input of CCG's project delivery and financial management organizations into the order of priority for the proposed investments.

The result of pure and practical prioritization is a list of proposed investments that can be implemented over the five year planning horizon, but with a focus on the upcoming year. Each investment will be assigned to one of four categories:

- New Starts/ "Tier I" Plan
Projects to be funded out of the current fiscal year's funding envelope.
- "On Deck"/ "Tier II" Plan
Projects that are unable to be funded within the current year's allocation due to lack of funds but not due to lack of capacity – activities that could be executed now if funding was available. Note: may also include future phases of ongoing projects that can be accelerated to avoid slippage.
- Future Starts
High-priority projects identified for implementation in future years (when capacity to implement the projects is available both inside and outside CCG).

Investments can be confirmed and scheduled to begin in future years when capacity constraints are no longer applicable.

- External Funding Source
Projects that are not affordable within CCG's major capital funding envelope.

Stage 3 – Investment decision

The results of the pure and practical prioritization exercises are presented to CCG's Investment Management Board for review and approval. This is an important step in the process because it allows senior CCG management to provide a final allocation of available funding reflective of the organization's priorities. While each COE works with a notional funding envelope when putting forward their proposed investment list, IMB may shift funding between COEs if high-priority projects are left unfunded on one COE's list.

As a part of this stage in the Investment Plan Development, CCG also works with other Centres of Expertise within DFO to communicate the Agency's requirements and to assist those COEs with their own project prioritization. The affected DFO COEs are Real Property, and Information Management & Information Technology. Representatives from Resource Management & Financial Allocation within Integrated Business Management Services coordinate a review meeting between relevant CCG stakeholders and those COEs to ensure that the proposed CCG-related investments within those COEs are the highest priority of the Agency.

Activity 8: Investment Plan Development

Phase 2: Investment Plan Development



Once the investment list has been approved by IMB, CCG prepares its Investment Plan documentation. While the Investment Plan only needs to be submitted to TBS every three years, CCG and DFO plan to revise the Investment Plan annually (as we have done previously with the Long-Term Capital Plan). This approach ensures that the organization is always forward-looking when making investment decisions.

*Activity 9: Project Approval Process***Phase 2: Investment Plan Development**

Once investments have been included in the Investment Plan, they are still subject to project approval before implementation. CCG has adopted a risk-based project approval process internally that applies a similar philosophy to the one used by the Treasury Board Secretariat (TBS) when determining the authorities vested in each department. It is at this stage that the Project Complexity and Risk Assessment (PCRA) is first completed for each project, which implies that no money can be spent on a project before this step. Details of the CCG project approval process are available on the CCG Intranet.

*Activity 10a: Implementation Evaluation & Monitoring***Phase 2: Investment Plan Development**

CCG has a strong track record of very rigorous monthly project progress reporting. On a monthly basis, CCG's Investment Management Board (described above in Appendix B – CCG Organization Structure and Governance) reviews the budget, scope, timeline and risks associated with every planned and ongoing investment within the Agency. Projects showing issues on any of these dimensions are required to report to IMB regarding the causes, mitigations and proposed solutions on a project-by-project basis. In this way project issues are identified as early as possible and highlighted to Senior Management for attention, decision and remedial action.

In addition to the project-by-project review, the effect of project performance is also evaluated on a regional basis (to help identify any areas that are consistently faced with challenges in project management effectiveness and to develop long-term solutions to issues) and national basis (to provide a holistic view of the budget, timeline and resource impacts on the agency as a whole).

This has proven to be an extremely effective and successful framework for CCG, and is a significant contributor to the Agency's ongoing successful track record for project delivery.

Activity 10b: Annual Integrated Investment Planning Process Review

On an annual basis, the Resource Management and Financial Allocations team will conduct debriefing sessions with Integrated Investment Planning Process participants and stakeholders and revise the process as necessary to ensure that it is meeting the planning needs of the Agency.

APPENDIX D: CAPABILITY GAPS IDENTIFIED IN THE 2010/11 PLANNING CYCLE

The Capability Gap Analysis is an annual exercise undertaken by the Canadian Coast Guard in order to identify gaps in the Agency's ability to meet mandated service requirements. This analysis considers gaps derived from the condition of current assets over time and the evolution of program requirements.

For each of CCG's programs, the analysis has reviewed the assets in place now to meet current needs and the assets expected to be in place to meet future needs. The analysis has also identified expected future shifts in service requirements, which have been factored into the gaps identified.

In general, most of the gaps related to growth in program requirements are related to an expected demand increase in the Arctic. It is apparent that demand for all of CCG's services will grow in the North as shipping in the North grows. Some of these gaps pertain to requirements that are beyond the planning horizon for the current Investment Plan.

The following list summarizes all of the gaps that have been identified, but it must be noted that not all of these gaps can or will be addressed. As outlined in CCG's Integrated Investment Planning Framework, the next step is to consider the identified gaps and analyze possible alternatives for the most significant gaps.

AIDS TO NAVIGATION

- Increased requirement for visual and aural aids to navigation to support re-supply of northern communities and Arctic shipping.
- Increased requirement for visual aids on the Pacific coast as shipping increases.
- Increased pressure to maximize channel loadings, leading to increased support requirements from Fleet for the placement of buoys.
- Provision of DGPS services in Arctic.
- Replacement of DGPS hardware and software as existing assets are now approaching the end of their operational life.
- Automate lightstations in Pacific Region.
- Ongoing lifecycle replacement of Aids to Navigation.
- Replacement of old buoys with four season buoys where it makes sense.

- Refurbishment of helicopter landing pads at Aids to Navigation Sites to enable maintenance activities at the sites.
- Deteriorating real property facilities at the following lightstations: Estevan Point, Ivory Island, Nootka, Triple Island, Port Colborne, Cape Sable, and Cape Race. (Real Property)

WATERWAYS MANAGEMENT SERVICES

- All of the major waterways connecting the St. Lawrence and the Great Lakes require ongoing maintenance dredging as silting never ends.
- Increased Channel Bottom Monitoring (surveying) in Arctic waters.
- The Fraser River Stevenson North jetty requires restoration as the structure has deteriorated (Real Property).
- The Fraser River trifurcation requires restoration as the structure has deteriorated (Real Property).
- The breakwater at Maugher's Beach in the Maritimes Region has deteriorated and will continue to until it is restored (Real Property).

SEARCH AND RESCUE SERVICES

- Increased demand for SAR coverage in the North.
- Normal replacement of SAR vessels as they reach the end of their life-cycles.
- Existing coverage provided by VHF radio and VHF Direction Finding (VHF-DF) networks requires improvement to better facilitate SAR communications for SAR system notification and during SAR missions.
- Port Hardy Station deterioration (Real Property).
- Saltspring/Ganges station is aging and requires modernization (Real Property).
- Kingston SAR station requires rehabilitation (Real Property).
- Burin SAR Station requires rehabilitation (Real Property).
- Port Weller SAR Station requires replacement (Real Property).

ENVIRONMENTAL RESPONSE

- All of the ER equipment is aging and either has or is approaching the end of its operational life. All of this equipment requires replacement.

MARINE COMMUNICATIONS AND TRAFFIC SERVICES

- VHF-DF coverage is non-existent in some areas on both the east and west coasts.
- Information Logging System to replace aging technology currently in use for MDS and NAVTEX.
- Ongoing refurbishment of MCTS communication towers and sites.
- National VTMISS Replacement to consolidate existing systems and update aging technology.
- Continuous Marine Broadcast Refurbishment to update aging technology.

- VHF-DF Direction Finding System refurbishment to increase levels of service and reliability.
- The facilities for MCTS Ucluelet have aged and require renovations (Real Property).

ICEBREAKING SERVICES

- Satellite Coverage: There is currently an “image repeat” period of approximately three days; meaning that information from satellites is only updated once every three days.
- Systems used to collect, automate and distribute ice information need to be upgraded. Existing systems are aging and may experience problems operating on upgraded operating systems.
- Greater data transmission capability north of 72 degrees latitude. While voice transmission is currently adequate, at this latitude, data compression and transmission capability are limited. This requirement will become more acute as time progresses.
- Lack of reserve capacity in High-Endurance Multi-Tasked Vessels, specifically in Maritimes Region.
- Lack of smaller icebreakers in Maritimes Region necessitating the deployment of ACVs from Quebec Region at the end of the winter season to do flood control, small harbour and fishing harbour breakouts.
- Lack of icebreaking resources on the Labrador Coast.

LIFECYCLE ASSET MANAGEMENT SERVICES

- Heavy Equipment Refurbishment to replace aging equipment used to support many programs.
- There is a need to standardize CCG operational networks in order to ensure compliance with IM/IT policies and procedures, and to provide a common platform to increase reliability of CCG service delivery.
- There is a need to link two maintenance management systems: Maximo for shore assets and MAINTelligence for ship assets. This is required as part of CCG’s overall maintenance management strategy.

FLEET OPERATIONAL SERVICES

- As a result of global warming, there will be a growing need for additional coverage in the Arctic as commercial users increase their presence in this area and the resulting existence of new commercial ports and waterways.

- An increasing proportion of the small craft asset base is aging and deteriorating beyond repair with some being kept in service only by means of costly repair and maintenance.
- Currently, CCG helicopters are equipped with a High Frequency (HF) tracking system (NavLink) that provides a tracking mechanism only when flying from a vessel and has no shore-based capability. NavLink is obsolete, with CCG being the only remaining user worldwide.
- Presently, CCG does not have an automatic system for tracking the Fleet. The CCG's current voice communication systems are limited in this capability. They do not provide a real time position and are not able to give a known position of small craft.
- A national standard of electronic data transmission from ships-to-shore and shore-to-ships does not currently exist. The Business Data Exchange Improvements for Ships project will establish national standards for vessel informatics that not only include technologies on-board vessels, but all aspects related to ship-to-shore data exchange.

CANADIAN COAST GUARD COLLEGE

- The College's capability gaps at this time are mainly related to real property requirements. The following life-cycle related gaps have been identified: Refurbishment of Great Lakes Wing; Roof Replacement; Simulator Replacement building/space; and Miramichi Wing residential refurbishment.

COMMON INFRASTRUCTURE

- Numerous gaps related to Real Property and the deteriorating state of CCG's facilities (Seal Cove Base, Quebec Base protection cathodique, Quai de la Reine, Newfoundland and Labrador (NL) Southside Base Exterior Reconstruction, BIO Second Access, NL Southside Base Fendering system, Arviat Breakwater and Moorings – Nunavut, Cape Dorset Breakwater & Mooring Bollards, Iqaluit Area Office, Parry Sound Base, Prescott Base, Quebec Base underground conduits & water collection system, Quebec Base move security building, Shannon Hill Addition, NL Southside Base Operational Storage Facility, Victoria Base, and Newfoundland and Labrador Southside Base reconstruction.

CCG has identified gaps that will arise in our capability to meet our mandate without investment in our asset base. These gaps occur in the future (capability analysis uses a 20-year time horizon) and do not currently impact the delivery of services. This allows CCG the necessary time to look at alternatives for filling these gaps and balance priorities in allocating its limited financial resources. The next step in the investment planning framework is to identify options to deal with the most significant gaps. This exercise may lead to investment projects to address these gaps. This will help ensure that all CCG's investments are allocated to the highest priorities which are clearly linked to real mandate requirements.

Note that not all capability gaps are necessarily addressed in this Investment Plan. A capability gap may not be addressed for a number of reasons, including:

- the lack of internal and/or external capacity to address the capability gap in the planning cycle;
- the lack of funds available in the planning cycle; and,
- a sufficient amount of lead time to address the gap in future planning cycles.

In each instance, the existence of a capability gap without a planned investment is not cause for concern in and of itself – capability gap analysis uses a long planning horizon to allow the Agency to anticipate future requirements and plan for them with foresight.

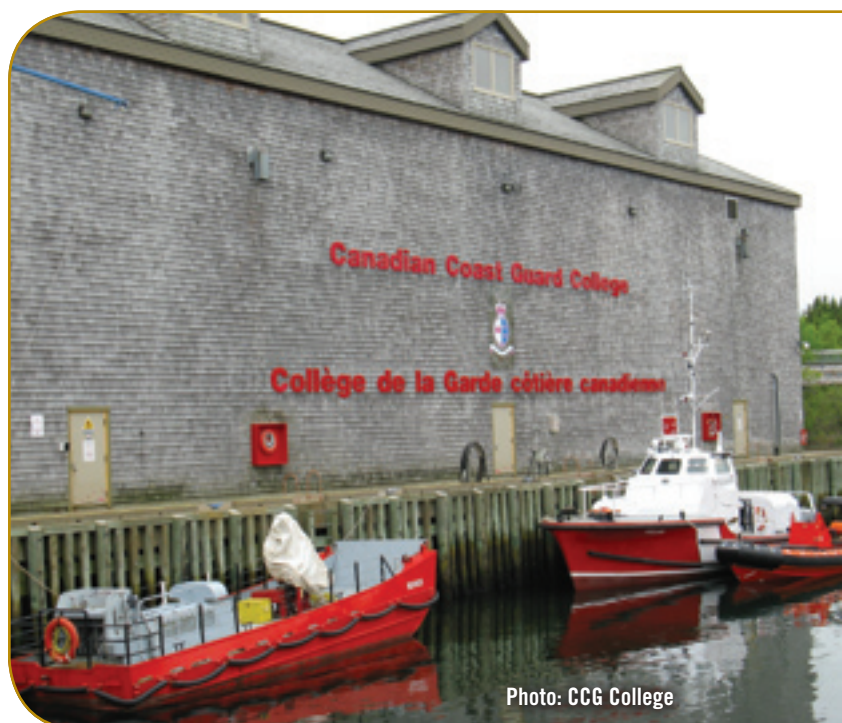


Photo: CCG College

APPENDIX E: CCG DETAILED PROJECT DESCRIPTIONS

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SELECTED INVESTMENT DESCRIPTIONS – PROGRAM INFRASTRUCTURE ASSET CATEGORY

A-Base Investments

The Equipment and Other Moveable Assets (EOMA) COE has a total of 40 investments projects worth \$292.4M. Of these investments, 24 are ongoing projects that consume \$135.2M of the Vote 5 A-Base budget in this five year planning cycle. These investments appear in the Investment Plan but CCG is not seeking authority from TBS to proceed with them. The approval was already granted through requests in previous Long-Term Capital Plans and/or through specific projects above CCG's existing authority levels. The COE also identified 16 new investment projects, totalling \$157.2M from the Vote 5 A-Base budget, which will be initiated during this planning cycle. Three illustrative/typical projects among the new starts are described below:

Project Name	COE
Marine Communication and Traffic Services (MCTS) Information Logging System	EOMA
Project Description	
This project will replace the outdated Message Data System and automatic message broadcasting system (MDS/NAVTEX) with a new MCTS Logging System at 22 MCTS centres, including the training simulator at the Canadian Coast Guard College. The MDS/NAVTEX system is among the oldest of MCTS assets, in the range of 20-30 years. The technology is so obsolete that it is no longer possible to repair or replace some of the components; making maintenance on this critical safety system extremely difficult. The existing software cannot run on modern hardware.	
Total Estimated Cost	Timing
\$4.6M	2010/11 - 2014/15

Project Name	COE
Fixed Aids Sites Refurbishment / Modernization (Phase 3)	EOMA
Project Description	
This project will replace, remove, relocate, redesign, and/or refurbish many critical short-range fixed aids to navigation and associated site infrastructure in all CCG regions to address high-risk items associated with structure failure and potential departmental liabilities. The existing fixed aids are aging, affecting reliability and the ability to meet program demands. An analysis of the existing infrastructure indicates that a significant percentage of the assets are beyond their life expectancy. The refurbishment of fixed aids sites will involve, in many cases, the use of new technology thereby reducing future maintenance costs and maintaining a reliable network of aids to navigation.	
Total Estimated Cost	Timing
\$17.5M (\$14.6M in current planning cycle)	2011/12 - 2015/16

Project Name	COE
CCG Operational Network (OpNet)	EOMA
Project Description	
This project will create a centralized CCG operational network by integrating approximately 40 different mission critical stand-alone operational systems, currently in use and vulnerable to failure. The operational network will serve as the backbone for a national standardized CCG operational system for delivering services consistently and efficiently across Canada. Improving CCG's operational systems/applications will take advantage of new technologies and result in greater efficiencies in CCG practices for the delivery of its mission-critical functions. The risks of service interruptions to clients would be minimized and the new centralized network would provide a platform for the next generation of CCG operational applications.	
Total Estimated Cost	Timing
\$7.5M (\$5.7M in current planning cycle)	2012/13 - 2015/16



Photo: PA Region

B-Base Investments

There are no B-Base investments planned in the Program Infrastructure asset category for this investment planning cycle.

Economic Action Plan Investments

There are no Economic Action Plan investments planned in the Program Infrastructure asset category.

SELECTED INVESTMENT DESCRIPTIONS – FLEET ASSET CATEGORY

A-Base Investments

The Fleet COE has a total of 34 investment projects in this five year planning period that will consume \$447.4M of the Vote 5 A-Base budget. Of these investments, 25 are ongoing projects totalling \$351.4M. These investments appear in the Investment Plan but CCG is not seeking authority to proceed with these investments since it has already been granted. The COE has also identified 9 new investment projects requiring \$96.0M in investments from the Vote 5 A-Base budget, and will be initiated in this planning cycle. Three illustrative/typical projects among the new starts are described below:

Project Name	COE
Vessel Tracking System	Fleet
Project Description	
This project will equip the Canadian Coast Guard Fleet's 116 vessels and 100 Small Craft with a Vessel Tracking System. Currently, the CCG does not have an automatic system to track the Fleet. In line with CCG modernization and support to the evolving national security agenda mandate, including support to Maritime Domain Awareness and on water enforcement, acquiring a vessel monitoring system that allows for the tracking of vessels by Global Positioning Satellite (GPS) will result in more efficient and effective delivery of CCG services.	
Total Estimated Cost	Timing
\$3.6M Total Estimated Cost	2010/11-2011/12

Project Name	COE
Near-Shore Fishery Research Vessel (<i>CCGS Shamook</i> replacement)	Fleet
Project Description	
This project proposes the acquisition of a Near-Shore Fishery Research Vessel to replace <i>CCGS Shamook</i> . At 34 years old and at the end of its operational life cycle, it would take an unreasonably high amount of funding to extend the life of <i>CCGS Shamook</i> so that ongoing and future program requirements can be met. Even with a vessel refurbishment, many of the program requirements would still not be met, such as accommodation for mixed gender and larger crews as well as scientific staff, use of hydro-acoustic surveys that require "quiet" operation, and increased space for laboratories, storage and staging areas. The vessel is under-powered, has insufficient lab space and accommodations for its roles, and requires improved lateral stabilization for some missions.	
The acquisition of a newly constructed replacement vessel will mean an increase in the number of days that the platform is available for program activities and a decrease in operating and maintenance costs. In addition, a newly constructed vessel will result in increased safety for both the crew and scientific staff and better multi-tasking capability in order to meet the Statement of Operational Requirements (SOR) which was revised by CCG in consultation with the Science Sector.	
Total Estimated Cost	Timing
\$16.0M Total Estimated Cost	2011/12-2013/14

Project Name	COE
<i>CCGS Leonard J. Cowley</i> Vessel Life Extension	Fleet
Project Description	
The vessel is designed as an Offshore Patrol Vessel with an extended forecastle and accommodation amidships. While the vessel is equipped for the role of fisheries patrol, it is also suitable as a standby vessel in SAR applications. In addition, the <i>CCGS Leonard J. Cowley</i> has ice transit capabilities. The vessel currently has a high utilization rate.	
The vessel reached its operational mid-life in 2007/08 and a Vessel Life Extension should be conducted in order to ensure that vessel operation capabilities do not deteriorate. Given timelines for replacement of Offshore Patrol Vessels, long-term reliability of the <i>CCGS Leonard J. Cowley</i> is at risk without this project. Completion of a Vessel Life extension on the <i>CCGS Leonard J. Cowley</i> will help ensure the vessel meets operational requirements of service. The ship, as a federal government asset, will maintain its functionality and integrity. Seaworthiness will also be maintained to improve health and safety concerns that may otherwise arise.	
Total Estimated Cost	Timing
\$10.0M Total Estimated Cost	2013/14 - 2014/15

B-Base Investments

The Fleet COE has four Major Crown investment projects ongoing that are funded by separate government funds:

Table 19 CCG Major Crown Projects – 2010/11 to 2014/15 Planning Cycle

Project	Total Estimated Cost	Investment This Planning Cycle	Planned Completion Date
Air Cushion Vehicle (ACV)	\$27.3M	\$27.3M	2013/14
Mid-shore Patrol Vessels (MSPV)	\$227.0M	\$201.2M	2013/14
Offshore Fishery Science Vessels (OFSV)	\$244.0M	\$229.7M	2015/16
Offshore Oceanographic Science Vessel (OOSV)	\$144.4M	\$143.4M	2014/15
Polar Icebreaker	\$800.0M	\$329.9M	2019/20
Total		\$931.5M	

Delivery of these investments is managed by the Major Crown Projects organization within CCG.

Note that some of the investments have implementation timelines longer than the 5-year planning horizon used in this investment plan. For example, the Polar Icebreaker project was initiated in 2009/10 and will continue until 2019/20. The \$931.5M planned investment figure reflects only expenditures that are planned within the investment planning horizon.

Economic Action Plan Investments

The Fleet COE has ten Economic Action Plan investments that are under way and will be completed in 2010/11. Approximately \$93M of EAP funding will be invested across a range of projects including vessel refits, Vessel Life Extensions and small vessel acquisitions. The EAP funding will also be augmented in some cases, by the CCG Vote 5 Major Capital budget, to ensure enough funding is available to complete these projects.

Table 20: CCG Economic Action Plan Investments

Type of Project	Project	2009/10 Actual Spending			2010/11 Planned Spending		
		EAP	Additional LTCP	Total Project	EAP	Additional LTCP	Total Project
Vessel Life Extensions	<i>CCGS Bartlett</i>	18,448.3	-	18,448.3	3,540.0	-	3,540.0
	<i>CCGS Tracy</i>	10,522.1	-	10,522.1	2,227.9	-	2,227.9
	<i>CCGS Limnos</i>	6,896.3	-	6,896.3	1,873.0	-	1,873.0
	<i>CCGS Tanu</i>	350.0	-	350.0	7,728.9	-	7,728.9
	<i>CCGS Cape Roger</i>	1,655.1	-	1,655.1	10,244.9	-	10,244.9
	SUBTOTAL	37,871.8	0.0	37,871.8	25,614.7	0.0	25,614.7
Vessel Acquisitions	Near-shore Fishery Research Vessel (3)	2,878.1	-	2,878.1	31,458.0	2,000.0	33,458.0
	Small Craft - Fast Rescue Craft	8,238.9	-	8,238.9	4,561.7	-	4,561.7
	Environmental Response Barges	0.0	1,415.3	1,415.3	4,692.3	1,400.0	6,092.3
	SUBTOTAL	11,117.0	1,415.3	12,532.3	40,712.0	3,400.0	44,112.0
Refits	Planned Refit Projects	24,448.7	-	24,448.7	14,673.3	-	14,673.3
	SUBTOTAL	24,448.7	0.0	24,448.7	14,673.3	0.0	14,673.3
Major Crown Projects	Five (5) 47' Motor Lifeboats (Cape Class)	8,530.6	-	8,530.6	12,000.0	-	12,000.0
	SUBTOTAL	8,530.6	0.0	8,530.6	12,000.0	0.0	12,000.0
TOTAL		81,968.1	1,415.3	83,383.4	93,000.0	3,400.0	96,400.0

Note: \$175 M received from the Economic Action Plan (EAP) for 2009/10 and 2010/11.

APPENDIX F: CCG-RELATED REAL PROPERTY INVESTMENTS AND PROJECT DESCRIPTIONS

As described in Section 3.2, CCG depends on investments made by Centres of Expertise managed by Fisheries and Oceans Canada. In particular, the Real Property COE, a distinct Centre of Expertise managed within the Fisheries and Oceans Canada (DFO), includes numerous CCG-related projects in their investment plan. As part of the CCG Integrated Investment Planning approach, an annual meeting is held with each COE to communicate the Agency's requirements and to review the CCG-related plans of these DFO-led COEs.

CCG personnel also participate, as required, in department-wide prioritization and peer review activities for these investments to ensure that COEs are addressing the Agency's top priorities. These activities are described in detail in the DFO Investment Plan.

In the 2010/11 to 2014/15 planning cycle, the Real Property COE plans to implement 28 separate investments on behalf of CCG totalling \$135.0M. The Real Property COE has also identified \$55.6M of additional unfunded requirements that will be addressed if additional funding becomes available or will be addressed in future planning cycles. Three illustrative/typical projects among the new starts are described below:

Project Name	COE
MCTS Ucluelet Facility Renovation	Real Property
Project Description	
This project is designed to achieve a comprehensive renovation and renewal of the existing Marine Communication and Traffic Services (MCTS) Ucluelet facility in the Pacific Region. The project is proposed to be conducted in a staged three-year program. Most of the new assets are replacements for existing facility components.	
These investments will ensure the continued ongoing effective operation of Canada's only CCG facility on the west coast of Vancouver Island that offers strategic value for the CCG and other government department operations.	
Total Estimated Cost	Timing
\$4.5M Total Estimated Cost	2012/13 to 2014/15

Project Name	COE
Fendering System Replacement and Wharf Repairs – Southside Base, St. John's, Newfoundland	Real Property
Project Description	
The project consists of replacing the existing fendering system at Berth 30, repairing the existing piles at Berths 28, 29, 30 & 31 and constructing a heavy load lifting pad at the Southside Base. This project is considered critical to ensure that the Southside Base wharf remains operational for CCG and other DFO Programs in the Newfoundland and Labrador Region. A failure at either Berth at the Southside Base would result in loss of valuable dock space, significant impact on cost and delivery of DFO programs and a possible safety concern to vessels from exposure to damaged fenders. Completion of this work would provide uninterrupted service for the remaining lifecycle of the Southside Base wharf facility.	
Total Estimated Cost	Timing
\$4.4M Total Estimated Cost	2010/11 – 2011/12

Project Name	COE
Canadian Coast Guard College Simulator Replacement Accommodation	Real Property
Project Description	
This project will develop accommodations at the Canadian Coast Guard College for a major simulator replacement program at the College site in Westmount, Nova Scotia. The College is the national training authority for CCG and delivers programs for Fleet Officer Training, Marine Communication and Traffic Services, Marine Maintenance and Equipment Training, Search and Rescue and Environmental Response. A modernized training-based simulator replacement program is scheduled for:	
• The Nautical Science Program • The Marine Communication and Traffic Services Program • The Marine Maintenance and Electronic Technology Program	
This simulator accommodation project will ensure a training environment that will house the technical infrastructure required for the new simulators as well the ancillary space requirements for instructors, debrief rooms and administrative/operational personnel based on increased program delivery from the College site.	
Total Estimated Cost	Timing
\$6.9M Total Estimated Cost	2012/13 – 2014/15

Full details of all Real Property investments on behalf of CCG can be found in the DFO Investment Plan.

APPENDIX G: INVESTMENT PLAN RISK ASSESSMENT DETAILS

The following table identifies risks and recommended mitigation strategies to the successful implementation of the Integrated Investment Plan.

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Table 21: CCG IIP Detailed Risk Descriptions and Mitigation Strategies

Risk	Mitigation Strategy
Insufficient Investment in Asset Base Canadian Coast Guard has identified investment in its asset base as a high risk area. There is concern that CCG will be unable to procure and maintain its asset base, in a timely fashion, to deliver mandated services. While the inevitable trend towards lower fleet reliability has been moderated by more aggressive and carefully managed maintenance and refurbishing programs, and through new acquisition decisions, “rust-out” remains a serious risk to CCG and DFO objectives. There is concern that current recapitalization plans will not replace assets in a timely manner, and that the condition of land based assets, such as fixed aids, may be worsening at an even faster rate than fleet assets, thereby also significantly contributing to the level of risk. Impact: 4 – Very High Likelihood: 3 – Moderate	This risk is mitigated by the Agency’s long-term planning efforts, namely the Fleet Renewal Plan and the Shore-based Infrastructure Renewal Plan. By articulating a concrete, long-term plan for the lifecycle management of the Agency’s assets, CCG is able to articulate its funding needs (over and above the annual Vote 5 allocation) for Major Crown Projects. To date, the combination of Vote 5 and Major Crown funding has been effective at sustaining the Fleet. Although mitigated, some risk will still exist going forward based on the availability of Major Crown funding to complete the required investments.
Changing Priorities – Programs Despite the recent global economic downturn, marine traffic is expected to increase in the medium to long term. This traffic, combined with rapid technological advancements in the marine and shipbuilding industries and climate-change impacts, including fluctuating water levels and extended shipping seasons, is among the factors expected to place increased demands on CCG Maritime Services programs, including Icebreaking, Search and Rescue, Environmental Response, and Waterways Management. The CCG Integrated Investment Plan was developed with the understanding that the Agency’s expectations and mandate will be relatively stable over time. There is a risk that priorities could change, due to a change in government policy, that may require increased departmental emphasis on a specific priority. Impact: 3 – Medium Likelihood: 1 – Rare	This risk is mitigated primarily by the fact that CCG completes a full investment planning cycle each fiscal year (not just in the years the IP needs to be submitted to TBS). The monthly Investment Management Board (whose role is described above in Appendix B – CCG Organization Structure and Governance) meetings also provide a short term ability to respond to program changes as they occur during the fiscal year. CCG therefore actively manages to mitigate these risks.
Changing Priorities – Assets The CCG Integrated Investment Plan was developed with the best possible understanding of asset conditions. However, there is a risk that priorities could change due to program delivery or health and safety concerns. For example, if an existing asset deteriorates faster than projected and begins to pose a safety risk to workers or the public or begins to interrupt program delivery. Impact: 3 – Medium Likelihood: 5 – Almost Certain	This risk is mitigated by the management and oversight of CCG’s investment portfolio by the IMB. If a breakdown of an asset necessitates the initiation of an investment outside of the regular planning cycle, IMB engages project managers across the country to identify projects with forecasts that can be pushed into the next fiscal year to allow implementation of the emergency investment.
Resource Availability – Internal There is a significant amount of effort inherent in the implementation of the investments on CCG’s Investment Plan. There is a risk that the proposed investments will exceed the Agency’s capacity to implement them. Impact: 4 – Very High Likelihood: 2 – Unlikely	Historically, numbers and skills of staff required for these projects have corresponded well with the nature of projects and the required project implementation and management skills, and departmental human resource capacity was taken into account when developing the IP and the associated timelines. This risk is further mitigated by the “Practical” prioritization step in the Investment Planning framework, where proposed investments are reviewed with CCG implementation organizations to ensure that sufficient internal and external capacity are available.

Risk	Mitigation Strategy
Resource Availability – External (Supply Limitations) The state of the shipbuilding industry in Canada has been identified as presenting a primary source of risk to timely investment in CCG's asset base related to contractor execution of fleet renewal plans on time and within budget. The potential risk that Major Crown Project replacements may not be acquired as planned is amplified by: • a slow and cumbersome procurement process relying on inexperienced personnel; • a significant lack of marine engineering capacity in Canada in terms of skills and actual shipbuilding capacity; • few competitors in the industry putting CCG in the position of being a price taker; • the customized nature of the design, construction, and equipment requirements for many vessels destined for government service; • price volatility in material, component and construction service supply chains; and • difficulty for ship builders in obtaining working capital and accessing credit. Impact: 4 – Very High Likelihood: 3 – Moderate	Through its Centre of Expertise planning structure, CCG maintains regular contact with industrial partners and plans investments according to available capacity. This risk is further mitigated by the “Practical” prioritization step in the Investment Planning framework, where proposed investments are reviewed with CCG implementation organizations to ensure that sufficient internal and external capacity is available. CCG also participates in the National Shipbuilding Procurement Strategy with the Department of National Defence. This program ensures timely and cost-effective procurement of new vessels by creating a sufficient volume of known shipyard work to enable a streamlined national contracting process. This program will also facilitate private investment in Canadian shipyards and provide CCG opportunities to achieve economies of scale and reduce overall project costs.
Over-programming Experience has consistently shown that despite best efforts, external factors often lead to project delays. In order to minimize Vote 5 lapses, CCG's Investment Management Board has decided to over-program its capital vote. This level is determined annually by IMB based on a number of factors including CCG's experience with the types of projects planned, communication with industry, communication with PWGSC (as the contracting authority), and internal capacity. There is a risk that the level of over-programming chosen for the Investment period is incorrect (either too high or too low). Impact: 3 – Medium Likelihood: 2 – Unlikely	CCG's regular project status monitoring enables the department to proactively manage projects that will not be able to spend their allocation and other projects that are in need of funding. CCG slots its approved projects into one of two lists: projects that will be started immediately in the fiscal year and projects which are lower priorities/ have shorter lead times that can begin after the start of the fiscal year. When oversight identifies that CCG is running the risk of lapsing funds, IMB reviews opportunities for Tier II projects to be activated. When oversight identifies that not enough projects are slipping in order to cover over-programming, project managers across the country are engaged to identify projects with activities that can be pushed into the next fiscal year.
Cost Increases The cost of investments scheduled later in the planning cycle is forecasted to the best of the Agency's ability, based on extensive experience and expertise. However, changing resource prices and labour markets mean that final investment costs may not match forecasts. (Note – this does not refer to cost over-runs that occur once an investment is initiated.) Impact: 3 – Moderate Likelihood: 3 – Medium	This risk is mitigated primarily by the fact that CCG completes a full investment planning cycle each fiscal year – the value of a proposed investment will be monitored over time and any significant changes will affect the Agency's proposed investments since the investments cannot exceed available funding. Mitigation will be achieved largely by incorporation of revised costs in the Investment Plan on an ongoing basis as projects progress through the procurement process, by reallocating among initiatives and projects and revising and rebalancing the IP.
Procurement CCG relies on the assistance of third parties to address functions critical to the delivery of CCG programs and services, such as corporate services, acquisitions and procurement. Expediting procurement is a top priority of the federal government, and CCG must work closely with federal departments and central agencies to find simpler and more streamlined processes through which to acquire needed assets and capabilities. Impact: 3 – Moderate Likelihood: 3 – Medium	This risk is mitigated, to the greatest ability possible by performing ongoing consultation and collaboration with PWGSC, and by the Agency's long track record/expertise at supporting major procurement initiatives in support of CCG's infrastructure.

APPENDIX H: ACRONYMS

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ACV	Air Cushion Vehicle	MB	CCG Management Board
AToN	Aids to Navigation	MCP	Major Crown Projects
BIO	Bedford Institute of Oceanography	MCTS	Marine Communications and Traffic Services
C&A	Central and Arctic	MDS	Message Data System
CCG	Canadian Coast Guard	MLM	Mid-Life Modernization
CCGA	Canadian Coast Guard Auxiliary	MS	Maritime Services
CCGC	Canadian Coast Guard College	MSPV	Mid-Shore Patrol Vessels
CCGS	Canadian Coast Guard Ship	NAVTEX	Navigation Telex
COE	Centre of Expertise	OFSV	Offshore Fishery Science Vessels
DFO	Fisheries and Oceans Canada	OOSV	Offshore Oceanographic Science Vessel
DG	Director General	PAA	Program Activity Architecture
DGPS	Differential Global Positioning System	PCRA	Project Complexity and Risk Assessment
EAP	Economic Action Plan	PWGSC	Public Works and Government Services Canada
EOMA	Equipment and Other Moveable Assets	RMFA	Resource Management & Financial Allocations
ER	Environmental Response	SAR	Search and Rescue
FOR	Fleet Operational Readiness	SCAP	Small Craft Acquisition Program
FRP	Fleet Renewal Plan	SOR	Statement of Operational Requirements
GPS	Global Positioning System	TBS	Treasury Board Secretariat
HF	High Frequency	TEC	Total Estimated Cost
IBMS	Integrated Business Management Services	VHF	Very High Frequency
IIP	Integrated Investment Plan	VHF-DF	Very High Frequency Direction Finding
IMB	Investment Management Board	VLE	Vessel Life Extension
IP	Investment Plan	VMMR	Vessel Maintenance Management Review
ISN	Investment Summary Note	VTMIS	Vessel Traffic Management Information System
ITS	Integrated Technical Services		
LCAMS	Lifecycle Asset Management		
LORAN-C	LOng RANGE Navigation (C refers to the version of the LORAN system in use)		