

HALIFAX

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Item No. 6
Halifax Regional Council
August 13, 2019

TO: Mayor Savage and Members of Halifax Regional Council

SUBMITTED BY: Original Signed by 
Jane Fraser, Director, Finance, Asset Management and ICT/CFO
Original Signed by 
Jacques Dubé, Chief Administrative Officer

DATE: April 24, 2019

SUBJECT: Capital Estimate Analysis

INFORMATION REPORT

ORIGIN

October 16, 2018 Item 14.4.1 Motion: THAT Halifax Regional Council request a staff report that analyzes the last five years of capital project estimates (including buildings, paving, etc.) to understand if projects are generally being under-estimated at each class of estimate and, if so, by how much. The data analysis should be applied to individual projects, types of projects, and projects by department, and staff should provide recommendations to improve capital project estimating and budgeting.

LEGISLATIVE AUTHORITY

Halifax Charter, section 35 (1) The Chief Administrative Officer shall (B) ensure that an annual budget is prepared and submitted to the Council.

BACKGROUND

When considering how to best approach the capital project information to reflect the desired view of effective estimation when budgeting, staff reviewed the \$791 million budgeted over the five most recent fiscal years, 2014/15 through 2018/19. The information is presented in two groups, discrete projects and bundled projects, for the analysis due to their distinct nature in budgeting approaches. Discrete projects are budgeted as specific, one-time design and scope infrastructure investment, whereas bundled projects are smaller-scale routine annual investments across a broader infrastructure group.

Budget estimation for discrete projects relies on the point in progression of planned requirements and design at the time the capital budget is submitted. Budgets for the ongoing annual bundled projects tend to remain at a stable level year over year unless there is a change in asset maintenance approach.

This report presents an analysis on how the financial costs of completed work compares to original project estimates as presented in each capital budget year.

DISCUSSION

The detailed analysis included in Attachment A of this report is presented with two approaches.

The first approach was applied to discrete projects. Discrete projects are generally unique and larger-scale purchase, construction or rehabilitation work to one or a minimal amount of assets. Projects have a defined start and end timeline that usually extends beyond one fiscal year. To analyze discrete projects for this report, only projects that both began and finished during the defined five-year period were assessed; a total of 25 were analyzed out of 67 discrete projects which were in various stages of progress from 2014/15 to 2018/19. Actual expenditure totals for each project were compared to the original project budget estimate in the first year of approval. The analysis also presents what the final project budget approved by Council totalled.

The second approach was applied to bundled projects. Bundled projects are generally annual programs for smaller-scale purchase or routine rehabilitation work that is required regularly for many assets. Within the annual program budget, a selection list of prioritized assets is identified and estimated plus a small value of contingency to allow for market fluctuations and scheduling adjustments in the post-estimating period. Projects chosen for the bundled annual accounts are intended to begin and be completed within one to two calendar years. Therefore, for this report’s analysis, each bundled project account reflects the variance between the annual budget and actual expenditures. For a more fulsome comparison, the analysis also includes balances that were approved in budget years prior to the 2014/15 which were unspent and carried forward. Due to the on-going nature of these programs, work activities tend to occur according to seasonal and service timing drivers rather than strictly within the fiscal year dates; this is demonstrated by the 2013/14 carry forward total of \$37 million being quite similar to the five-year variance of \$35 million which would result as a carry forward total to be spent in 2019/20. The smaller scope and larger volume of assets being managed in these accounts generally result in a much smaller variance than discrete projects, which is then repurposed towards the next prioritized asset on the list. The analysis details included in Attachment A of this report are restricted to include only bundled accounts which average above \$500,000 within the defined five-year term, which resulted in 53 of 76 projects being analyzed.

Project Type	Original Budget Estimate	Actual Expenditures 2014/15 – 2018/19	Variance Amount	Variance %
Discrete	65,095,000	77,372,542	(12,277,542)*	(12%)
Bundled**	432,351,077	411,953,052	34,872,784	8%

* Project variance is primarily the result of the decision to purchase 2 additional ferries.

** Bundled projects budget includes total unspent carried over

In summary, the 25 discrete projects analyzed results in a 12% variance of actuals to the originally estimated budget proposed in the first year of approval. Nearly the entire variance can be attributed to one project, the Ferry Replacement account, in which the scope of the project was redefined from two ferries to four. The decision to increase the scope in the 2017/18 budget was influenced by additional federal funding from the Public Transit Infrastructure Fund program and Building Canada Fund which facilitated escalating replacement plans for the aging fleet. Across the 53 bundled projects analysed, the variance column presents more a timing variance of budget allocation than a representation of inaccurate budget estimation, due to the ongoing program nature of the investment activities which is demonstrated in comparing the similar totals in Attachment A between the 2013/14 Carry Forward column and the Cost Variance column.

During the 2019/20 capital budget process, staff presented to council its plan to transform the annual capital budget into a strategic capital plan in the near term. The transition process is being supported by the integration of asset management methodologies and other industry best practices. Although there will continue to always be an innate risk in capital project budget estimates, due to factors outside the control of skilled staff, such as external market impacts, hidden issues, and mother nature for example, it is anticipated that adopting a longer-term focus and improving the governance structure will result in more consistent and reliable budgeting estimates. Two examples of improved governance include the implementation of the capital prioritization framework into the 2019/20 capital process and the implementation of project business cases beginning in 2020/21.

Within the implemented capital prioritization framework, staff applies four evaluation lenses to assist in determining projects the greatest capital investment value. This best practice enables the ability to assess an extensive volume of infrastructure requests against limited financial and capacity resources. The framework evaluates each project for its Strategic Alignment to Council's six Priority Areas, Impact to Service, Risk, and Capacity to Deliver. The Capacity to Deliver lens provides a structured gating process for staff to evaluate the project's readiness. It is intended to provide transparency to Council and the community by setting expectations that capital projects will not be recommended to proceed in the near term until key aspects of planning and preparation are near completion. This improved state of readiness for projects in the next budget year should increase project budget estimation. As well, improvements being made in 2019/20 to the quarterly capital projections process should additionally help with analyzing the cost drivers of projects to be applied in future planning and estimation.

FINANCIAL IMPLICATIONS

There are no financial implications associated with the analysis of this historical capital information. Integrating industry best practices into HRM's infrastructure management and capital budget governance should result in increased project estimate confidence. Even more importantly, the overall value of capital investments should be increased by creating a longer horizon for infrastructure planning which will better leverage partnerships, synergies, improved coordination and proactive and preventative rehabilitation interventions.

RISK CONSIDERATION

Inherent risk exists in any planning and budgeting process due to the use of assumptions. The analysis requested for this report reviews previous planning accuracy and the request to recommend changes to minimize the level of inherent risk for budget variances.

COMMUNITY ENGAGEMENT

Halifax Regional Council sessions are open to the public. Both agendas and approved minutes can be found on Halifax.ca.

ENVIRONMENTAL IMPLICATIONS

There are no direct environmental implications with this historical information analysis. Recommended capital planning improvements, however, include integrating increased consideration for environmental resiliency.

ALTERNATIVES

Halifax Regional Council could instead direct the CAO to plan and estimate capital budgets according to a different standard.

ATTACHMENTS

Attachment A – Five-Year Capital Project Estimates Analysis

A copy of this report can be obtained online at halifax.ca or by contacting the Office of the Municipal Clerk at 902.490.4210.

Report Prepared by: Crystal Nowlan, Manager, Asset Management, 902.237.8768

ATTACHMENT A

Five-Year Capital Project Estimates Analysis (2014/15 - 2018/19)

Motion: October 16, 2018

Project Name	Project Acct #	Budget Category	Project Lead Business Unit	Project Start	Project End	Project Cost/ Class Estimate	Initial Budget Approval	Total Approved Budget	Project Actuals	Cost Variance to Original Budget	Comments
DISCRETE PROJECTS (Based on Projects where Start and End Dates occur within 5-Yr Range)											
Beazley Field Grandstands	CB000030	Buildings	Corporate & Customer Services	2014-15	2016-17	Class 'D'	235,000	235,000	147,710	87,290	
Bicentennial Theatre Musquodoboit Harbour	CB000035	Buildings	Corporate & Customer Services	2014-15	2017-18	Class 'D'	250,000	325,000	316,776	(66,776)	Budget increase due to scope increase to deal with hazardous materials.
Carroll's Corner Community Centre	CB000063	Buildings	Corporate & Customer Services	2015-16	2017-18	Class 'D'	200,000	200,000	199,187	813	
Chocolate Lake Community Centre	CB000072	Buildings	Corporate & Customer Services	2016-17	2018-19	Class 'D'	220,000	220,000	218,223	1,777	
Cole Harbour High School Enhancements	CB000005	Buildings	Corporate & Customer Services	2014-15	2015-16	Class 'D'	650,000	650,000	630,000	20,000	
Cole Harbour Outdoor Pool & Tennis Court	CP000010	Buildings	Corporate & Customer Services	2015-16	2017-18	Class 'D'	165,000	215,000	210,987	(45,987)	Budget increase of \$50,000 due to cost sharing with Federal Govt which involved Project Scope increase.
Corporate Records Renovation	CB000025	Buildings	Corporate & Customer Services	2014-15	2017-18	Class 'D'	600,000	600,000	445,151	154,849	
Dartmouth Multi-Pad (RBC Centre)	CB180007/CB000049	Buildings	Corporate & Customer Services	2015-16	2017-18	Class 'D'	43,000,000	43,800,000	43,620,794	(620,794)	Additional funds for allowances and change orders.
East Preston Recreation Centre	CB000050	Buildings	Corporate & Customer Services	2015-16	2018-19	Class 'D'	240,000	240,000	226,649	13,351	
Fire Station 14, Woodlawn Recapitalization	CB000054	Buildings	Corporate & Customer Services	2015-16	2017-18	Class 'D'	150,000	150,000	143,060	6,940	
Fire Station 16, Eastern Passage Recapitalization	CB000056	Buildings	Corporate & Customer Services	2015-16	2017-18	Class 'D'	150,000	150,000	132,504	17,496	
Fire Station 20, Lawrencetown Recapitalization	CB000053	Buildings	Corporate & Customer Services	2015-16	2017-18	Class 'D'	100,000	100,000	75,170	24,830	
Musquodoboit Harbour Village Plaza	CB000058	Buildings	Corporate & Customer Services	2015-16	2018-19	Class 'D'	1,080,000	1,080,000	1,075,490	4,510	
North Woodside Community Centre Recapitalization	CB000059	Buildings	Corporate & Customer Services	2015-16	2017-18	Class 'D'	270,000	270,000	252,415	17,585	
Oakwood House Recapitalization	CB000029	Buildings	Corporate & Customer Services	2014-15	2017-18	Class 'D'	110,000	110,000	108,145	1,855	
Quaker House Recapitalization	CB000033	Buildings	Corporate & Customer Services	2014-15	2017-18	Class 'D'	70,000	70,000	54,309	15,691	
Tallahassee Recreation Centre Upgrades	CB000068	Buildings	Corporate & Customer Services	2016-17	2018-19	Class 'D'	310,000	310,000	292,635	17,365	
Election Management Solution	CI990015	Business Tools	Finance, Asset Mgmt & ICT	2014-15	2017-18	Class 'C'	600,000	962,500	952,352	(352,352)	Budget increase due to time and staff constraints and rework of project to meet time lines and deliverables of original contract.
Health and Safety Incident Reporting	CI990010	Business Tools	Finance, Asset Mgmt & ICT	2014-15	2017-18	Class 'C'	1,775,000	1,775,000	1,762,745	12,255	
Fire Services Training Simulator	CE010003	Equipment & Fleet	Halifax Regional Fire & Emergency Services	2015-16	2017-18	Class 'D'	100,000	100,000	88,041	11,959	
New Maintenance Vehicle	CV000001	Equipment & Fleet	Corporate & Customer Services	2014-15	2017-18	Class 'D'	70,000	70,000	69,429	571	
Ferry Replacement	CM000001/ CM180003	Halifax Transit	Halifax Transit	2014-15	2018-19	Class 'A'	12,000,000	24,276,788	24,276,788	(12,276,788)	Originally 2 ferries @ \$6M; scope increased.
Scotia Square Facility	CM000008	Halifax Transit	Halifax Transit	2016-17	2018-19	Class 'D'	150,000	150,000	68,034	81,966	
Mainland Common Artificial Turf Renewal	CP110001	Parks & Playgrounds	Parks & Recreation	2015-16	2017-18	Class 'D'	1,850,000	1,750,000	1,701,969	148,031	
Vertical Expansion of Landfill Cells	CW000006	Solid Waste	Transportation & Public Works	2015-16	2016-17	Class 'B'	750,000	750,000	303,979	446,021	
Total Variance of Discrete Projects Begun and Completed between 2014/15 - 2018/19							65,095,000	78,559,288	77,372,542	(12,277,542)	

Class 'A' = (Pre-Tender) Based on completed construction drawings prior to calling tenders. Should be within 5-10% of actual contract award.

Class 'B' = (Substantive) Based on design drawings and includes the design of all major systems and subsystems

Class 'C' = Based on a comprehensive list of requirements and assumptions

Class 'D' = Based on historical cost data

ATTACHMENT A

Five-Year Capital Project Estimates Analysis (2014/15 - 2018/19)

Motion: October 16, 2018

Project Name	Project Acct #	Budget Category	Department Lead	Project Cost/Class Estimate	2013/14 Carry Forward	5-Yr Project Budget	Mid-Year Adj / Transfers	Project Actuals	Cost Variance	Comments
BUNDLED PROJECTS (Based on annual budget comparison)										
Accessibility - HRM Facilities	CBX01154	Buildings	Corporate & Customer Services	Class 'D'	119,693	2,045,000	-	1,966,342	198,351	
Alderney Gate Recapitalization	CBX01157	Buildings	Corporate & Customer Services	Class 'D'	1,477,560	2,640,000	-	4,027,579	89,981	
Corporate Accommodations	C8000047	Buildings	Finance, Asset Mgmt & ICT	Class 'D'	-	2,000,000	-	1,079,261	920,739	ETA late 2019/20
Corporate Accommodations - Alderney Campus	C8000046	Buildings	Corporate & Customer Services	Class 'D'	-	920,000	-	653,981	266,019	
Energy Efficiency Projects	CBX01161	Buildings	Planning & Development	Class 'D'	444,564	2,275,000	-	865,315	1,854,249	\$1.2M returned in 2016/17
Facility Maintenance - HRM Facilities	CB990001	Buildings	Corporate & Customer Services	Class 'D'	177,361	2,750,000	-	2,116,265	811,096	Account closed and amount returned
Fire Station Land Acquisition	CBX01102	Buildings	Corporate & Customer Services	Class 'D'	-	2,000,000	-	1,052,372	947,628	Account closed and amount returned
Fire Station Replacements	C8000065	Buildings	Corporate & Customer Services	Class 'D'	-	2,000,000	-	-	2,000,000	18/19 Budget, attachment E; Council approved deferral of project.
General Building Recapitalization	C8000090/CB01269	Buildings	Corporate & Customer Services	Class 'D'	1,079,560	500,000	-	828,029	751,531	ETA mid 2019/20
Halifax City Hall and Grand Parade Restoration	CBX01046/CB180003	Buildings	Corporate & Customer Services	Class 'D'	481,846	6,430,000	-	6,787,309	124,537	
Library Masterplan Implementation	C8000077	Buildings	Halifax Public Library	Class 'D'	-	500,000	-	353,582	146,418	
Multi District Facilities (MDF)-Upgrades	C8000002/CB180001	Buildings	Corporate & Customer Services	Class 'D'	2,220,582	5,730,000	-	6,916,989	1,033,593	ETA mid 2019/20
Regional Library Facility Upgrade	CBX01165	Buildings	Halifax Public Library	Class 'D'	-	1,250,000	-	887,503	362,497	
Roof (Category 3)	CBX01272/CB180005	Buildings	Corporate & Customer Services	Class 'C'	2,040,660	2,430,000	-	3,961,148	509,512	ETA mid 2019/20
Scotiabank Centre	C8000028	Buildings	Corporate & Customer Services	Class 'C'	-	11,485,000	-	10,917,382	567,618	ETA mid 2019/20
Application Recapitalization	C1000002	Business Tools	Finance, Asset Mgmt & ICT	Class 'C'	289,720	6,320,000	-	5,658,621	951,099	ETA late 2019/20
ICT Infrastructure Recapitalization	C1000004	Business Tools	Finance, Asset Mgmt & ICT	Class 'C'	368,372	3,905,000	-	3,870,233	403,139	
Fire Apparatus Fleet Expansion	CE010004	Equipment & Fleet	Corporate & Customer Services	Class 'C'	-	1,400,000	-	1,767,400	(367,400)	Budget increase of \$367,400 for 2 vehicles higher than budgeted
Fire Apparatus Replacement	CVJ01088/CE180002	Equipment & Fleet	Corporate & Customer Services	Class 'C'	5,298,559	6,593,000	-	11,674,552	217,007	
Fire Services Equipment Replacement	CE010001/CE180004	Equipment & Fleet	Halifax Regional Fire & Emergency	Class 'D'	-	5,230,000	-	4,916,911	313,089	
Fleet Vehicle Replacement	CV001087/CE180001	Equipment & Fleet	Corporate & Customer Services	Class 'C'	2,469,452	7,100,000	-	9,084,030	485,422	ETA late 2019/20
Police Fleet	CVK01090/CE180003	Equipment & Fleet	Corporate & Customer Services	Class 'C'	801,559	6,200,000	-	5,185,216	1,816,343	ETA mid 2019/20
Access-A-Bus Replacement	CV000430	Halifax Transit	Halifax Transit	Class 'A'	13,233	3,809,000	-	3,331,983	490,250	
Biennial Ferry Refit	CV000436/CM180007	Halifax Transit	Halifax Transit	Class 'A'	348,149	1,540,000	(735,000)	1,057,883	95,266	Transfer to Ferry Replacement acct in 2016
Bus Maintenance Equipment Replacement	CM000005	Halifax Transit	Halifax Transit	Class 'C'	-	1,525,000	-	850,306	674,694	ETA late 2019/20
Conventional Bus Expansion	CV020003/CM180008	Halifax Transit	Halifax Transit	Class 'D'	-	9,200,000	3,985,000	13,185,091	(91)	Budget increase in 2017/18
Conventional Bus Replacement	CV020004/CM020006	Halifax Transit	Halifax Transit	Class 'A'	-	30,267,000	(12,613,186)	17,377,329	276,485	Transfer to MetroX account in 2017/18
Ferry Terminal Pontoon Rehabilitation	CBX01171	Halifax Transit	Halifax Transit	Class 'A'	3,011,990	4,490,000	(2,600,000)	4,859,616	42,374	Reduction in 2018/19
MetroX Bus Replacement	CM020002/CM000016	Halifax Transit	Halifax Transit	Class 'D'	-	4,725,000	25,160,271	29,885,271	0	Transfer from Conventional Bus acct & PTIF increase
Transit Facilities Upgrades (Bundle)	CBX01164	Halifax Transit	Corporate & Customer Services	Class 'D'	660,397	500,000	123,500	1,283,897	-	Budget increase in 2017/18
Beazley Field Complex	CP000018	Parks & Playgrounds	Parks & Recreation	Class 'D'	-	500,000	-	455,845	44,155	
Park Land Acquisition	CPX01149/CP180004	Parks & Playgrounds	Parks & Recreation	Class 'D'	1,862,644	7,000,000	-	8,281,317	581,327	ETA based on availability and negotiations
Park Recapitalization	CP000002/CP180001	Parks & Playgrounds	Parks & Recreation	Class 'D'	971,442	9,995,000	-	10,240,612	725,830	ETA late 2019/20
Regional Trails Active Transportation	CPX01196	Parks & Playgrounds	Parks & Recreation	Class 'D'	1,086,014	1,700,000	(1,293,070)	1,492,944	-	Closed in 2016/17; Transferred to AT Strategic acct
Regional Water Access/ Beach Upgrades	CPX01331/CP180002	Parks & Playgrounds	Parks & Recreation	Class 'D'	1,140,901	2,605,000	-	2,893,461	852,440	ETA mid 2019/20
Sports Fields/Courts - State of Good Repair	CP000003/CP180003	Parks & Playgrounds	Parks & Recreation	Class 'D'	901,768	5,945,000	-	4,272,235	2,574,533	ETA late 2019/20
Sports/Ball Fields/Courts - New	CP000004/CP180005	Parks & Playgrounds	Parks & Recreation	Class 'D'	847,350	3,383,500	-	4,008,952	221,898	
Street Trees	CP990001	Parks & Playgrounds	Parks & Recreation	Class 'D'	151,530	650,000	-	801,530	-	Closed 14/15; Moved to operational program
Active Transportation - Strategic Projects	CTU00420/CR180001	Roads & AT	Transportation & Public Works	Class 'C'	-	14,510,000	2,447,244	13,812,201	3,145,043	ETA late 2019/20
Bridges	CRU01077/CR180003	Roads & AT	Transportation & Public Works	Class 'A'	667,139	9,600,000	-	7,135,806	3,131,333	ETA late 2019/20
Curb Renewals	CYU01076	Roads & AT	Transportation & Public Works	Class 'D'	250,700	1,100,000	-	1,253,343	97,357	
New Paving Subdivision Streets - Provincial	CR990001/CR180007	Roads & AT	Transportation & Public Works	Class 'D'	-	906,186	-	906,186	-	
New Sidewalks	CR000003	Roads & AT	Transportation & Public Works	Class 'D'	916,988	5,000,000	(1,051,222)	4,865,766	-	Closed 2017/18; Combined with Street Recap
Other Road Related Works	CRU01079/CR180004	Roads & AT	Transportation & Public Works	Class 'C'	644,409	9,550,000	-	8,555,600	1,638,809	ETA late 2019/20
Road Operations and Construction - State of Good Repair	CR990002/CR180005	Roads & AT	Transportation & Public Works	Class 'B'	536,897	14,315,000	-	14,432,584	419,313	
Sidewalk Renewals	CKU01084/CR180002	Roads & AT	Transportation & Public Works	Class 'C'	172,715	13,850,000	-	11,238,517	2,784,198	ETA late 2019/20
Storm Sewer Upgrades	CR000001	Roads & AT	Transportation & Public Works	Class 'D'	1,340,423	2,995,000	-	4,214,262	121,161	
Street Recapitalization	CR000005/CR000009	Roads & AT	Transportation & Public Works	Class 'C'	271,278	138,910,000	1,051,222	140,131,154	101,346	Transfer from New Sidewalks 2017/18
Other Lake Equipment	CW000002	Solid Waste	Transportation & Public Works	Class 'D'	435,000	2,370,000	-	2,591,754	213,246	
Intersection Improvement Program	CTU01086/CT180005	Traffic Improvements	Transportation & Public Works	Class 'C'	1,271,085	2,905,000	-	3,878,824	297,261	
Traffic Signal Rehabilitation	CTU00419/CT180002	Traffic Improvements	Transportation & Public Works	Class 'C'	520,544	5,730,000	-	5,406,941	843,603	ETA late 2019/20
Traffic Signal Re-lamping Program	CT000002/CT180003	Traffic Improvements	Transportation & Public Works	Class 'B'	-	1,530,000	-	901,505	628,495	ETA late 2019/20
Traffic Signal System Integration	CT140001	Traffic Improvements	Transportation & Public Works	Class 'B'	1,555,307	2,695,000	-	3,780,318	469,989	
Total Variance of Bundled Projects between 2014/15 - 2018/19					36,847,391	395,503,686	14,474,759	411,953,052	34,872,784	

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