Fleming College

SIR SANDFORD FLEMING COLLEGE BOARD OF GOVERNORS PUBLIC MEETING AGENDA

Wednesday, April 24, 2019
1:20 p.m.

Sutherland Campus
Scholfield Boardroom, B3330
Peterborough, ON

	Topic	Presenter	Time
1.	**Call to Order** • Welcome to the Traditional Territory *The Board of Governors will hold this meeting on the traditional lands of the Mississauga and Anishinaabe peoples*. • Introduction of Guests	D. Marinigh	2 min
2.	**Declarations of Conflict**	D. Marinigh	1 min
3.	**Approval of Meeting Agenda** (pages 1 - 2)	D. Marinigh	1 min
4.	**Consent Agenda** *The following items will be addressed through the Consent Agenda unless specifically requested to be removed for separate attention, by request.* Approval of the minutes from the: **4.1** March 28, 2019 – Public meeting (pages 3 - 6) Receive for information the following reports: **4.2** Report on Contracts Awarded (page 7)	D. Marinigh	1 min

REGULAR AGENDA

5.	**Business Arising** (not otherwise covered) None identified.		
6.	**Decision Items**		
6.1	**Approval of Draft 2019 / 2020 Financial Plan** (pages 8 - 26)	B. Baker and A. Sims	15 min
6.2	**Approval of Student Levied Fees** (pages 27 – 31)	B. Baker, A. Sims, S. Dupret, V. Hynes, N. Khandewal, S. Polley, and C. Smith	10 min
6.3	**New Program Approval: Geothermal** (pages 32 - 88)	J. Jackson and T. O'Connor	10 min
6.4	**Exception to Policy 5-502 Issuance of Diplomas & Certificates** (pages 89 - 97)	S. Kloosterman	5 min
7.	**Discussion Items, Reports and Information Items**		
7.1	**New Program: Public Infrastructure Asset Management Certificate 28, 2019** (pages 98 - 102)	B. Wootton	10 min
7.2	**Quality Assurance Management Report** (pages 103 – 104)		

Receive for information

7.3 Report from the Board Chair D. Marinigh 5 min

Next Public Board Meeting: May 22, 2019
Sutherland Campus, Peterborough
Time – to be confirmed

7.4 Report from the President (pages 105 - 108) M. Adamson 5 min

8. Other Business

9. Roundtable – "Community Connections" D. Marinigh 5 min

An opportunity to share information that may be of interest / benefit to other Governors or to the College.

10. Adjournment approximately 2:30 p.m.

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Board of Governors PUBLIC MEETING
Wednesday, March 27, 2019
Sutherland Campus, Scholfield Boardroom – B3330
Peterborough, ON

M I N U T E S

Present: Mr. Fred Clifford (phone)
Ms. Chloe Craig
Mr. George Gillespie
Dr. Aaron Grant
Ms. Hajni Hos
Ms. Rosemarie Jung
Mr. Mike Leonard
Ms. Katherine MacIver
Mr. Dan Marinigh, Board Chair
Ms. Mary Lou McLean
Ms. Cathy Praamsma
Ms. Maureen Adamson, President

Ms. Michele McFadden, Board Secretary

Regrets: Ms. Rosemarie Jung

Senior Administration:
Mr. Drew Van Parys, Executive Director Marketing and Advancement
Ms. Shelley Mantik, Vice-President Human Resources
Dr. Brent Wootton, Vice-President Applied Research and Innovation
Ms. Maxine Mann, Dean, School of Trades & Technology

Staff Guest:
Ms. Angie Sims, Director Budget Services

1. **Call to Order**
The Chair called the meeting to order at 2:11 p.m. and acknowledged holding the meeting on the traditional lands of the Mississauga and Anishinaabe peoples.

Quorum was confirmed, regrets noted, staff and guests in attendance were **welcomed**.

2. **Declarations of Conflict**: There were no conflicts disclosed concerning items identified on the agenda.

3. **Approval of the Agenda:** It was moved by Mr. Leonard, seconded by Ms. McLean and carried to approve the printed agenda for the March 27, 2019 Public Meeting.

4. **Consent Agenda**
Governors were afforded the opportunity to identify those items to be removed from the Consent Agenda and placed on the regular Public meeting agenda.

Moved and seconded by Ms. Craig and Ms. McLean

THAT the Board of Governors of Sir Sandford Fleming College approve the Consent Agenda for the March 27, 2019 meeting and, through this consent,

4.1 approve the minutes of the January 30, 2019 Public Board meeting;
4.2 receive for information the financial statements to March 31, 2018 for the Frost Student Association and the Student Administrative Council.

Motion Carried
(Resolution BoGMarch27-2019 #1)

REGULAR AGENDA

5. **Business Arising from Previous Meetings:** None identified.

6. **Approval/ Decision Items**

6.1 2019-2020 Program Compulsory Fees: The ministry framework requires college boards to approve tuition and ancillary fees for all programs of instruction and courses operated by the college. Governors were afforded the opportunity to ask questions of Ms. Sims.

Moved and Seconded by Ms. McLean and Dr. Grant
THAT the Board of Governors of Sir Sandford Fleming College approve the Program Compulsory Fees for 2019-2020 as presented in Appendices A and B in the Report.

Motion Carried
(Resolution BoGMarch27-2019 #2)

6.2 Creation of a Maker Space: Dean Mann presented a request to develop a maker space location in downtown Peterborough. Maker spaces are collaborative, creative, hands-on learning facilities often featuring 3D printers and other manufacturing technology. The lack of a maker space is viewed negatively by students within the School of Trades and Technology; the addition of such a space would enhance community partnerships.

Moved and Seconded by Ms. Craig and Ms. Grady
THAT the Board of Governors of Sir Sandford Fleming College approve the concept of a School of Trades and Technology Maker Space at an estimated cost of $300,000.

Motion Carried
(Resolution BoGMarch27-2019 #3)

6.3 New Program – Supply Chain Management Global Logistics: The preliminary program proposal was brought to the Board a year ago. This is an opportunity to return to the field of international commerce given the strength of international student recruitment and growing popularity of Graduate Certificates focusing on more specialized areas of study.

Moved and Seconded by Mr. Gillespie and Ms. Hos
THAT the Board of Governors of Sir Sandford Fleming College approve the *Supply Chain Management - Global Logistics* Ontario College Graduate Certificate program with an implementation date of September 2019 for submission to the Ministry of Training, Colleges and Universities for funding approval.

Motion Carried

(Resolution BoGMarch27-2019 #4)

7. INFORMATION ITEMS

7.1 Financial Position at February 28, 2019: The College is on track to building its surplus/contribution to reserves for year end.

Moved and Seconded by Ms. McLean and Mr. Gillespie
THAT the Board of Governors of Sir Sandford Fleming College receive the month-end report for information.

Motion Carried
(Resolution BoGMarch27-2019 #5)

7.2 Projects / Property Update: The past several months have been an active period for projects and property improvements. This Report details a variety of projects that are completed or in progress.

Moved and Seconded by Ms. Grady and Ms. Praamsma
THAT the Board of Governors of Sir Sandford Fleming College receive the projects/property update report for information.

Motion Carried
(Resolution BoGMarch27-2019 #6)

7.3 Quality Assurance Monitoring Report: The Board requested a monthly dashboard be created to assist in monitoring the College's progress towards meeting the OCQAS (Ontario Colleges Quality Assurance Service) recommendations. The Quality Assurance Monitoring Report uses icons to represent progress to date on the OCQAS areas of improvement. The report will be updated and presented at subsequent Board meetings.

Moved and Seconded by Ms. McLean and Mr. Gillespie
THAT the Board of Governors of Sir Sandford Fleming College receive the quality assurance monitoring report for information.

Motion Carried
(Resolution BoGMarch27-2019 #7)

7.4 Report from The Board Chair: Five Governors have completed governance training through The College Centre of Board Excellence. Good Governance Certificates were presented to Governors Craig, Grant, Leonard and McLean; an Advanced Good Governance Certificate was presented to Governor MacIver.

College Day at Queen's Park is Monday, April 1; President Adamson and Governor MacIver will attend. The day ends with a culinary showcase reception and Fleming culinary students will be there.

The annual Innovation and Technology Showcase takes place Friday, March 29 here at the Sutherland Campus in the KTTC between 11:00 a.m. and 4:00 p.m. Governors were encouraged to explore the projects developed by our Technology and Business students.

Open House takes place Saturday, April 6 at all our campus locations.

Next Board Meeting: April 24, 2019. Members were asked to keep the day available.

Moved and Seconded by Ms. MacIver and Ms. Craig
THAT the Board of Governors of Sir Sandford Fleming College receive the verbal report of the Board Chair for information.

Motion Carried
(Resolution BoGMarch27-2019 #8)

7.5 Report from the President

Moved and Seconded by Ms. Hos and Dr. Grant
THAT the Board of Governors of Sir Sandford Fleming College receive the Report of the President for information.

Motion Carried
(Resolution BoGMarch27-2019 #9)

8. **Other Business:** None tabled.

9. **Community Connections:** Members were afforded the opportunity to share information that may be of interest to other Governors or to the College.

10. It was moved by Ms. Craig, seconded by Ms. Praamsma and carried to adjourn the Public Board meeting at 2:42 p.m.

Period: January 1, 2019 - March 31, 2019

Procurement Contract Awards Between $500,000 and $999,999.

Award Date	Description	Vendor Name	Contract Amount (tax excluded)
25-Jan-19	GGCRP Project Component - Remove existing, supply and install new HM doors, frames, hardware, aluminum doors, frames and hardware, new ramps for AODA , new window film, & new window blinds at Sutherland Campus, Frost Campus, Haliburton Campus	Steelcore Construction Ltd	$ 636,000.00

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SUBMISSION TO THE BOARD OF GOVERNORS

Agenda Item 6.1

Report Title: Draft Fleming College 2019-2020 Financial Plan
Report to: Public Board Meeting **Meeting Date: April 24, 2019**
Requested Action: Decision / Approval
Prepared and Submitted by: Angie Sims, Director Budget Services

OVERVIEW / BACKGROUND

To present the draft 2019-2020 Financial Plan (Preliminary College Budget) to the Board of Governors for review and approval.

ANALYSIS / PROPOSED OPTIONS

The scope of analysis will depend on the nature of the issue but may include Legal Impact; Financial/HR Implications; Student Impact; Stakeholder Implications. Pros and Cons for each option should be identified as appropriate.

Fleming College Administration has developed the Draft Financial Plan for 2019-2020 (Preliminary Budget) providing for a $2.1 million surplus to contribute to reserves, and is recommending it to the Board of Governors for Approval. The budget projects a decrease in revenues from 2018-2019 Budget Update of $10.3 million (6.9 %) with a decrease in expenditure of $3.8 million (2.6%). Pertinent analysis and background details supporting the budget are as follows:

REVENUE:

Significant components that make up the College Revenue include grants, student fees and other income:

Grants are relatively stable year over year, with changes based on enrolment projections or negotiated amounts. However, for 2018-2019, the ministry (MTCU) had awarded the College an additional $5.26 million in one-time operating grant which has now been removed. Changes to all operating grants have been itemized on page 6 of the attached Financial Plan.

Student tuition fees are projected to decline this year in combination with the mandated 10% reduction on tuition fees and a planned decrease of international enrolments to right size the college student mix. Our International strategy is to plan on reducing our reliance on India while growing other international markets. Additional work is still required to determine what the right student mix should look like for the College and its highly likely the current enrolment plan will require adjustments in the fall Budget Update. It is also anticipated that we will see an increase in international levels currently projected. The current budget is absorbing the reduction in tuition revenues by not holding a large projected surplus or contingency fund as we have been able to do over the past couple years. However, it is the intention of the College to rebuild a contingency funding source.

Details of other income include a variety of revenue sources. Other revenues such as bookstore and food services are projected on past trending tied to enrolment projections and inflation factors and are projected to increase slightly. A new international fee was also introduced part way through last fiscal as an application fee through the student OCAS portal to receive and track student applications.

Non-operating revenues are projected based on known funding agreements and pose very little risk. This includes residence and parking fees, both with good history of occupancy/sales and established fee structures.

OPERATING EXPENDITURES:

The budget process takes into consideration the results of our long range planning process, projection of College revenues and the business plan to project department funding needs and to set expenditure budget allocations. A review of departmental capacity including full-time and/or part-time compliment are also considered within this process.

While 2018-2019 staffing decisions focused on bolstering our FT faculty, 2019-2020 is a year of refocusing and rebuilding in support of the new College Strategic Plan. Organizational reviews are being planned to inform organizational redesign, therefore limited increases to staffing are being planned this year. Current plans have been limited to areas required to improve College quality service delivery capacity including additional staff to support course and program reviews, new design and digital marketing.

We will continue to update our long range planning projections as we refine the College enrolment strategies to ensure our financial health and our ability to maintain the College strategy of building surplus budgets into the future.

ONE-TIME INVESTMENTS, CAPITAL ASSETS AND NET ASSETS:

As part of the planned $137.9 M in college expenditures, the College is proposing to spend $1.6 M in renovations, deferred maintenance and small equipment renewal for the classrooms, including $0.4 M funded directly from residence and parking revenues and $0.5 M funded from grants.

Acquisition of Capital Assets is planned at $6.7 M, including $3.2 M funded by grants.

Further details are included in the 2019-2020 Capital Investment Plan>$50,000 Report attached.

The Ministry's Financial Health and Sustainably Metrics are all projected to be achieved.

RISK CATEGORY

Select all that apply *(to check a box, double click; from drop-down menu, select "checked" under Default Value)*

☐ External Environment ☐ Internal Environment ☒ Financial ☒ Human Resources
☒ Information Technology ☐ Legal ☒ Operational ☒ Strategic ☐ N/A

RECOMMENDATION AND/OR MOTION *(i.e. Receive the update on Winter Enrolment for information. Refer the matter to Committee for further investigation. Approve the proposed xyz program of instruction.)*

It is recommended the Board of Governors of Sir Sandford Fleming College:

Approve the Fleming College Financial Plan 2019-2020 which provides for:

Total Revenue of $140,043,649
Expenditures of $137,902,149
Capital Expenditure of $6,677,005
Net Assets at March 31, 2020 of $46,199,000 and

THAT the Preliminary Budget be submitted to the Ministry of Trades Colleges and Universities

SUPPORTING DOCUMENTATION

Draft Fleming College 2019-2020 Financial Plan
2019-2020 Capital Investment Plan > $50,000 Report
Financial Health and Sustainability Metrics

Fleming College

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Fleming College Financial Plan 2019-2020

DRAFT

April 2019

Fleming College Financial Plan 2019-2020

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I. Summary

The College Financial Plan for 2019-2020 anticipates contributing $2.1 million to College reserves.

Total revenues in this Financial Plan are forecasted at $140.0 million, a decrease of $10.4 million (6.9%) from the 2018-2019 Budget Update. Expenditures are planned at $137.9 million, $3.8 million (2.6%) less than 2018-2019 Budget Update.

Capital Investment is budgeted at $6.7 million with $3.2 million projected to be funded by capital grants.

The following table provides a high level Financial Summary:

Fleming College Financial Plan Preliminary Budget 2019/2020

SUMMARY

($ 000's)

	Preliminary Budget 2019/2020	Budget Update 2018/2019	$ Increase (Decrease)	% Increase (Decrease)
Revenue				
Grants & Reimbursements	$ 45,636	$ 51,333	$ (5,697)	-11.1%
Student Tuition Fees	56,147	59,834	(3,688)	-6.2%
Contract Training	1,015	934	81	8.7%
Other Income	16,237	15,482	756	4.9%
Amortization	4,487	4,393	95	2.2%
Skills, Bursaries, Ancillary & Projects	16,520	18,437	(1,916)	-10.4%
Revenue	140,044	150,413	(10,369)	-6.9%
Operating Expenses	113,939	111,144	2,795	2.5%
Amortization Expense	7,046	6,604	441	6.7%
Skills, Bursaries, Ancillary & Projects	16,917	23,905	(6,988)	-29.2%
Expenses	$ 137,902	$ 141,653	(3,751)	-2.6%
Excess of Revenue over Expenditures	$ 2,142	$ 8,759	(6,618)	-75.6%

	Projected Balance Mar 31/20	Projected Balance Mar 31/19	$ Increase (Decrease)	% Increase (Decrease)
NET ASSETS				
Invested in Capital Assets				
As of April 1, 1997	$ 2,417	$ 2,417	$ -	
Since April 1, 1997	25,938	24,235	$ 1,703	
Total Invested in Capital Assets	28,355	26,652	1,703	6.4%
Unrestricted				
Operating (Board Reserves)	19,290	17,149	439	
Accrued vacation pay, Future Benefits and Derivative & Sick Leave & PSA *	(9,242)	(9,242)	-	
Total Unrestricted	10,048	7,907	439	5.5%
Internally Restricted	1,168	1,168	-	
Subtotal Net Assets	39,571	35,727	2,142	6.0%
Externally restricted	6,628	6,628	-	
TOTAL NET ASSETS	$ 46,199	$ 42,355	$ 2,142	5.1%

II. Revenue

College revenues are budgeted at $ 140.0 million, a decrease of $10.4 million (6.9%) from the 2018-2019 Budget Update.

	Preliminary Budget 2019-2020	Budget Update 2018-2019	Change	%
Revenue				
Grants and Reimbursements	**(45,636,458)**	**(51,333,224)**	**5,696,766**	-11.1%
Student Tuition Fees	**(56,146,846)**	**(59,834,437)**	**3,687,591**	-6.2%
Contracted Educational Services	**(1,015,405)**	**(934,366)**	**(81,039)**	8.7%
Other Income				
Other Income	**(10,308,030)**	**(9,810,428)**	**(497,602)**	5.1%
Ancillary Fees	**(5,929,463)**	**(5,671,340)**	**(258,123)**	4.6%
Total Other Income	**(16,237,493)**	**(15,481,768)**	**(755,725)**	4.9%
Amortization of Deferred Capital Contributions	**(4,487,000)**	**(4,392,500)**	**(94,500)**	2.2%
Total Operating Revenues	**(123,523,202)**	**(131,976,295)**	**8,453,093**	-6.4%
Skills Programs	**(3,278,133)**	**(3,650,253)**	**372,120**	-10.2%
Tuition Holdback Bursaries	**(3,380,000)**	**(3,050,000)**	**(330,000)**	10.8%
Ministry Bursaries	**(280,800)**	**(582,300)**	**301,500**	-51.8%
Special Projects	**(2,688,321)**	**(4,470,615)**	**1,782,294**	-39.9%
Facilities Renewal and Renovation Projects	**(526,792)**	**(676,325)**	**149,533**	-22.1%
Ancillary Operations	**(6,366,401)**	**(6,007,025)**	**(359,376)**	6.0%
Total Revenue	**(140,043,649)**	**(150,412,813)**	**10,369,164**	-6.9%

Highlights of significant budget assumptions and budget changes on revenue are summarized as follows:

1. Grants and Reimbursements

Grants are budgeted to decrease by $5.697 million from the 2019-2020 Preliminary Budget as follows: ($ 000's)

	Preliminary 2019-2020	Update 2018-2019	Change
Basic Operating Grant	$32,264	$32,807	
Performance Funding Grant	1,795	1,795	
College Funding Formula	**$34,059**	**$34,602**	**(543)**
One-time College Operations Grant	-	5,260	(5,260)
BScN Grant	4,183	4,141	42
Small Northern & Rural Grant	3,969	3,969	-
Second Career Grant	450	700	(250)
Apprentice Grants	1,257	857	400
Special Needs & Interpreter Grants	671	641	30
Municipal Tax Credit	363	406	(16)
Rental Grants	230	250	(10)
Medical & Clinical Grant	380	380	-
Misc. Recoveries	74	127	(54)
Grants and Reimbursements	**$45,636**	**$51,333**	**($5,697)**

Many of the grant forecasts are driven by enrolment projections and thus are subject to increases or decreases as enrolment changes. Significant changes to our grants include the following:

- the overall reduction in grant under the College Funding Formula is due to the new corridor model which has adjusted our grant based on average of our domestic enrolments over the past 3 years which has been declining,
- the one-time grant provided from the provincial budget has been removed and
- College application for new pre-apprentice programs has been accepted

2. Student Tuition Fees

Tuition fee revenue is expected to be $56.1 million, down $3.7 million (6.2%) from the 2018-2019 Budget Update.

Full time tuition is based on a College enrolment plan that is detailed to the program level using approved tuition rates that vary by program. Overall, the enrolment plan is projecting growth in our domestic enrolments with a decline planned in international enrolments taking into account a large expected flow through from the 2017/2018 winter term.

3. Contracted Educational Services

Contract training revenue is subject to annual fluctuation dependant on client groups and specific contracts acquired.

4. Other Income

Overall, Other Income has increased by $0.5 million from the 2018-2019 Budget Update. Other Income is comprised of a variety of income streams from operations, including provincially funded projects/programs, administrative fees, bookstore, and food services, as well as recovery from students for student supply fees, academic fees for field placements, and international student health fees.

While most sources of these revenues are projected to increase for 2019-2020, the main increases are projected to occur in ancillary fee revenue including a new international application fee.

5. Non-Operating Revenues

Non-operating revenues vary significantly year over year as many are based on contractual agreements negotiated annually.

Skills programs include the College contracts for Literacy Basic Skill and Employment Services (CREW).

Ministry Bursaries represent the standard annual bursaries that are disbursed. Additional bursaries become available in year and will be updated in the Budget Update to reflect additional amounts known at that time.

Special Projects include newly negotiated funding agreements, primarily for projects managed through the Office of Applied Research but also include the Language Introduction for New Immigrants (LINC) and special purpose program grants.

Facility Renewal and Renovation Projects revenue represents funding received from the federal and provincial governments for facility and other projects as well as funding received and allocated for items under $5,000 of value, such as academic equipment and personal computers. Items over $5,000 are deemed capital assets. The mix between capital asset and expense will change from year to year depending on the nature and value of these items.

Ancillary Operations revenues are associated with the College residence and parking operations.

III. Expenditures

College expenditures are budgeted at $137.9 million, a decrease of $3.8 million (2.6%) from the 2018-2019 budget update. Expenditures have been aligned with funding projections to provide for a $2.1 million surplus, or contribution to College reserves.

	Preliminary Budget 2019-2020	Budget Update 2018-2019	Change	%
Expenditures				
Salaries and Benefits				
Salaries, Full Time	**49,365,704**	**46,282,848**	**3,082,856**	6.7%
Salaries, Part Time	**18,007,551**	**19,189,543**	**(1,181,992)**	-6.2%
Benefits	**15,002,597**	**14,214,046**	**788,551**	5.5%
Total Salaries and Benefits	**82,375,852**	**79,686,437**	**2,689,415**	3.4%
Non-Salary Expenses				
Instructional Support Costs	**6,653,822**	**6,291,841**	**361,981**	5.8%
Travel and Professional Development	**2,116,319**	**2,031,552**	**84,767**	4.2%
Advertising	**1,281,281**	**1,226,996**	**54,285**	4.4%
Telephone, Audit, Legal & Insurance	**2,828,352**	**3,453,942**	**(625,590)**	-18.1%
Equipment Maintenance	**714,860**	**655,218**	**59,642**	9.1%
Plant and Security	**2,859,044**	**2,850,118**	**8,926**	0.3%
Rentals and Taxes	**995,607**	**1,043,808**	**(48,201)**	-4.6%
Utilities	**2,636,129**	**2,557,366**	**78,763**	3.1%
Contract Services Trent	**2,355,850**	**2,280,436**	**75,414**	3.3%
Services & Other	**8,944,145**	**8,983,662**	**(39,517)**	-0.4%
Long Term Debt Interest	**178,009**	**82,449**	**95,560**	115.9%
Amortization of Capital Assets	**7,045,853**	**6,604,426**	**441,427**	6.7%
Total Non-Salary Expenses	**38,609,271**	**38,061,814**	**547,457**	1.4%
Total Operating Expenditures	**120,985,123**	**117,748,251**	**3,236,872**	2.7%
Investments	**745,154**	**5,632,501**	**(4,887,347)**	-86.8%
Skills Programs	**3,278,133**	**3,650,253**	**(372,120)**	-10.2%
Tuition Holdback Bursaries	**3,380,000**	**3,050,000**	**330,000**	10.8%
Ministry Bursaries	**280,800**	**582,300**	**(301,500)**	-51.8%
Special Projects	**2,688,321**	**4,470,615**	**(1,782,294)**	-39.9%
Facilities Renewal and Renovation Projects	**432,500**	**703,509**	**(271,009)**	-38.5%
Ancillary Operations	**6,112,118**	**5,816,053**	**296,065**	5.1%
Employee Future Benefits	**-**	**-**	**-**	
Total Expenditures	**137,902,149**	**141,653,482**	**(3,751,333)**	-2.6%

Highlights of significant budget assumptions and budget changes on expenditures are summarized as follows:

1. Full Time Salaries

Full time (FT) salaries are budgeted according to Collective Agreements that are currently in place. FT salaries also include approved staff sabbaticals and a provision for sick leaves. Overall FT salary expenditures are projected to increase by $3.0 million (6.7%) over the 2018-2019 Budget Update, accounting for a full year salary for a significant number of new FT faculty hired late in the 2018-2019 year. Additional hiring plans this fiscal year include adding supports in ensuring quality for students and staff.

2. Part Time Salaries

Part time (PT) salaries are expected to decrease by $1.2 million (6.2%) from the 2018-2019 Budget Update. This decrease is primarily related to reduced PT teaching required as a result of added FT faculty.

3. Instructional Support Costs

Instructional support costs including a variety of costs for classroom supplies, field camps, computer software and software maintenance licenses are increasing by $361,981 (5.8%). The main increase is related to added academic software supports.

4. Travel and Professional Development

Overall the travel and professional development (PD) is planned to increase by $84,767 (4.2%) in support of enhancing and promoting staff PD. A larger increase has been planned for onsite PD (up to an additional $300,000), however that is offset by a decrease in travel costs and hospitality events.

5. Telephone Audit Legal & Insurance

Overall, international health insurance expenditures are projected to decrease along with planned decline in international enrolment.

6. Investments

The 2019-2020 planned investments of $ 0.7 million represents annual College infrastructure projects that do not qualify as capital assets. These projects include planned facility repair/renovation and required replacement of IT infrastructure across all campuses. Funding over the past couple of years has been supplemented through special purpose grants and capital project grants that are not available or have not yet been announced for this year.

IV. Capital

Capital spending in 2019-2020 is budgeted at $6.7 million of which $3.1 million is funded from various grant sources. The balance of $3.5 million is capital funded from the College.

Capital budgeted for 2019-2020 is summarized below:

	College Funded	Grant Funded	Total Capital
Building Construction/Renovations	782,871	662,500	1,445,371
Network/IT Systems	1,060,000	-	1,060,000
Academic Equipment	1,327,282	531,708	1,858,990
Applied Research	236,867	1,970,777	2,207,644
Residence	105,000	-	105,000
	3,512,020	3,164,985	6,677,005

2019-2020 Capital Investment Plan > $50,000 Report

PROJECT NAME	BUSINESS NEED	College Base Capital	Enhanced College Capital Grants
Replacement of brick siding - Sutherland	Replacement of stacked brick on the exterior of the Desbiens Wing (yr 2 of a 5 yr plan). Original installation has failed to adhere, causing a H&S risk due to dropping bricks.		300,000
Roof Replacements	Annual cycle roof replace repair.		340,000
LED Lighting installs	Continued efforts to replace college lighting to LED lighting	167,000	
College Campus Master Planning	Develop an Integrated Master Plan for all campuses' program/space needs	140,000	
LAN room chiller install	Completion (install) of prior year project to replace cooling system for Sutherland data centre.	60,000	
Paving	To replace worn asphalt surfaces on various roadways and parking lots	127,500	
Exterior Glazing - Frost	Replacement of existing windows in various locations on main building. Windows are old and have settled leaving exposed areas to the exterior and allowing water infiltration resulting in water and moisture damage and ongoing repairs to the affected areas.	100,000	
Br-Replace Honeywell Card Access	Install replacement Card Access system in D wing (defective) with new standard system that is in A Wing.	65,000	
Building Construction/Renovations	Subtotal Projects > $50, 000	659,500	640,000
Building Construction/Renovations	Subtotal Projects < $50, 000	123,371	22,500
Total Building Construction/Renovations		**$ 782,871**	**$ 662,500**

Network/IT Systems			
Core Network Replacement	The College's current core network switches at the Sutherland and Frost data centres are coming end-of-life and end-of-support. ITS has a limited ability to purchase support for this critical components and has recently resorted to purchasing refurbished parts to supplement growing network infrastructure needs. The College will run an elevated risk of a core network infrastructure failure if these devices are not replaced in the upcoming fiscal year.	400,000	
SAN Refresh	The College disk storage - H drives, S drives and Evolve currently has three Dell Equalogic SANs coming end-of-life/end-of-support in FY2019/2020. This asset will consolidate the College's three oldest SAN into one new consolidated SAN. Without this asset, the College data infrastructure will be at an elevated risk of device failure, and potentially relying only on best effort support to remedy/recover from a SAN failure.	140,000	
Core Firewall Upgrade ROI	The new PA-5220 firewalls are comparable to the College's current PA-5060 but with a substantially lower operating cost. Upgrading is predicted to save the College $70K per year on annual hardware and support costs. The payback for this one-time capital investment is 18-months.	115,000	
Secondary Internet Build-in Fibre	This asset will provide a reliable redundant Internet connection for the College. Current Internet service is via a single provider on a single line, exposing the College to the risk of an extended Internet outage from a variety of factors.	80,000	
AV Digital Upgrade	As part of the analog to digital migration plan, the college must update our audio video switching equipment to stay current. As well as upgrading specific lecture theatres, we are recommending the college also update the classrooms. This will ensure that both external and internal users can display the latest video content. This equipment is also required before we can further upgrade a classroom for lecture capture.	75,000	

VDI Expansion - GPU blade 3	This hardware and software will be used to expand the user capacity of the new Dell VxRail based VDI (Virtual Desktop Interface) solution. The GPU enhanced hardware and graphic licensing are required to run more intense graphics workloads, such as GIS and AutoCAD applications. This hardware will be used to replace the aging VDI hardware currently used for GIS remote academic delivery and general student access to VDI resources as a "virtual LRC".	70,000	
Video Conference Units	Further deployment of additional video conference units for academic delivery & organizational collaboration.	50,000	
Network/IT Systems	Subtotal Projects > $50, 000	930,000	-
Network/IT Systems	Subtotal Projects < $50, 000	130,000	-
	Total Network/IT Systems	**$ 1,060,000**	
Academic Equipment			
TT05-Festo Trainer	Due to demand from domestic and international students, the School of Trades & Technology will be delivering a new post graduate certificate beginning Fall 2019 in the field of Mechatronics. This equipment is essential for curriculum delivery and for applied projects which are a differentiator for the program.	680,000	
SENRS03-Diamond Drill	With a new diamond drill rig, the Resource Drilling and Blasting program could eliminate the 40-year-old outdated technology, which is in need of a very expensive repair. Replacing the Long year translates to reduced fuel consumption and reduced emissions by using current technology. Less fuel consumption equals fewer emissions, which reduces the College's carbon footprint.	279,207	
SENRS02-4 Skid Steers	The Heavy Equipment Operators Program is needing to expand the type of machines they are offering in the program. The majority of new graduates leaving the program going into the workplace will operate skid steer type loaders first as a stepping stone into the operating industry. Skid steer loaders are utilized in virtually all industries	248,184	
JCD01-Phase 2 AV A-Wing	Phase 2 of prior year approved project to provide for a simulation centre management solution within the newly renovated labs in A-wing. This will install cameras in all remaining labs on A1 and A2 and connect them to the management system.		77,558

JCD04-Simulation and Virtual Reality	Installation of immersive simulation pod. This includes everything from driving simulations (ambulance, etc.) firearms training and safety (PF) mental health assessments (SSW, DSW, MHAW) mass casualty scenarios (PN and PMD)		50,000
Academic Equipment	Subtotal Projects > $50, 000	1,207,391	127,558
Academic Equipment	Subtotal Projects < $50, 000	119,891	404,150
Total Academic Equipment		**$ 1,327,282**	**$ 531,708**
Applied Research			
CFI	Fleming applied to CFI and the Ontario Research Fund for $2 million in cash for equipment and increased infrastructure that will allow Fleming's Centre for Advancement of Water and Wastewater Technologies and its private sector partners to discover and develop techniques and methods for water reclamation and nutrient removal.	$ 236,867	$ 1,837,521
NSERC - ARTI	The CAWT successfully obtained funding from NSERC for the acquisition of a centrifuge with a SCADA control system and an inline TSS probe that will provide us an opportunity to expand our capacity to assist our partners with their onsite wastewater treatment technologies research needs.		133,256
Total Applied Research		**$ 236,867**	**$ 1,970,777**
Residence Operations			
	Subtotal Projects < $50, 000	105,000	
Total Residence		**$ 105,000**	
Total 2019-2020 Capital Investment Plan		**$ 3,512,020**	**$ 3,164,985**

Fleming College Financial Plan
Preliminary Budget 2019-2020
Financial Sustainability Metrics (Indicators)

		Projected Balance March 31/20	Projected Balance March 31/19	Change
Ratios	Benchmarks			
Annual Surplus/(Deficit) (in millions of $)	> $ 0	$ 2	$ 15	$ (13)
Accumulated Surplus/(Deficit) (in millions of $)	> $ 0	$ 37	$ 35	$ 2
		Pass	**Pass**	
Net Assets to Expense Ratio	> 60.0%	89.9%	90.2%	-0.3%
		Pass	**Pass**	
Debt Servicing Ratio	< 3.0%	1.2%	0.9%	0.3%
		Pass	**Pass**	
Quick Ratio	> 1:1	2.5	2.1	0.4
		Pass	**Pass**	
Debt to Assets Ratio	< 35.0 %	24.0%	25.3%	-1.3%
		Pass	**Pass**	
Net Income to Revenue Ratio	> 1.5%	1.5%	10.4%	-8.9%
		Pass	**Pass**	

Summary of College Financial Health and Sustainability Metrics

1.	**Annual Surplus/(Deficit)** (revenue – expenses) **Objective:** Measures the excess of revenues over expenses in a given fiscal year. **Benchmark:** Must be greater than $0.
2	**Accumulated Surplus/(Deficit)** (unrestricted net assets + investment in capital assets) **Objective:** Represents the cumulative wealth that an institution has under its own control to assist with ongoing operations and future investment. **Benchmark:** Must be greater than $0.
3	**Net Assets to Expense Ratio** (net assets) / (expenses) **Objective:** This ratio measures the ability of a college to continue operations in the event of a delay in revenue streams. **Benchmark:** A benchmark of 60% or higher was chosen based on historical trend analysis.
4	**Debt Servicing Ratio** (interest expense + principal payments) / (revenue) **Objective:** The percentage of annual revenues that is used to make debt and interest payments. **Benchmark:** A ratio of 3% or lower has been chosen based on historical trend analysis.
5	**Quick Ratio** (current assets) / (current liabilities) **Objective:** This ratio is a measure of liquidity. It measures the college's ability to pay its short term maturing obligations (e.g. biweekly payroll payments). **Benchmark:** A ratio of 1:1 or higher.
6	**Debt to Assets Ratio** (debt) / [(assets) – (endowments)] **Objective:** This ratio measures the proportion of college assets that are financed by debt or other liabilities. A high or increasing value may be predictive of future liquidity problems or a reduced ability to borrow money in the future. **Benchmark:** Trend analysis of college performances and a review of other post-secondary education institutions has led to a benchmark of 35% or lower.
7	**Net Income to Revenue Ratio** (revenue - expenses) / (revenue) **Objective:** This ratio measures the return an institution generates on each dollar of revenue. **Benchmark:** A ratio of 1.5% or higher has been determined based on historical trend analysis.

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SUBMISSION TO THE BOARD OF GOVERNORS

Agenda Item 6.2

Report Title: 2019-2020 College Ancillary and Student Levied Fees
Report to: Public Board Meeting Meeting Date: April 24, 2019
Requested Action: Decision / Approval
Prepared and Submitted by: Greg Jefford and Angie Sims, Director Budget Services

OVERVIEW / BACKGROUND

The Ministry of Training, Colleges and Universities (MTCU) has released a new policy related to student fees and have outlined their categorization of what will be considered an essential fee. Our current fee structure will be adjusted to fit the following categories:

- Athletic and Recreation
- Career Services
- Student Buildings
- Health and Counselling
- Academic Support
- Student Achievement and Records
- Health & Dental Plan (but must allow opt out with proof of pre-existing coverage)
- Student Transit Passes (existing mandatory transit passes will remain)

All other fees not included above are considered non-essential and must be optional.

ANALYSIS / PROPOSED OPTIONS

The scope of analysis will depend on the nature of the issue but may include Legal Impact; Financial/HR Implications; Student Impact; Stakeholder Implications. Pros and Cons for each option should be identified as appropriate.

From the College perspective:

As direct impact to college operating budget we have 3 fees to consider as itemized under the college student fee protocol:

Support Services Fee, IT Tech Fee and Alumni Fee.

1) Our current Support Services Fee has been unbundled and a new fee structure is proposed to align with new Ministry categorization of fees as follows:

Support Services		
Learning Support Services (i.e. Tutoring)	19.18	Essential - Academic Supports
Orientation/Campus Life	3.84	Essential - Academic Supports
Counselling Services	32.61	Essential- Health and Counselling
Health Services	16.30	Essential- Health and Counselling
Career and Graduate Placement Services	13.43	Essential - Career Services
Convocation Ceremonies	11.55	Essential - Student Achievement and Records

2) Our IT Tech Fee ($99.81), as charged in past years, has been deemed essential under the category of Academic Support and will be open to further analysis next fiscal year

3) Our Alumni Fee ($14.61) is non-essential and must be made optional.

Student Association Fees:

The following listing provides a summary of fees that have been confirmed as being essential.

ALL via SAC	Health Insurance- full year	280.00	Essential- Health and Dental (with opt out option)
SAC	Athletic Fee - Sutherland	53.06	Essential-Athletic & Recreation
	Peterborough Sport and Wellness Student Membership	87.55	Essential-Athletic & Recreation
	Student Centre Renovation Fund	40	Essential-Student Buildings
	Building Fund – (PSWC/Sport Field)	42	Essential-Student Buildings
	Transportation-full year	365	Essential - Student Transit Pass
FSA	Athletic Fee – Frost	66.3	Essential-Athletic & Recreation
	Student Centre Frost	40.66	Essential-Student Buildings
	Recreational Building Fund - Frost (Fieldhouse)	15	Essential-Student Buildings
	Lindsay Recreation Facility Fee - Frost	65	Essential-Athletic & Recreation
	Lindsay Transit Fee - per semester	45.84	Essential - Student Transit Pass

The final fee and most controversial of all fees is the Student Activity fee which varies between our two student associations and between campuses. This fee builds the base for the student associations' operating budgets and it funds many activities including orientation, facility costs, social events and staffing/overhead costs. Activities funded by these fees have been itemized as follows:

	Student Activity		
SAC	Academic supports (orientation/handbooks/student advocacy)	9.5	Essential - Academic Support
	General building operations - Sutherland (% SA fee)	48	Essential - Student Building
	Athletic and Recreation - SAC	14.75	Essential - Athletic & Recreation
	Food Bank/Breakfast program	1.25	Optional
	Clubs	2.8	Optional
	Student Governance	8	Optional
	Provincial Advocacy	5	Optional
FSA - Frost	Academic supports (orientation/handbooks/student advocacy)	3.64	Essential - Academic Support
	FSA Operations	57.71	Essential - Student Building
	Mental Health	13	Essential - Health & Counselling
	Pub Operations	9.32	Optional
	Governance	25.24	Optional
	Student Experience	17.39	Optional
	Transition	2.5	Optional
FSA - Haliburton	Academic supports (orientation/handbooks/student advocacy)	10	Essential - Academic Support
	Mental Health	5	Essential - Health & Counselling
	Student Experience	8	Optional
	Transition	2.5	Optional

RISK CATEGORY

Select all that apply *(to check a box, double click; from drop-down menu, select "checked" under Default Value)*

☒ External Environment ☐ Internal Environment ☒ Financial ☐ Human Resources
☐ Information Technology ☐ Legal ☒ Operational ☐ Strategic ☐ N/A

RECOMMENDATION AND/OR MOTION *(i.e. Receive the update on Winter Enrolment for information. Refer the matter to Committee for further investigation. Approve the proposed xyz program of instruction.)*

It is recommended the Board of Governors of Sir Sandford Fleming College:

THAT the Board of Governors of Sir Sandford Fleming College approve the Student Levied Fees for 2019-2020 as presented.

SUPPORTING DOCUMENTATION

Student Levied Fees Schedule

Ancillary and Student Levied Fee Schedule					
(PER SEMESTER)					
Effective September 1, 2019					
COLLEGE ANCILLARY FEES					
	2018/2019 Fees	**2019/2020 Fee Proposal**	**$ increase (decrease)**	**% change in fee**	**Comment**
Alumni - Optional	14.33	14.61	0.29	2.0%	nominal increase to account for inflationary increases, however this fee is now optional for students
Support Services Fee (unbundled for 19/20)	94.02				
Learning Support Services		19.18			
Orientation/Campus Life		3.84			
Counselling Services		32.61			
Health Services		16.30			
Career and Graduate Placement Services		13.43			
Convocation Ceremonies		11.55			nominal increase to account for inflationary increases, adding $1 per student to enhance the college convocation ceremonies
	94.02	96.90	2.88	3.1%	
Information Technology Fee	97.85	99.81	1.96	2.0%	nominal increase to account for inflationary increases
Accumulated Fee Total	206.20	211.32	5.12	2.5%	
Support Services Part Time	0.77/hr	0.77/hr			
max $ 45 per course					
STUDENT LEVIED FEES					
Student Activity – Sutherland /Cobourg (S/C)	95.00				
Academic supports (S/C)		9.50			
General building operations - Sutherland		48.00			includes facility/space cost for Steele Centre
Athletic and Recreation operations (S)		14.75			
Optional:					
Food Bank/Breakfast program (S)		1.25			
Clubs (S)		2.80			Changes to SAC fee structures were required under new policy directive. Overall restructuring has resulted in a small dollar decrease, with multiple fees now being optional.
Student Governance (S/C)		8.00			
Provincial Advocacy (S/C)		5.00			
	95.00	89.30	-5.70	-6.0%	
Student Activity – Haliburton (H)	54.00				
Academic supports		10.00			
Mental Health		5.00			Limited services at Haliburton fall within any essential categories, thus have decreased the student support fee and introduced a student experience fee as optional for students to opt into organized events. Restructuring of the FSA services and staffing was required to comply with the new policy directive.
Optional:					
Student Experience		8.00			
Transition		2.50			
	54.00	25.50	-28.50	-73.2%	
Student Activity - Frost (F)	120.21				
Academic supports		3.64			
FSA Operations		57.71			
Mental Health		13.00			
Optional:					
Pub		9.32			
Governance		25.24			Changes to FSA fee structures were required due to budget and staff restructuring, overall restructuring has required small dollar increase, however many fees are now optional.
Student Experience		17.39			
Transition		2.50			
	120.21	128.80	8.59	7%	
Athletic Fee - **S**	52.02	53.06	1.04	2.0%	nominal increase to account for inflationary increases
Athletic Fee – **F**	65.00	66.30	1.30	2.0%	nominal increase to account for inflationary increases
Athletic Fee – **H**	53.55	0.00	-53.55	-100.0%	eliminating fee under new policy as Haliburton does not host a recreation facility

Peterborough Sport and Wellness Student Membership -**S**		85.83	87.55	1.72	2.0%	nominal increase to account for inflationary increases
Student Centre Renovation Fund - **S**		40.00	40.00	0.00	0.0%	fee set under student referendum as fixed fee
Building Fund – **S (**Sport and Wellness and Sports Field)		42.00	42.00	0.00	0.0%	
Building Fund (Aux) - **F** (Student Centre Frost)		35.00	40.66	5.66	16.2%	additional overhead costs distributed under revised fee model.
Recreational Building Fund - F (Fieldhouse)		15.00	15.00	0.00	0.0%	fee set under student referendum as fixed fee
Lindsay Rec Facility Fee - **F**		45.20	65.00	19.80	43.8%	new complex agreement
Lindsay Transit Fee - **F (Fall/Winter)**		38.00	45.84	7.84	20.6%	revised transit agreement
Sutherland Transit Fee - **S (Full Year)**		365.00	365.00	0.00	0.0%	
Health Insurance (**Per Year**) **ALL**		248.50	280.00	31.50	12.7%	For both domestic and international insurance there is a revised insurance agreement with adjusted rates from the service providers.
International Health Fees		705.00	740.00	35.00	5.0%	
S = SUTHERLAND **H** = HALIBURTON						
F = FROST **C** = Cobourg						
Total per campus excluding Health Fees						
Sutherland		886.05	888.23	2.18	0.2%	
Frost		524.61	572.92	48.31	9.2%	
Haliburton		313.75	236.82	-76.93	-24.5%	
Cobourg		301.20	233.82	-67.38	-22.4%	

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SUBMISSION TO THE BOARD OF GOVERNORS

Agenda Item 6.3

Report Title: New Program Business Case: Geothermal Systems
Report to: Board Committee Meeting Meeting Date:
Requested Action: Decision / Approval
Prepared and Submitted by: Brett Goodwin, Dean School of Environmental and Natural Resources Sciences

OVERVIEW / BACKGROUND

To present the final business case for a new Ontario College Graduate Certificate in Geothermal Systems to be offered jointly by the School of Environmental and Natural Resources Sciences and the School of Trades and Technology.

This was first proposed as a 2-year diploma in the fall of 2017, but was subsequently re-worked as a Graduate Certificate. The new program proposal for the Graduate Certificate was presented to the Board of Governors in the fall of 2018 where the proposal was supported. The final business case has been developed and is included for review and final approval.

ANALYSIS / PROPOSED OPTIONS

The scope of analysis will depend on the nature of the issue but may include Legal Impact; Financial/HR Implications; Student Impact; Stakeholder Implications. Pros and Cons for each option should be identified as appropriate.

New legislation driven by climate change action plans at the federal, provincial, and local levels will drive increasing demand for geothermal systems. Additionally, with more environmental awareness, individual consumers will increasingly demand such systems. With increasing interest in geothermal systems, a work-force capable of designing, installing, and maintaining such systems will be needed. Individuals who can design, install, commission, and repair these systems will find ready employment.

This business case is to offer a two-semester Ontario Graduate Certificate in Geothermal Systems which builds off of current Fleming strengths in Drilling and Hydronics. This program will teach students the required skills and knowledge to install, repair, maintain, and assist in the design of geothermal systems including drilling and preparing loops (open and closed). According to Fleming's Canada-wide reference group, this would be the only program of its kind in North America due to integrating the drilling and hydronics aspects of the field. The proposed Graduate Certificate would also represent one of the few Graduate Certificates for the trades. Furthermore, the development of this unique graduate certificate opens up potential for applied research on the installation and functioning of geothermal systems – there is already interest from members of the geothermal industry in working with Fleming on research into various aspects of geothermal systems. Finally, a geothermal program would be fitting given Fleming's reputation in sustainability and environmental programming.

RISK CATEGORY

Select all that apply *(to check a box, double click; from drop-down menu, select "checked" under Default Value)*

☐ External Environment ☐ Internal Environment ☐ Financial ☐ Human Resources
☐ Information Technology ☐ Legal ☐ Operational ☒ Strategic ☐ N/A

With growing interest in green-jobs and alternative energy coupled with Fleming's (in particular Frost's) reputation in environmental fields and strong programs in drilling and hydronics, to not have a geothermal program would set us behind the curve in environmental job training. Other colleges are

developing alternative energy programs but none can include the drilling piece. This is an opportune time to set a stake in the ground around geothermal training, and to not do so now would risk leaving us out of the market. Additionally, feedback from the industry as we have developed the program has been extremely positive. To not pursue this program at this time would damage those industry relationships.

RECOMMENDATION AND/OR MOTION *(i.e. Receive the update on Winter Enrolment for information. Refer the matter to Committee for further investigation. Approve the proposed xyz program of instruction.)*

It is recommended the Board of Governors of Sir Sandford Fleming College:

Approve the Business Case for the new Geothermal Systems Program

SUPPORTING DOCUMENTATION

Attached Business Case

BUSINESS CASE

Geothermal Systems

Date:	April 24, 2019		
Board of Governors:	☐ Feedback	☒ Decision	
Proposed By	Brett Goodwin, Dean, School of Environmental and Natural Resource Sciences		
School of Study:	School of Environmental and Natural Resource Sciences		
Proposed Launch Date:	January 2020		
Offering:	☒ Full-Time	☐ Part-Time	
Student Enrolment Target:	YEAR 1 = 15	YEAR 3 = 47	YEAR 5 = 70
New Faculty Resources			
Semesters / Hours:	2 Semesters / 682 Hours		
Applied Learning Method(s):	☐ Applied Project	☐ Co-op/Placement	☒ Other
First Graduating Class	Class of 2020		
Credential Ontario College (OC):	☐ OC Diploma ☐ OC Advanced Diploma ☐ Fleming College Diploma	☐ OC Certificate ☒ OC Graduate Certificate ☐ Fleming College Certificate	
Program Mapping:	Appendix I		
Career Opportunities:	Geothermal Systems Installer; HVAC Installer; Geothermal Driller; Geothermal Systems Technician		
Proposed Tuition (per Semester):	$3,060		
Program Start-up Cost:	Development costs $87,750; special funding spent $75,600		
Program Operating Cost:	YEAR 1 = $73,296	YEAR 3 = $194,290	YEAR 5 = $305,376
Return on Investment:	YEAR 1 = ($133,596)	YEAR 3 = $52546	YEAR 5 = $291,593
OCQAS Program Validation	☐ Pending	☒ Approved	APS Number: FLEM01301

Review and/or Approval

☐ Aboriginal Education Council
☒ Academic Council
☐ Deans Council
☐ Deans and Chair Committee
☐ Executive Leaders
☐ Program Advisory Committee
☐ Strategic Enrolment Management
☐ Other: _____

Acknowledgements

Thank you to the members of our *Academic Development Team* including Trish O'Connor, Director of Sustainability; Mary Overholt, Teaching and Learning Specialist; Jason Jackson, Chair, School of Trades and Technology; Brett Goodwin, Dean and Principal, School of Environmental and Natural Resource Sciences; Terri Geerinck, Program Development Lead; Steve Wilkinson, Coordinator, Resources Drilling Technician; for their dedication and excellent work in engaging the college community in consultations, research, writing, and responding to feedback. Over the course of our planning and approval process this team involved industry representatives: Brian Beatty, Beatty Geothermal Consulting (Founding Director and Ontario Chapter President, IGSHPA Canada); David Hughes, Coordinator Special Projects – Mechanical Dept. Northern Alberta Institute of Technology; Stan Reitsma, Chief Executive Officer, GeoSource Energy; Matt Wiesenfeld, Program Manager, Canadian Institute of Plumbing and Heating; Mark Metzner, Chair - International Ground Heat Pump Assoc. CDN.

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APS Code	FLEM01301

CIP Code	15.0805 Mechanical engineering/ mechanical technology/ technician 46.0503 Well drilling/ driller 47.0201 Heating, air conditioning, ventilation and refrigeration maintenance technology/ technician
MTCU Code	55506
NOC Code	2232 Mechanical Engineering Technologists and Technicians 7372 Drillers and Blasters- surface mining, quarrying and construction

	Semester					
Funded Instructional Setting	**1**	**2**	**3**	**4**	**5**	**6**
Classroom instruction	146	165				
Laboratory/workshop/fieldwork	191	180				
Independent (self-paced)						
One-on-one instruction						
Clinical placement						
Field placement/work placement						
Small group tutorial						
Total	337	345				
Non-Funded Instructional Settings	**1**	**2**	**3**	**4**	**5**	**6**
Co-op work placement – Mandatory	0	0				
Co-op work placement – Optional	0	0				
Degree work placement – Mandatory (shorter than Co-op)	0	0				
Total	0	0				
Total Hours Each Semester	0	0				
Grand Total	337	345				

1. Executive Summary

There is little doubt of the realities of climate change and the threats it poses to resources, communities, infrastructure and food supply. A recent United Nations Conference in Katowice, Poland, concluded that without “a rapid move to a zero-carbon global energy system by mid-century, humanity will be in grave peril” (Sachs, 2018).

The Canadian federal government has set a target for 30% reduction in greenhouse gas (GHG) emissions below 2005 levels by 2030 (Pan-Canadian Framework on Clean Growth and Climate Change, 2016). Every province has made a commitment to this framework including Ontario with its plan, *Preserving and Protecting our Environment for Future Generations: A Made-In-Ontario Plan* (2018). The new federal budget plans to spend $1.01 billion to increase energy efficiency in residential, commercial and multi-unit buildings starting in 2018-2019. Locally, in the Greater Peterborough Area, residential homes represent 36% of the GHG emissions and as such the Greater Peterborough Area Climate Action Plan calls for a goal of 30-50% gains in energy efficiency in 40% of existing homes (Greater Peterborough Area Climate Change Action Plan, 2016).

Geothermal systems heat and cool homes and businesses by transferring heat to or from the ground or water-bodies. These systems can be used in new builds or retrofits of existing buildings. Geothermal systems are a major environmental alternative to heating with fossil fuels and can play a major role in reducing GHG emissions.

Government programs to encourage the use of geothermal systems for heating and cooling of individual buildings as well as community-based systems that will service entire neighbourhoods will occur in the future (ex; Lee-Shanok, 2018). The federal government is expected to introduce changes to the national building code that will require builders to include more net zero GHG homes. The federal government is expected to announce incentives for homeowners to retrofit their existing homes to systems that use less energy (Zimonjic and McDiarmid, 2016). Investments in clean energy generation and energy conservation by Ontario will parallel federal changes (Ministry of the Environment, Conservation, and Parks, 2018). The United States offers federal energy tax incentives for residential installations and retrofits of geothermal heat pumps (waterfurnace.com, 2018). As well as this incentive, other states, including New York, Indiana, South Carolina, Pennsylvania and New Mexico, offer additional incentives, loans, and credits (DSIRE, 2019).

New legislation driven by climate change action plans at the federal, provincial, and local levels will drive increasing demand for geothermal systems. Additionally, with more environmental awareness, individual consumers will increasingly demand such systems. With increasing interest in geothermal systems, a work-force capable of designing, installing, and maintaining such systems will be needed. Individuals who can design, install, commission, and repair these systems will find ready employment.

This business case is to offer a two-semester Ontario Graduate Certificate in Geothermal Systems. This program will teach students the required skills and knowledge to install, repair, maintain, and assist in the design of geothermal systems including drilling and preparing loops (open and closed). According to Fleming’s Canada-wide reference group, this would be the only program of its kind in North America. Furthermore, the development of this unique graduate certificate opens up potential for applied research on the installation and functioning of geothermal systems. Finally, a geothermal program would be fitting given Fleming’s reputation in sustainability and environmental programming.

This program received funding for geothermal equipment, and a portion of its curriculum development from the 2017-18 Low-Carbon Building Skills Training Fund for Publicly Assisted Universities and Colleges.

2. Program Description

The global focus on climate change and the reduction of society's carbon footprint has stimulated renewed interest in geothermal energy. The coming decades will see increased use geothermal energy in all sectors of society, including residential, commercial, institutional and industrial.

This program will provide students with knowledge of geothermal energy systems and the evolution of processes to harness the resource to heat and cool buildings. Students will be introduced to the fundamentals of geothermal energy, starting with a basic understanding of the heating and cooling energy loads of buildings. Students will learn about the various geothermal resources, including geological formations, groundwater, lakes and rivers. Students will learn the procedures to install loops as well as grouting techniques and joining the loops to the internal geothermal system.

This program is a partnership between two schools, the School of Environmental and Natural Resource Sciences and the School of Trades and Technology (Kawartha Trades and Technology Centre). The first semester of the Geothermal Systems program, taught at the Frost Campus, will focus on the specialized drilling skills and knowledge required to install, maintain, and repair the loop field for a geothermal system. This includes construction safety, soil analysis, hydrogeology, drilling, trenching, grouting, and pipe installation. The second semester, taught at the Kawartha Trades and Technology Centre (KTTC), will focus on the skills and knowledge to design, install, maintain, and repair the hydronic systems within the building and connecting the system to the loop field. New technologies such as smart homes and smart home monitoring will also be taught.

Graduates of this program will possess a unique skill set that will make them highly employable. They will have the knowledge and skills to assist in the design of geothermal systems and will be able to install, maintain and repair these systems including the knowledge and skills for drilling and installation of open or closed loop systems. Currently, geothermal drilling does not require certification. However, it is expected that with continuing government mandates for certifications in trades, the geothermal industry will require Certificates of Qualification in the future.

This is an applied program and students will have ample opportunity for hands-on skill development including drilling in the first semester while the second semester will offer blended learning as well as applied learning for installation and troubleshooting of heating and cooling components.

2.1 Program Mapping

As the only graduate certificate program in geothermal systems, there are no provincial program standards nor are there any applicable provincial program descriptions of learning outcomes. The closest, which the program was mapped to for the CVS, was a two-year diploma in Geothermal Installation Technician (MTCU 55506) which did not include geothermal drilling. These vocational outcomes have been designed based on industry requirements and expertise.

At the completion of this program, graduates will be able to:

1. Prepare and maintain geothermal engineering records, logs, and inventories to meet industry standards.
2. Produce and analyze project drawings, documents, and graphics to appropriate, current geothermal industry standards.
3. Follow health and safety standards and workplace best practices to all aspects of work done in geothermal projects.
4. Collaborate in the successful design, construction, operation, and maintenance of integrated geothermal systems.
5. Solve routine and non-routine technical problems in order to ensure the successful design, construction, operation, and maintenance of geothermal systems.
6. Complete all work in compliance with contractual obligations, applicable laws, standards, bylaws, codes, regulations, and accepted engineering practices.
7. Analyze geothermal system feasibility, including economics, site-specific technical requirements, and environmental impacts in order to meet clients' needs.
8. Analyze and test soils, groundwater, and surface water to determine suitability and type of geothermal systems.
9. Research and apply current and future trends and technologies in geothermal systems to best meet clients' needs.

Below is a chart of the courses and hours as well as the breakdown of class type (ie., lec; lecture):

Geothermal Systems Ontario College Graduate Certificate				
Semester	Course Code	Course Name	Hours	Delivery
1	NEW 1	Geothermal Drilling- Open & Closed Loop System	60	1 lec; 3 lab
1	NEW 2	Closed Loop Installation & Grouting	45	1 lec; 2 lab
1	NEW 3	Geothermal Systems I (first half)	56	4 lec; 4 lab
1	NEW 4	Geothermal Systems II (second half)	56	4 lec; 4 lab
1	NEW 5	Geology and Hyrdogeology	60	2 lec; 2 lab
1	NEW 6	Integrated Hydronic Heating and Cooling Systems I	60	2 lec; 2 lab
			Total Semester 1 hours : 337	
2	NEW 7	Integrated Hyrdonic Heating and Cooling Systems II	60	2 lec; 2 lab
2	NEW 8	Mechanical Systems	60	2 lec; 2 lab
2	NEW 9	Feasibility	60	2 lec; 2 sem
2	NEW 10	Geothermal Systems Maintenance, Repair and Operation	45	1 lec; 2 lab

2	NEW 11	Building Science and Heating and Cooling	60	2 lec; 2 sem
2	NEW 12	Geothermal Systems III	60	2 lec; 2 lab
Total Semester 2 Hours: 345				
Total Program Hours: 682				

Please refer to Appendix I for the completed and approved CVS documents.

2.2 Essential Employability Skills

This is a graduate certificate. As with all graduate certificates, these essential employability skills outcomes would have been met in students' prior diplomas or degrees and are not required to be articulated. However, this program will continue to emphasize many of these skills including teamwork and collaboration, problem-solving, ongoing professional development, and communication skills.

3. Fleming Student Fundamentals

3.1. The Ideal Student

The ideal student for this program will have a keen interest in alternative energies and the environment. They have a capacity for analytical thinking and working with technical systems. They will also be able to handle working in all kinds of conditions including damp/ wet basements and outdoors.

Some of the personality traits and skills essential to student success in this program include:

- good motor skills;
- flexibility (particularly regarding hours of work);
- good interpersonal skills;
- analytical and creative thinking skills;
- mechanical aptitude;
- able to perform routine mathematical calculations;
- and able to read and understand safety labels (equipment, electrical, chemical).

3.2. Admission Requirements

An Ontario College Diploma, Advanced Diploma, or Degree in a trades or technology field; OR an Ontario College Diploma, Advanced Diploma, or Degree in another discipline plus 2 years of experience or training in drilling, Heating, Ventilation & Air-Conditioning/Heating, Refrigeration & Air Conditioning, mechanical engineering, or a related field; OR equivalent.

3.3. Applied Learning and Applied Research Opportunities

Fleming has an opportunity to be a distinctive and unique (in Canada) training and skills development provider for low carbon technologies with a focus on geothermal and hydronic

systems. This leverages of the School of Environmental and Natural Resource Sciences – Resources Drilling and Blasting program and Geothermal Systems and our trades programs in the Kawartha Trade and Technology Sector. Industry participation has been very strong and partnerships with both industry and other institutions for pathways (e.g. from engineering programs) and applied research are being actively pursued with the aid of the industry reference group.

There are applied research opportunities in this program that students can actively participate in as part of their program. Furthermore, given the unique drilling expertise at Fleming, there is the potential to develop a complimentary applied research focus that can support industry development. Industry representatives, during a teleconference on March 15, 2019, have suggested the following types of research in the assessment and/or testing of:

- different types of installations
- borehole depth and configuration - vertical, horizontal
- looping design and installation methods, configurations, and materials testing
- grouting testing
- borehole heat exchange: response testing/thermal response testing

This program includes both lab and field work with drill rigs and lab work at the KTTC in the installation and repair of system components including hydronics, pipes, and electrical.

3.4. Student Target Audience and Student Demand for Program

This program is designed for graduates of other technician and technology programs who want to learn the specialized skill set required for professional geothermal systems installation. Graduates of Fleming technician/ technologist programs as well graduates from other colleges may find this program attractive for further education.

This program will appeal to students who are aware of climate change and are motivated to work in a field that reduces GHG and promotes sustainability. As with many of the other programs at the college, students are seeking programs that will help them “make the earth a better place.”

There are few Ontario Graduate Certificates designed specifically for technician/ technology graduates. An OCAS search performed on January 23, 2019, identified only seventeen Ontario graduate certificate programs under the category of Engineering and Technology. Of these seventeen programs, only six had the Admission Requirements of this program and none were related to geothermal systems.

3.5. Student Benefits

A major benefit for students in this program is its uniqueness, not only across the province but in Canada. The reference group stated repeatedly (please refer to meeting minutes in Appendix II) that they are in dire need of employees who will have the skills and knowledge offered in this program. Students will also benefit using new hydronics and geothermal equipment purchased through the 2017-18 Low-Carbon Building Skills Training Fund for Publicly Assisted Universities and Colleges ($100,000).

3.6. The Student Experience

Fleming College supports all students to ensure an excellent student experience. Frost and the KTTC have state-of-the-art equipment and facilities to support the program needs. Students will have professors who are experts in the field and represent Fleming on many fronts including training in other countries (ie, training drillers in Oklahoma), sitting on numerous committees (Ontario Association of Certified Engineering Technicians and Technologists- OACETT), memberships and certifications.

The college provides excellent services for students ranging from housing assistance to counselling and tutoring to sporting and social venues. The college is also a leader in offering online learning opportunities with technical support systems embedded into the delivery models to provide flexible learning experiences for the students.

3.7. Education Pathway Opportunities

This program will allow graduates of many technician/ technology programs from Fleming and other colleges to receive additional education in geothermal systems. Traditionally, there have been few graduate certificates available for these graduates.

Through a highly engaged reference group representing the Ontario Chapter of the International Ground Source Heat Pump Association-Canada (IGSHPA-CANADA), the President of IGSCHPA – Canada and the Canadian Institute of Plumbing and Heating, and Northern Alberta Institute of Technology, Fleming will be pursuing pathways and applied research opportunities with engineering programs at other institutions and organizations.

3.8. Value Proposition

This new program will be not only the only program of its type in Ontario, but unique across Canada. There are no competitor programs and no credentialed programs at any college that focus on this specific set of skills and knowledge.

Fleming is a leader in environmental studies and sustainability. Students who value the environment will benefit from this expertise. Research supports the increase of geothermal systems use in the future. There is now a need for geothermal systems installers who know what they are doing on a higher level than previously. Several recent articles continue to underscore the need for qualified geothermal installers as the use of geothermal systems increase nationally and internationally (Nogrady, 2017; Shaver, 2017).

4. Strategic Alignment

4.1. Strategic Mandate Agreement

This program aligns with the first priority of the 2017-20 Strategic Mandate Agreement, Program Enrichment and Growth as this program will attract more students to a new specialized program that promotes environmental sustainability. Thus, this program will build on the quality of our core environmental programming to better prepare our students to become leaders in sustainability.

This program also aligns with the second priority, Student Success First. The program will build new partnerships and deepen industry relationships by offering opportunities for applied research with industry partners.

The program will align with the third priority of Discovery and Innovation and the fourth priority Sustainability by examining and supporting applied research on the impacts of climate change, legislation to mitigate climate change, and the use of geothermal technology to reduce greenhouse gases. While geothermal systems have been used for many years, new technologies such as smart homes and new systems technology will be offered in this program.

This program is a collaboration between two college's schools. Through the reference group representing the Ontario Chapter of the International Ground Source Heat Pump Association-Canada (IGSHPA-CANADA), the President of IGSCHPA – Canada and the Canadian Institute of Plumbing and Heating, and Northern Alberta Institute of Technology, there will be opportunities for further collaboration.

4.2. Fleming College Strategic Plan

Fleming College is currently in the process of developing a new Strategic Plan. The new priorities identified are as follows: New Programming, Quality, Preferred Graduates, Superior Student Experience, Investing in People, and Embeddedness in the Community.

This program aligns with all of these priorities. This program will attract students to a new specialized program and fills a gap for technician/ technology graduates who desire further education. Industry experts have been hired to design and teach several new courses. Students will benefit from the latest knowledge and skills in the field.

This program supports efforts for new programming within Ontario Graduate Certificates. Secondly, this program will align with our Quality priority by employing top industry experts to develop and deliver the curriculum, as well as, offer an applied research opportunity for students through industry partnerships.

This program will produce Preferred Graduates from the only program of its kind in North America. The program will train students in two sets of skills required in the geothermal industry; geothermal drilling and installation. This program will build new partnerships and deepen industry relationships by offering opportunities for applied research with industry partners particularly in the field of drilling and loop construction.

The program will offer Superior Student Experiences with applied learning opportunities with geothermal system companies within our community. Several reference group members have offered our students opportunities as part of a course or placement to work with their employees installing, maintaining, and repairing systems. This program is a unique partnership of two Schools and students will benefit from the skills, expertise, and knowledge of their faculty and learn in well-equipped labs and classrooms.

New faculty will be hired to teach some of the specialized geothermal courses. This Investment in People will add to the expertise of both schools and will benefit the students as well.

The program will be Embedded in the Community. Fleming's trade and technology programs work closely with local industry. In 2015, Siemens Canada donated $100,000 in equipment for the KTTC. Industry partners also include the Canadian Institute of Plumbing, the Canadian

Hydronics Council, and the Ontario Geothermal Association. Fleming's current Resource Drilling and Blasting program, which will house the drilling courses previously received a donation of $1,000,000 from the Parnham family to purchase blast hole drills, a mobile drill and to make significant upgrades to the training centre. Several local geothermal businesses have been involved in the design of this program and will continue their involvement once the program is launched.

4.3. Fleming College Business Plan

The College Business Plan connects to the Strategic Plan. "High level priorities for 2018-19 include efforts to continue to develop differentiated relevant programs and continue to enhance flexible learning." This program, to be launched in January 2020, will be one of the targeted ones sent for Board approval this year and continues to differential the programming at the School of Environmental and Natural Resource Sciences and expanding programming in the School of Trades and Technology.

4.4. Fleming College Academic Plan

This new offering will be consistent with the current Academic Plan's intent to increase flexible and efficient delivery options that meet the needs of students through collaboration with college services and facilities. Through the Low-Carbon Building Skills Training Fund for Publicly Assisted Universities and Colleges, curriculum will be developed by experts in the field so that students will benefit from best industry practices and new research and methods in geothermal systems. The fund also allowed for the purchase of new hydronics and geothermal equipment.

This program also supports the plan with the inclusion of learning opportunities to fully engage students using applied learning and authentic assessment. Operating machinery safely and correctly, building and installing geothermal systems components, drilling open and closed loops all connect to authentic assessment and mirror current and best job practices in this field.

The program aligns with the Applied Research priority of the Academic Plan by including opportunities for applied research in geothermal drilling, loop construction, and systems feasibility and output within their courses.

Lastly, this program is a collaboration between schools where students will benefit from the expertise of both schools and the use of up-to-date facilities and equipment. This meets one of the plan's end goals of developing at least two new cross-disciplinary programs.

4.5. Fleming College Sustainability Plan

Fleming's Sustainability Plan (2019-2022) commits Fleming to be a leader in sustainability, both in operations and programming. The plan underscores Fleming's unique position to address sustainability and climate change challenges and to prepare students with skills and knowledge to prepare for a sustainable future. This new program supports the college's sustainability plan in several ways.

The Frost Campus, with its focus on environmental and natural resource sciences, has traditionally led the college in this area. This program will join other programs offered at Frost that highlight sustainability including graduate certificates in Advanced Water Systems and Operations Management, Sustainable Agriculture; diplomas and advanced diplomas in Environmental Technician/ Technology, Urban Forestry, and Ecosystem Management

Technician/ Technology; and the Ecological Restoration program, a joint Bachelor of Science program with Trent University. These programs include a focus on managing environmental resources for future sustainability and resources health. More recently, new programs have been launched at the college that also support sustainability such as Leadership in Sustainable Business Practices and Sustainable Waste Management.

Sustainability at Fleming, in the plan, means that students will work on applied projects that improve social and environmental well-being, that concern for the environment and community health is factored into college decisions, and that the college operates to produce a positive benefit on the environment. This program emphasizes this definition including the urgent need to reduce carbon footprints by changing the reliance on fossil fuels and the benefits of alternative energy sources for heating and cooling.

Fleming is committed to sustainability across the curriculum and is the only Canadian Centre for Sustainability across the Curriculum (designated by the Association for Sustainability in Higher Education).

4.6. Fleming College Internationalization Plan

The Internationalization Plan is currently under revision. Once the new plan is in place, the program will be aligned with the plan in terms of opportunities for international students. This program, like Sustainable Agriculture and Advanced Water Systems and Operations Management, may appeal to international students who are interested in more sustainable use of resources/ practices in their own countries.

5. Environmental Scan

5.1 Soft Skill Market

The labour market requires that individuals have more than technical skills to be successful in any given job. The top ten skills in our region are oral and written communication, detail orientated, team player, working independently, clean criminal record, problem solving, integrity, organizational skills and marketing. The reference group underscored the need for problem-solving, decision-making, and good customer communication skills. Even graduate certificates need to reinforce these essential skills as this one does in several courses.

5.2. Labour Market

Employees in this field contribute to the design of geothermal heating and cooling systems. They may also prepare for the installation (including drilling and installing open or closed loops), analyze the building properties for the type of design and system, install the system, test and finally commission the system. They also maintain and troubleshoot non-functioning systems. This program spans over two separate National Occupational Codes (NOC). It should be noted that these scans do not reflect only geothermal systems employment but are much broader in scope than the current program employment prospects.

The current market supports current jobs in this sector of NOC 2232, Mechanical engineering technologists and technicians. Numerous searches on job sites such as Workopolis demonstrated numerous jobs in this field. Jobs which align with NOC 7372, Drillers and

Blasters-surface mining, quarrying and construction are not as robust, but this is harder to assess as blasters are included in this NOC for job analysis.

Please refer to Appendix III for more details for both occupational areas.

5.3. Market Potential

Future job growth will be robust in the geothermal sector. New funding in the recent federal budget will add impetus to the current statistics. Regionally, it is estimated that there will be an increase of 13.8 per cent in jobs for technicians and technologists. In Ontario, an increase of over 16 per cent has been predicted. While drilling jobs are not increasing at the same rate; as geothermal installations increase so will the need for qualified geothermal drillers.

Please refer to Appendix III for more details regarding future market potential.

5.4. Evidence of Need

There is a real need for trained geothermal installers from the ground source to the building mechanics, and with both the drilling and trades programs, Fleming is uniquely positioned to fill this need. Currently, there has been difficulty in ensuring standards of quality and installation across the country. When governments offer green energy incentives, industry sees a jump in unqualified contractors who install systems incorrectly so that the systems malfunction or do not perform as they should (Leblanc, 2018). This was echoed by the reference group (refer to Meeting Minutes, Appendix II and support letters, Appendix V). While the current government has cancelled the GreenOn program (Green Ontario) which offered substantial rebates on green initiatives including geothermal systems, contractors report very little loss in business (Campbell, 2018). The new federal budget will have a positive impact on jobs in the geothermal sector as will the reintroduction of incentives or tax credits.

While Ontario currently has no incentives, many other provinces do have programs in place including North West Territories, Manitoba, and Quebec (Natural Resources Canada). The new federal budget is allotting monies in this sector. The United States has a Federal Tax Credit for Geothermal which has been extended to 2021 (Geothermal Genius, 2019). Students, who are willing to relocate, will have ample opportunities for employment.

Appendix IV includes several job samples ranging from entry level to more experienced positions. Most jobs use the titles of Heating, Ventilation, and Air Conditioning (HRAC) or Heating, Ventilation, and Air Conditioning (HVAC).

5.5. The Competition

There are no competitor programs for this program except one graduate certificate at Conestoga College. Conestoga College offers an Ontario Graduate Certificate in Applied Energy Management, but this program does not address geothermal systems nor does it seem to be running at this time. Two- and three- year diploma programs are available at two central region colleges, Conestoga and Niagara. However, there are no graduate certificates at any Ontario College in geothermal systems. While many of those programs touch on geothermal systems, none are focused on geothermal, and in fact many of those diploma programs could produce students interested in expanding on geothermal skills in our proposed Graduate Certificate program.

Conestoga College

The only Ontario Graduate Certificate in renewable energies in the Central Region is a four-semester program in Applied Energy Management at Conestoga College. This program is designed for graduates of technical degrees or diplomas to explore further studies across the realm of energy management while experiencing hands-on exposure to various technologies and means of power generation. In this program, students will explore how core technologies in gas and steam are combined with renewable energy sources such as solar and wind. This may be a new program as there is no data regarding student numbers.

Certificates, Diploma and Advanced Diploma Programs

Programs that offer Alternative Energies and some drilling are few at the diploma or certificate level. Conestoga, Mohawk, and Niagara, part of the central region, offer programs in Renewable Energies with some geothermal content. References to geothermal have been included for information purposes. This chart can be found as part of Appendix III.

None of these programs are Ontario Graduate Certificates. Graduates of these programs may be attracted to the new program which offers a specialized set of skills rather than a broad range of skills that include some geothermal, solar, and wind-power. Central region colleges show increased enrolment for 2018.This chart can also be found in Appendix III.

The defining feature of the new program is its specialization as well as opportunities for employment. Several of these programs are so broad in nature that the students do not get any opportunity to learn one skill set at the depth relevant for employment.

6. Community Collaboration

6.1. Fleming College Board of Governors

Item	Meeting Date	Questions and Concerns Addressed with Actions Taken
Preliminary Program Proposal	Oct 24, 2018	Changed to Graduate Certificate; received full support

6.2. Fleming College Councils and Committees

The following committees, councils and/or external community partners were consulted during our research and program development process:

☒ Academic Council Meeting Date(s): October 24, 2018

Decision/Support: program was changed to a graduate certificate; full support to move forward

☒ Senior Management Team Meeting Date(s): Oct. 16, 2018

Decision/Support: Support

☒ Program Advisory Committee Meeting Date(s): Last meeting; Feb. 14, 2018

Decision/Support: Reference group fully supports program. Three letters of support received.

☒ Strategic Enrolment Management Meeting Date(s): Nov. 27, 2018

Decision/Support: Support

☒ Program Implementation Meeting Date(s): March 14,2019

Decision/Support: Support

6.3. Community, Industry, and Other Partners

Organization	Meeting Date	Input and Feedback with Actions Taken
Preliminary Program Proposal	Feb 14, 2019	Full support of reference group
Program Feedback	Nov 30, 2018; Jan 9, 2019	Reference Group Meetings; ongoing work with reference group members
Program Implementation Comm.	March 14	Continue with development
Comprehensive Business Proposal		

7. Program Implementation

7.1. Responsible School

This is a joint program with two schools. SENRS will take the lead with this program and will provide the drilling and outdoor work including loop installation, grouting, and connections to building interiors. The School of Trades and Technology will teach the interior aspects of geothermal systems installation including piping, electronics, and hydronics.

7.2. Staffing Requirements

Faculty for this program will include existing contract faculty and will include some new contract faculty as well. New contract faculty have been hired to do some of the curriculum and teaching.

7.3. Space and/or Equipment Requirements

The current labs are sufficient for this program. The Low Carbon Fund included $100,000 for new equipment which was used to purchase new hydronics and geothermal equipment. There is new equipment required for geothermal drilling which is detailed in the financials including costs.

7.4. Information Technology Requirements

No additional.

7.5. Program Promotion Strategy (Launch plan/timelines/webpage development)

This program will be a soft launch in January 2020. Activities start Spring 2019 and on-going, upon final MTCU approval. This will include college open houses, web campaigns, marketing to current technician/technology/ resources drilling students, and advertisements in current trade journals and magazines.

7.6. Office of the Registrar

Upon final MTCU approval for funding, program specifics will be loaded into Evolve.

7.7. Timelines

An integrated marketing plan will be developed to promote this program to key target audiences including college graduates (Fleming and other colleges), non-direct applicants, and influencers.

Registration: Summer/ Fall 2019.
Promotion Start Date: Spring 2019
Expected launch date: January 2020
Expected first cohort of graduates: Class of 2020 (August 2020)
Program Review Date: 2023/ 2024

8. Financial

8.1. Return On Investment At-A-Glance

Description	Class of 2020 (Year 1)	Class of '21 (Year 2)	Class of '22 (Year 3)	Class of '23 (Year 4)	Class of '24 (Year 5)
Revenue	$91,050	$261,010	$285,290	$424,900	$424,900
Expenses	$73,296	$165,868	$194,290	$305,376	$305,376
Cumulative Cash-Flow OR ROI	($133,596)	($38,454)	$52,546	$172,069	$291,593

8.2. Program Costing

Refer to Appendix VI for detailed costing.

8.3. Financial Risks

The biggest risk is that enrolment targets are not met for January 2020. Since this program had additional funding of $103,900 through the low-carbon fund, including monies for curriculum

development, the program may be able to run with lower numbers than the original targets. This would need to be assessed for feasibility.

8.4. Countermeasures

Currently, the low carbon-funds are being spent early to ensure that as much curriculum can be developed as quickly as possible. If the enrolment is still too low, the program will be deferred and launched in September 2020.

9. Quality Assurance

Fleming College is committed to quality assurance processes that promote excellence in the development, design, delivery, and ongoing review of new and existing academic programs. Mechanisms are in place to demonstrate accountability to Fleming College students, the Board of Governors, the Ministry of Training, Colleges and Universities, and the communities we serve that will ensure all academic program meet or exceed the relevant quality standards including an ongoing and systematic program review process. *(See College Policy #2-213: Program Quality Assurance)*

10. Conclusion / Recommendation

THAT the Board of Governors of Sir Sandford Fleming College approve the Geothermal Systems program for launch in January 2020.

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12. Appendices

12.1. Appendix I: Program and CVS Documents

Geothermal Systems

Fleming College | APS # FLEM01301 | MTCU # 55506
Ontario College Graduate Certificate | Funding requested - full-time

The global focus on climate change and the reduction of society's carbon footprint has stimulated renewed interest in geothermal energy. The coming decades will see increased use of efficient and comfortable geothermal energy in all sectors of society, including residential, commercial, institutional and industrial. This program will provide students with a basic knowledge of geothermal energy systems and the evolution of processes to harness the resource to heat and cool buildings. Students will be introduced to the fundamentals of geothermal energy, starting with a basic understanding of the heating and cooling energy loads of buildings. Then, students will learn about the various geothermal resources, including geological formations, groundwater, lakes and rivers. The applicable legislation related to each resource will be presented. Students will study the numerous options to harness stored thermal energy for geothermal heat pump applications. Students will be introduced to the unique methods of optimizing the design, construction and operation of geothermal systems to achieve maximum energy and cost savings. The program will finish with the requirements to commission system installations. Upon successful completion of this program, students will be able to apply their knowledge and skills related to geothermal energy to make informed decisions on where and how the technology can be applied.

Admission Requirements

An Ontario College Diploma, Advanced Diploma, or Degree in a trades or technology field; OR an Ontario College Diploma, Advanced Diploma, or Degree in another discipline plus 2 years experience or training in drilling, Heating, Ventilation & Air-Conditioning/Heating, Refrigeration & Air-Conditioning, mechanical engineering, or a related field; OR equivalent.

Occupational Areas
Graduates from this program will be highly employable in the installation, repair, and maintenance of geothermal systems in both residential and commercial applications. They will have knowledge in all areas of these systems including how these systems are designed, building sciences, pumps, piping, soil and rock sciences, and drilling.

Laddering Opportunities

Graduates of Fleming's Resources Drilling & Blasting and Heating, Refrigeration & Air-Conditioning diploma programs are well-suited for this program, as are Mechanical engineering degree or engineering technology programs and Alternative Energy diploma programs.

Program VLOs

1. Prepare and maintain geothermal engineering records, logs, and inventories to meet industry standards.
2. Produce and analyze project drawings, documents, and graphics to appropriate, current industry standards.
3. Follow health and safety standards and workplace best practices in all aspects of work done in geothermal projects.
4. Collaborate in the successful design, construction, operation, and maintenance of integrated geothermal mechanical heating and cooling systems.

5. Solve routine and non-routine technical problems in order to ensure the successful design, construction, operation, and maintenance of geothermal systems.
6. Complete all work in compliance with contractual obligations, applicable laws, standards, bylaws, codes, regulations, and accepted engineering practices.
7. Analyze geothermal system feasibility, including economics, site-specific technical requirements, and environmental impacts in order to meet clients' needs.
8. Analyze and test soils, groundwater, and surface water to determine suitability and type of geothermal systems.
9. Research and apply current and future trends and technologies in geothermal systems to best meet clients' needs.

Curriculum

NEW 1 - Geothermal Drilling - Open & Closed Loop Systems (Semester 1 - 60.00 hours)
This course covers appropriate drill rigs and techniques used to drill vertical and horizontal boreholes in overburden and rock conditions for geothermal open and closed loop installations. This course will be presented in both theoretical and applied learning situations with a strong emphasis on safety and efficient drilling practices. Students will gather, report on, and analyze borehole information to increase productivity and efficiency.
NEW 2 - Closed Loop Geothermal Heat Exchanger Construction (Semester 1 - 45.00 hours)
Installation of a geothermal heat exchanger (GHX) is central to construction of a closed-loop geothermal system. This course will describe the role of a GHX, types of GHXs (horizontal and vertical), and installation methods. Details on GHX materials, modes of failure during and after installation, effects of differential pressure, protection of GHX following installation, clearing of debris from GHX, and pressure and depth-testing techniques of GHX will be included. In-class instruction and hands-on skill training will be included for GHX insertion techniques including equipment requirements for the various GHX types. Grouting of GHX boreholes is a critical element to completion of a GHX. Details on the role of grout, types of grout, grout installation techniques, testing of grout properties, grouting quality, difficult ground condition issues, and risks associated with poor grouting practice will be included. Hands-on skills training will include grout mixing and grouting of boreholes using various grout mixes.
NEW 3 - Geothermal Systems I (Semester 1 - 60.00 hours)
This course will begin with a general overview of shallow geothermal systems, why the 2nd law of thermodynamics is applicable, and the basic concept and workings of a geothermal heat pump. Students will learn about the types of GSHP equipment, factors that affect energy balance between geothermal heat pumps and the ground loads and design criteria for equipment selection. Additionally, students will clearly learn the various design configurations of ground heat exchangers - vertical, horizontal, submerged, open surface and groundwater, standing column well, direct expansion and foundation / energy piles - the benefits and drawbacks of each. Overall geothermal heat pump design procedures will be examined including heating and cooling load calculation and the impact of interiative building energy modelling on source heat exchanger sizing. Students will learn about thermal response tests (TRTs) and how to accurately read and interpret TRT report datas.
NEW 4 - Geothermal Systems II (Semester 1 - 60.00 hours)
This course will include fusion welding procedures - socket, butt and electrofusion, flushing and purging procedures, pressure testing protocols and system documentation requirements. Students will learn about pipe types and materials, pipe thermal resistance, head loss, flow capacities/requirements, building penetration methods, interior pipe layouts, source pump sizing, site evaluation, header design, as-built drawings, antifreeze types & injection and system start-up & commissioning.

NEW 5 - Geology & Hydrogeology (Semester 1 - 60.00 hours)
This course is designed to broaden students' knowledge in geology and hydrogeology with respect to construction and thermal energy storage as related to the geothermal industry. Students will learn the fundamentals of private water supply wells, supply pumps and the operating characteristics of sewage disposal systems. Potable water and water purification systems will also be introduced as well as procedures to avoid water contamination. In addition, students will be introduced to the emerging fields of solar hot water, hydronic, and geothermal applications as they relate to the geothermal industry.
NEW 6 - Integrated Hydronic Heating & Cooling Systems I (Semester 1 - 60.00 hours)
This course provides students with a thorough understanding of hydronic heating system, water heaters and combination systems as it relates geothermal Installation, controls, service and maintenance used in the heating and cooling industry will be discussed. In addition, students will learn to apply renewable energy practices to the heating industry.
NEW 7 - Integrated Hydronic Heating & Cooling Systems II (Semester 2 - 60.00 hours)
In the day of the "smart home" and digital control of every aspect of one's life, controls take on a large part of ensuring that the integrated geothermal heating and cooling system will work efficiently. This course provides students with the background and understanding to select and integrate the correct controls and control strategies that will provide efficiency through the proper operation of the system. Major topics within this course are: controls (geothermal, heating, cooling), automation and control wiring, and the integration of those controls to make the system whole.
NEW 8 - Mechanical Systems (Semester 2 - 60.00 hours)
In this course students will examine the function of mechanical and electrical systems in buildings as related to integrating geothermal systems. Students will review major mechanical and electrical systems, and their components and equipment, including sustainable technologies and innovative solutions to create high-performance buildings. Mechanical and Electrical drawings and specifications are interpreted along with an overview of relevant codes, standards and emerging trends.
NEW 9 - Feasibility (Semester 2 - 60.00 hours)
Students will learn to accurately construct feasibility reports for clients that provide real-world guidance. Students will learn about project site investigations, analysis of any existing client supplied reports, applicable Codes & Standards, regulatory requirements, and financial / economic models.
NEW 10 - Geothermal Operation, Maintenance & Repair (Semester 2 - 45.00 hours)
In this course, students will learn the fundamentals of how geothermal systems have to be operated to achieve optimal performance. Students will learn how to achieve the most efficient transfer of thermal energy between a building and the earth, groundwater, or surface water. This will include the use of pumping equipment, flow controls, sequence of pump operation, monitoring devices, and the use of building automation systems. Students will learn how to achieve good balance between the annual heating and cooling energy loads and how to assess the long-term effects of unbalanced loads. This course will include an outline of routine maintenance and repair procedures for the mechanical components of geothermal systems, including circulation pumps, heat exchangers, heat pumps, flow controls, and monitoring equipment. Students will also learn the fundamental requirements of a detailed forensic analysis of operating geothermal systems. This comprehensive analysis will include both general and detailed troubleshooting guidelines.
NEW 11 - Building Science & Heating & Cooling Systems (Semester 2 - 60.00 hours)
Today's building construction process offers a dynamic combination of materials and methods for both residential and commercial applications. The integration of a geothermal system require that students be acquainted with the different technologies, and their impact on heating installations, in order to ensure that their installations can be cost-effective and lead to a high level of customer

satisfaction. By employing the fundamentals of building science and design, students will learn how heating and cooling systems employ many different methods of heat application and transfer. A thorough understanding of heat and heat transfer is required in order to design and install heating systems that will meet the goal of efficiency, while providing the user with comfort and reliability.

NEW 12 - Geothermal Systems III (Semester 2 - 60.00 hours)
This course will include a brief overview of the development to date of geothermal energy systems. Students will learn how the use of geothermal energy has rapidly spread over the last half decade, from individual homes, to schools, places of worship, recreation centres, offices, industries, highrise towers, and more. This course will then focus on future trends of geothermal systems across the continent and around the world.

VLO Mapping

Course Name	Sem	VLO 1	VLO 2	VLO 3	VLO 4	VLO 5	VLO 6	VLO 7	VLO 8	VLO 9
Geothermal Drilling - Open & Closed Loop Systems	1	X	X	X	X	X	X	X	X	
Closed Loop Installation & Grouting	1	X		X	X		X		X	
Geothermal Systems I	1		X	X	X		X	X	X	X
Geothermal Systems II	1		X	X	X		X	X	X	X
Geology & Hydrogeology	1	X		X	X	X	X	X	X	
Integrated Hydronic Heating & Cooling Systems I	1		X	X	X		X			
Integrated Hydronic Heating & Cooling Systems II	2		X	X	X	X	X			
Mechanical Systems	2	X	X	X	X	X	X			X
Feasibility	2		X	X	X	X	X	X	X	
Geothermal System Maintenance, Repair & Operation	2	X	X	X	X		X	X	X	
Building Science / Heating & Cooling Systems	2		X	X	X	X	X	X		X
Geothermal Systems III	2	X		X	X		X	X	X	X

12.2 Appendix II: Meeting Minutes

MINUTES OF MEETING
GEOTHERMAL SYSTEMS DESIGN AND INSTALLATION
November 30, 2018

Present:
Industry Guests: Brian Beatty, Beatty Geothermal Consulting (Founding Director and Ontario Chapter President, IGSHPA Canada); David Hughes, Coordinator Special Projects – Mechanical Dept. Northern Alberta Institute of Technology; Corey Paterak, President CDP Geothermal, Stan Reitsma, Chief Executive Officer, GeoSource Energy; Matt Wiesenfeld, Program Manager, Canadian Institute of Plumbing and Heating; Mark Metzner, Chair - International Ground Heat Pump Assoc. CDN

College: Terri Geerinck, Program Development Resource; Brett Goodwin, Dean/Principal Frost Campus, School of Environmental and Natural Resources (SENRS); Charlie Morettie, Professor (SENRS); Trish O'Connor, Director of Sustainability; Jason Jackson, Chair, School of Trades and Technology; Eva Rees, Manager Contract Training and Flexible Delivery; Jim Smith, Professor, SENRS; Steve Wilkinson, Professor SENRS

Regrets: Mary Overholt, Teaching and Learning Specialist

1. Introductions and Current State of Program Development: Introductions were made and the current status of the program was reviewed. Currently the program is proposed as an Ontario Graduate Certificate with course areas in drilling, hydronics, and geothermal science and is two semesters. The program development process was reviewed.

2. Current state of Geothermal Training: All industry members agreed that there are no comprehensive training programs available in North America. Several groups have put together training but they often have their own agendas or are territorial which complicates the training, self-certification. Credentialing from a third party (i.e., a college) would be preferable and a significant benefit to the industry.

3. Need for Program: All agreed there is a need for this type of program. Ideally, a program that starts with design through to the stages of installation and commission would be preferable. Currently, there are knowledge gaps between the well and the (building) systems. Typically, designers and installers are two different people with different skills/knowledge and there is a need for connectivity between the designers and the drillers -- require people who understand both parts.

The first important component is knowledge of the building; systems must be designed to work within the structure and details of the building itself whether a new building, old building, or updating/ repair of a current geothermal system. This includes basic building science, calculating energy (heating and cooling loads) etc. and understanding of design principles is critical, including sizing the system (correct number of boreholes/loops). Installation includes the drilling holes, installing loops, installing the pipes, and grouting the bore holes.

Scope: A discussion took place as to the extent that Fleming could provide design. This may be more suitable to a university engineering program. However, there could be a course or two that covered design principles. The student would have a good knowledge of building science and systems to provide technician level assistance for an engineer (e.g. energy modelling, thermal response to changes in the building envelope, proper code connections etc.) in building new systems or forensically troubleshooting a failed system both within and outside a building.

System operation and maintenance is also a needed skill to prevent system failure. This includes pressure testing, filling systems, bleeding systems, understanding the mechanical and hydronics; how to find and a fix a leak etc.
Partnerships and pathways should be considered.

Funding: While there are currently no funding and incentives in Ontario/Canada for installation of systems (although the federal mandate for alternative energy is strong), many states in the United States offer such programs and there is training out of Oklahoma. By 2030, current fuel systems will need to be replaced with alternate energy systems. Geothermal with loops and systems with wells are good options both residentially and commercially.

4. Discussion of skills and knowledge (not in order of priority)

- System design (assisting in the geothermal design, knowledge of design and the principles)
- Rehabilitating non-functioning systems and figuring out what is wrong with it and the building (troubleshooting)
- Energy modelling
- Installation of system
- Maintaining of current systems
- Geothermal drilling including bore holes, grouting, piping, flushing, filling, anti-freezing
- Soil science
- Require some familiarity with drilling however, there will be limited drilling in the program (geothermal applications) (discussion that Fleming can teach geothermal drilling)
- Installation open and closed loops
- System controls
- Hydronics including pumps
- Pump and Systems Installer Mechanic (263-F)

Wednesday, January 9, 2019

Present:

Industry Guests: Brian Beatty, Beatty Geothermal Consulting (Founding Director and Ontario Chapter President, IGSHPA Canada); David Hughes, Coordinator Special Projects – Mechanical Dept. Northern Alberta Institute of Technology; Stan Reitsma, Chief Executive Officer, GeoSource Energy; Matt Wiesenfeld (by phone for Motion), Program Manager, Canadian Institute of Plumbing and Heating; Mark Metzner, Chair - International Ground Heat Pump Assoc. CDN

College: Jason Jackson, Lisa Stefaniak, Trish O'Connor, Mary Overholt, Terri Geerinck, Steve Wilkinson. Brett Goodwin joined by phone for introductions and overview.

Regrets: Corey Paterak, President CDP Geothermal

1. Introductions and Program Overview: A round table of introductions were made with a special welcome to Dave Hughes who flew in from British Columbia to attend. All agreed that this program was the only one of its kind in Canada and is needed in the industry.

2. Program Name Change: Mary looked at titling for the program and the group approved the new title as Geothermal Systems to align with other graduate certificate titling in the province. Mary will put this title forward to the CVS for validation.

3. Motion to move forward with program development: Brian Beatty made the motion "that the program in Geothermal Systems move forward and be developed as a Graduate Certificate at Fleming College." This was seconded by Mark Metzner. All were in favour.

4. Program Outcomes: The balance of the morning was spent developing the program outcomes which were completed. Mary will now submit these outcomes to the CVS for review.

5. Course titles, hours, and titling. Using the subject areas developed at the last meeting and this meeting, course titles and hours were developed. The current hours are 690 hours, within the Ministry Binding Policy Directive for hours in a graduate certificate. Several people volunteered to assist with the CVS document. **Brian and Stan** will craft the program overview. **Terri** will send her executive summary to assist them with this overview. **Terri** will complete the occupational area of the CVS document. **David and others** volunteered to complete course descriptions.

6. Next meeting will be held on Tuesday January 29, 2018 from 10-12 in room D1 129.7 This will be a working meeting to finish course descriptions.

12.3. Appendix III: Environmental Scan: Job Market Details

1. Current Market Details

NOC 2232 Mechanical engineering technologists and technicians

The first is NOC 2232, *Mechanical engineering technologists and technicians.* Mechanical engineering technologists and technicians provide technical support and services or may work independently in mechanical engineering fields such as the design, development, maintenance and testing of machines, components, tools, heating and ventilating systems, power generation and power conversion plants, manufacturing plants and equipment. They are employed by consulting engineering, manufacturing and processing companies, institutions and government departments.

Example Titles

- tool designer
- marine engineering technologist
- mechanical engineering technician
- mechanical engineering technologist
- thermal station technician
- mechanical technologist
- heating designer
- machine designer
- tool and die designer
- HVAC (heating, ventilation and air conditioning) technologist
- mould designer

Main duties

Mechanical engineering technologists perform some or all of the following duties:

- Prepare and interpret conventional and computer-assisted design (CAD) engineering designs, drawings, and specifications for machines and components, power transmission systems, process piping, heating, ventilating and air-conditioning systems
- Prepare cost and material estimates, project schedules and reports
- Conduct tests and analyses of machines, components and materials to determine their performance, strength, response to stress and other characteristics
- Design moulds, tools, dies, jigs and fixtures for use in manufacturing processes
- Inspect mechanical installations and construction
- Prepare contract and tender documents
- Supervise, monitor and inspect mechanical installations and construction projects
- Prepare standards and schedules and supervise mechanical maintenance programs or operations of mechanical plants.

Mechanical engineering technicians perform some or all of the following duties:

- Assist in preparing conventional and computer-assisted design (CAD) engineering designs, drawings and specifications
- Carry out a limited range of mechanical tests and analyses of machines, components and materials
- Assist in the design of moulds, tools, dies, jigs and fixtures for use in manufacturing processes
- Assist in inspection of mechanical installations and construction projects
- Participate in the installation, repair and maintenance of machinery and equipment.

NOC 7372 Drillers and blasters- surface mining, quarrying and construction

The second NOC is 7372, Drillers and Blasters. While very few graduates will likely be hired as full-time drillers, some graduates may choose this job. Therefore, it has been incorporated in the business case. Blasters and drillers are categorized together under this NOC which does not accurately reflect drilling on its own. Drillers in this unit group operate mobile drilling machines to drill wells, bore blast holes in open-pit mines and quarries and to bore holes for blasting and for building foundations at construction sites. Blasters in this unit group fill blast holes with explosives and detonate explosives to dislodge coal, ore and rock or to demolish structures. They are employed by mining, quarrying and construction companies and by drilling and blasting contractors.

Example Titles

- rotary drilling machine operator
- driller – surface mine
- construction driller
- drill rig operator

Main duties

Drillers in this unit group perform some or all the following duties:

- Drive and operate tracked or truck-mounted rotary drilling, air-track or other drilling machines to bore large blast holes to specified depths at staked positions in open-pit mine or quarry
- Operate drilling machines to drill blast holes in rock at road or other construction sites
- Operate tracked or truck-mounted drill equipped with auger or other attachment to drill holes for building foundations or pilings
- May measure location and stake out pattern of holes to be drilled, load blast holes with explosives and detonate explosives to dislodge coal, ore or rock.

Wage estimates for Mechanical Engineering Design Technologist are not available for Muskoka Kawarthas region. Ontario wages average $31.97 with the highest hourly wage of $51.44. Canada estimates are slightly lower with $31.00 as an hourly average and a high of $50.00.

There is very little data on current wages for this specialization in geothermal. The closest standard is the pay scale for Heating, Air Conditioning, or Refrigeration Mechanic/ Installer. According to payscale.com (2018), wages in Canada vary from $16.10 per hour to $39.49 per hour with an average hourly pay of $26.00. Yearly salary ranges from $34,168 to $91,182 not including overtime. This may be the best estimate for individuals who install, maintain, and repair these systems.

While not all statistics align, the current job market is good for NOC 2232, *Mechanical engineering technologists and technicians*. Geothermal systems jobs make up only a small portion of this large market which does not capture drilling. The current market potential for mechanical engineering technicians and technologists appears to be good with more job

openings than job seekers to fill them from 2014-2016. The provincial outlook is *fair* for the province of Ontario for 2017- 2019 (jobbank.gc.ca, 2018). However, according to other research, there is a steady growth in the market for heat pumps. One article suggests that heat pump installation (air and ground source) will increase to 15 per cent of new heating devices by 2025 and installations will increase to 30 per cent by 2040 (National Energy Board, 2018). This should continue to improve job opportunities now and in the future. Students who wish to venture further into such markets as the United States will benefit from both federal and state incentives for residential and commercial geothermal systems installation.

For the 2017-2019 period, the employment outlook is expected to be fair for *Drillers and Blasters – Surface mining, Quarrying and Construction (NOC 3237)* in Ontario. The analysis of key labour market indicators such as employment and wage growth as well as the unemployment rate suggests that the number of job seekers was sufficient to fill the job openings in this occupational group over the 2014-2016 period. For **Crane operators, drillers and blasters**, over the period 2017-2026, new job openings (arising from expansion demand and replacement demand) are expected to total **7,500**, while **7,200** new job seekers (arising from school leavers, immigration and mobility) are expected to be available to fill them. While the current market does not look robust for drillers, it appears that it will improve over time.

Wage estimates for Drillers and Blasters are not available for the Peterborough Muskoka-Kawartha's Region. Provincially and nationally, this group averages $30.00 per hour with the highest hourly wage of $40.00.

2. Market Potential

Regional Employment Trends

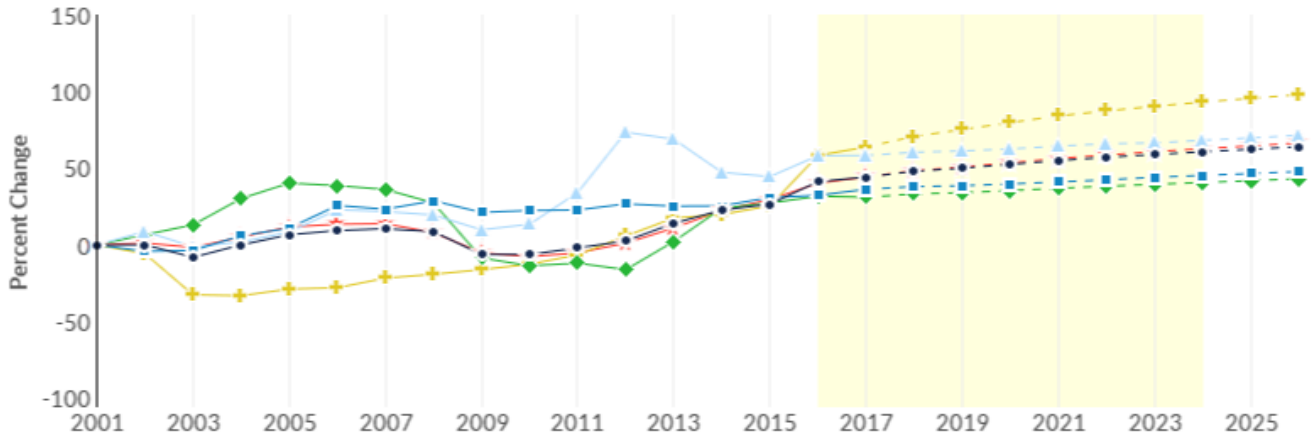
The future labour market is strong for Mechanical Engineering Technicians and Technologists regionally and provincially. It is estimated that there will be a 13.8% increase in jobs regionally up to 2025 (ESMI Analyst, 2018). Refer to the charts below for a more detailed analysis of trends for this employment.

Note: Data is for census divisions of Peterborough, Durham, Northumberland, Kawartha Lakes

737	**+13.8%**
Jobs (2016)	**% Change (2016-2024)**
34% above National average	Nation: 16.6%

Regional Trends

Jobs per Region



	Region	2016 Jobs	2024 Jobs	Change	% Change
●	Region	737	839	102	13.8%
●	Peterborough	89	97	8	9.0%
●	Kawartha Lakes	22	24	2	9.1%
●	Durham	281	300	19	6.8%
●	Simcoe	304	371	67	22.0%
●	Ontario	7,703	8,942	1,239	16.1%

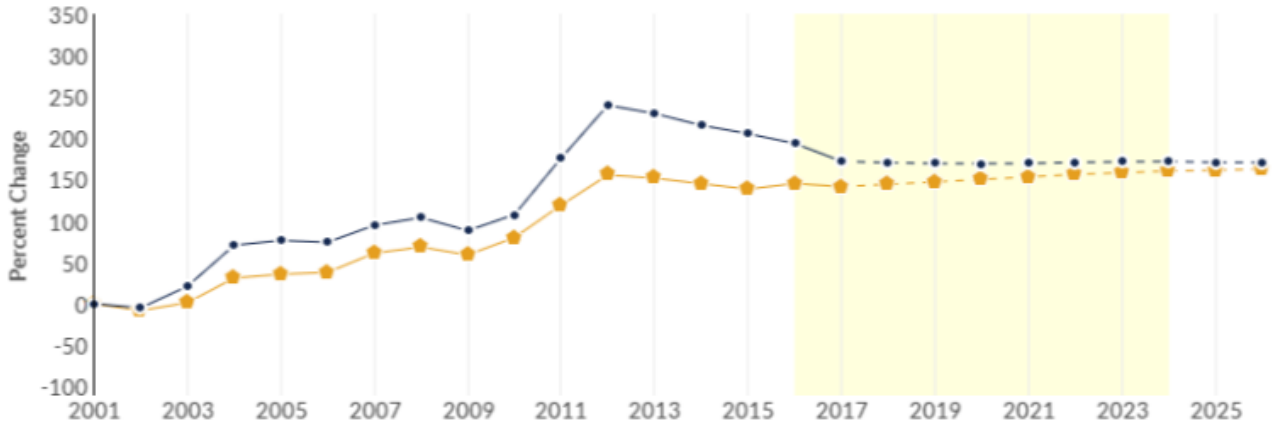
The current and future market does not look as robust for Drillers and Blasters with an expected 7.6 per cent decrease in employment (ESME Analyst, 2018). This statistic is harder to interpret as it includes blasters. Of interest, positive growth is expected in Ontario and even higher growth in Durham Region. This growth is likely attributed to the Highway 407 work and expansion. These statistics are not accurate as geothermal drilling is a specialized sub-set of skills and these numbers do not reflect specific drilling jobs in geothermal installation.

Note: Data is for census divisions of Peterborough, Kawartha Lakes, Durham, Simcoe, and Hastings

92	**-7.6%**
Jobs (2016)	**% Change (2016-2024)**
3% below National average	Nation: +35.2%

Regional Trends

Jobs per Region



	Region	2016 Jobs	2024 Jobs	Change	% Change
●	Region	92	85	-7	-7.6%
●	Ontario	855	908	53	6.2%
●	Hastings	13	12	-1	7.7%
●	Peterborough	20	13	-7	-35.0%
●	Kawartha Lakes	<10	<10	Insf. Data	Insf. Data
●	Durham	20	23	3	15.0%
●	Simcoe	30	29	-1	-3.3%

3. Competitor Colleges

COLLEGE	PROGRAM TITLE	LENGTH, TYPE (DIPLOMA, CERT., POST)	DELIVERY METHOD(S)	OTHER (UNIQUE TO THE PROGRAM)
Centennial	Energy Systems Engineering Technology	3 years 6 semesters	Optional Co-Op	Semester 6 has a course called: "Geothermal Heat Pumps: Installation and Design"
Conestoga College	Renewable Energy Techniques	Ontario College Certificate		Second semester has a course "Canadian GeoExchange Coalition Installer's Course" which is more theoretical and 28 hours long.
Mohawk College	Energy Systems Technician	Diploma 2 years		Includes several technologies including nuclear, wind, bioenergy, hydro, solar, and geothermal
Niagara College	Renewable Energies Technician	Diploma 2 years		Geothermal (GSHP) is covered in third semester
St. Lawrence	Energy Systems Engineering Technology FAQs (FAQs)	2 year Diploma		Under FAQ ***"Will we work with Ground Source Heat Pumps?"*** *Yes - Ground Source Heat Pump (also less accurately known as geothermal) technology is part of the program. We focus on the design and theory of operation, as well as performing labs to assess GSHP efficiency. We do not offer ground exchange heat pump design or installation certification. These certifications are offered by industry associations."*
Fanshawe College	Renewable Energies Technician	Diploma 48 weeks		Geothermal not specifically mentioned However, *"Graduates will be employed by owners of Renewable Energy projects such as Wind and Solar farms as well as third party contractors/manufacturers/providers and as installers and maintainers of said projects. Other opportunities may exist in sales and marketing, project site assessment, energy consulting and regulatory functions."*
Northern Alberta Institute of Technology (Fleming partner)	Hydronic Designer and Installer Certification	Certification through the Canadian Hydronics Council	Online or correspondence	*The Hydronics program, developed by NAIT's pipe trades group for students throughout North America, also addresses hydronics systems involving solar, fuel cell and geothermal heating sources.*
Red Deer College	Water Well Driller, Apprenticeship	2 years		

Enrolment- Diploma and Advanced Diploma Programs

Full-time Enrolment, November of each year (central region colleges highlighted)

College	Program	2015	2016	2017	2018
Centennial	Energy Systems Technology	110	115	167	153
Conestoga	Energy Systems Technology	54	45	36	43
Humber	Energy Systems Technology	92	91	97	86
Mohawk	Energy Systems Engineering Technology	100	97	96	87
Centennial	Energy Systems Technician	61	56	64	77
Durham	Energy Systems Technician	54	49	16	0 (suspended)
St. Lawrence	Energy Systems Technician	16	15	42	45
Fanshawe	Integrated Systems Technician	23	42	41	31
Mohawk	Energy Systems Technician	0	0	0	0
Niagara	Integrated Systems Technician	49	55	52	60

Red- technology programs (3-year advanced diploma)
Blue- technician programs (2-year diploma)

12.4. Appendix IV: Evidence of Need: Employment Postings

General labourer (starter position in large company)

Vaughan, ON

Apply Now

Job Summary

Clean Energy is an established Geothermal Company. Clean Energy is 100% Canadian owned and operated in Toronto. Clean Energy is a sister company of VCI Controls, Inc.

The ideal candidate should possess the following:

- Previous experience in commercial construction is an asset
- Previous experience in geothermal fusion is an asset
- Must be a self-starter
- Must have a high school diploma
- Must be able to read and write fluently in English
- Must be able to work with minimal supervision
- Must have a Valid Driver's licence and a vehicle
- Working in outdoor environments

Responsibilities:

- Assist fusion installer*
- Work in trenches**
- Shoveling and cleaning roadways**
- Traffic control*

Hours:

- Working hours are Monday – Friday from 7am – 5 pm*
- May be required to work weekends or after-hours**
- May work out of town*

Security Clearance:

- Applicant must be able to pass government security clearances**.**

Job Type: Full-time

Gas and Oil Burner Technician

The Hayter Group
Alvinston, ON

Apply Now

Job Summary

The Hayter Group is hiring! Here's your opportunity to build your career with one of Ontario's leading green energy contractors. We sell and install solar panels, geothermal systems and energy efficient HVAC equipment.

Responsibilities and Duties

- Troubleshoot oil, propane and natural gas HVAC equipment, indoor comfort, energy efficiency, and related problems
- Present findings and options to customers; provide advice and recommendations
- Provide customers with information on new equipment when repairs exceed $300 and/or existing equipment exceeds 10 years of age
- Provide customers with information and pricing on service agreements, accessories, quality, cost and other comfort improvements
- Complete approved repairs, improvements, or installations within industry standard times, following proper safety procedures
- Clean equipment and work area, ensure complete customer satisfaction upon completion of work

Qualifications and Skills

- Two or more years of experience as an HVAC installation, maintenance, or service technician for natural gas, propane or heating oil
- Ability to communicate clearly in a friendly, personable way with customers and coworkers
- EPA certified
- Valid social security card, driver’s license and a clean driving record
- Well groomed, neat appearance
- Able to quickly troubleshoot problems
- Ability to follow controls/wiring schematic
- Ability to braze/solder/weld
- On call over weekends and after hours as required
- NATE certification a plus

Benefits

The Hayter Group provides a professional work environment with competitive wages and benefits. Please complete the application below:

Job Type: Full-time

Salary: $25.00 to $34.00 /hour

Experience:

- HVAC: 2 years (Preferred)

Licence:

- Gas or Oil Burner (Required

HVAC Technician

HirePower

North York, ON10 days ago

Apply Now

The Hydronics Team is a design-build mechanical firm providing proven expertise in radiant heating, snowmelt, HVAC, geothermal, as well as creative cooling solutions for residential and commercial applications.

Founded in 1998, The Hydronics Team continually proves to be the leader in design and installation of efficient systems. We strive to elevate standard in ethics, professionalism, and longevity within the heating and cooling industry. Our systems are extremely reliable and efficient and we stand behind our work.

We are looking for a full time HVAC helper to assist with installs of Hydronics Systems in and around the GTA. Experience and own transportation preferred.

The successful candidate must have knowledge or a desire to gain knowledge of the following:

- Hydronic Heating
- Gas Technician Work
- Controls and Electrical

The candidate should also be

- Self-motivated
- Goal oriented
- Be able to foster relationships with our current customers, and coworkers.

A successful candidate will be willing to assume any and all duties related to the business to ensure the success of the company. As our name states, we are a team. We offer great support for our employees and take pride in our work. If you do not meet all the requirements but believe you are an excellent candidate for the position please do not hesitate to apply.

Job Type: Full-time

Experience:

- HVAC repair & maintenance: 1 year (Required)

Licence:

- Drivers Licence (Required)
- G1/G2 or G3 (Required)

PROJECT COORDINATOR, ENERGY MANAGEMENT **(job prospect with increased experience)**

City of Brampton
Brampton, ON
Apply Now

Job Description

PROJECT COORDINATOR, ENERGY MANAGEMENT

POSTING NUMBER: 103321

HIRING SALARY RANGE: $77,201.00 - $86,851.00

MAXIMUM OF SALARY RANGE: $96,501.00

Are you passionate about cities and climate change? Do you want to contribute to meaningful and measurable action on energy use and greenhouse gas emissions?

We have an opening for a Project Coordinator, Energy Management. This role will help shape the future of energy management at Brampton through the development and delivery of projects at City-owned facilities.

AREA OF RESPONSIBILITY:
Reporting to the Supervisor, Energy Management, the Project Coordinator is responsible for the coordination & implementation of all Energy Management projects at City-owned facilities, ensuring assigned projects are completed on time, within budget, and to the standards required by legislation and the City.

Project Coordination. Facilitate the development, implementation and verification of energy efficiency and conservation projects.

Develop business case elements including budget costs, savings, funding and scheduling in collaboration with internal and external stakeholders.
Apply for funding with utilities, governments and other organizations.
Create requests for services (which may include proposals or quotations) for consultants. Prepare contract documents and manage consultants as required. Identify and continuously monitor project risks including costs, savings, funding and scheduling to ensure minimal impact to client programs.
Facilitate program information for the preparation of implementation plans, obtain relevant information from other departments or authorities having jurisdiction. Verify and report on business case elements at project closeout.
Co-ordinate the work of service contractors as it relates to existing energy management systems including building automation and support troubleshooting of operational problems for energy management projects.
Support City-wide existing building commissioning program to address the best energy conservation and operational practices
Develop renewable energy projects including budget costs, cost and greenhouse gas savings as well as funding including third party sources. Some examples of renewable energy projects

are (but not limited to) solar photovoltaic, solar thermal and geothermal.
Act as liaison between internal staff and external consultants/contractors on energy management/conservation initiatives and provide recommendations to the Supervisor.

Data Management. Administer the City's utility data management system which includes electricity, gas and water bills.

Manage the vendor for the utility data management system to ensure data quality and business continuity is maintained.
Process vendor progress payments for approval by Supervisor and document system workflow as well as any changes.
Respond to data queries from external and internal stakeholders as required.

Monitoring, Tracking and Verification. Maintain and further develop a monitoring, tracking and verification program that will optimize the performance of energy systems that consume electricity and gas.

Collaborate with internal stakeholders to establish standard operating procedures as it relates to energy systems.
Coordinate on-site inspections to ensure compliance.
Manage site reports, project status updates, meeting minutes, project schedule and budget status as required, participate in project progress meetings as required.
Prepare statistical analysis for stakeholder and senior management overview purposes for energy management information.

Reporting. Coordinate the reporting of energy and greenhouse gas emissions as required by provincial regulations. Manage the development of automated systems to report corporate key performance indicators (KPIs).

Commodity Procurement. Manage and recommend the procurement of gas, hydro and water contracts.

Review consultant's reports and identify commodity accounts that are suitable for third party procurement
Recommend short, medium, and long-term procurement strategies for Supervisor approval

Project Administration. Ensure project schedules and budget are on target.

Submit schedules and budget estimates of project deliverables to Supervisor for approval.
Identify risks to minimize impacts on project schedules and budgets.
Track change orders and progress payments
Maintain filing system per corporate standards for all project plans, specifications, schedules, budget and correspondence.

Consulting and Training. Advise on energy management best practices for new and existing buildings. Facilitate efficiency and conservation training for City staff including energy management workshops.

SELECTION CRITERIA:

Post secondary diploma/degree (3-year minimum) and/or professional engineering designation in Energy Management. An electrical engineering degree is preferred.
A minimum of 5 to 7 years experience in energy management and facility operational experience. A focus on lighting, electrical and building automation systems is preferred.
A valid Ontario Driver's License Class "G" and the use of a personal vehicle to travel to various City of Brampton sites.
Must be flexible to work variable hours
Knowledgeable of renewable energy systems such as wind power, solar power and other alternatives; building code, electrical code, utility rate structures and billing; and how these alternative systems may contribute to energy reduction programs within a facility.
Project Management experience, with proven ability to create and interpret business cases and financial proposals as well as identify project risks.
Highly skilled in measurement and verification to validate project savings. CMVP designation is an asset.
Experience with managing funding applications with utilities and other organizations
Clear understanding of commodity procurement strategies to minimize cost risk
Expertise in benchmarking building energy and water performance
Proficiency with data visualization software and reporting systems
Effective report writing skills, presentation & communication skills
Strong knowledge of Microsoft Word & Excel and Utility Tracking Software (Utility Management Pro)
In-depth knowledge of building systems including mechanical, electrical, lighting and building envelope

As part of the corporation's Modernizing Job Evaluation project, this position will undergo an evaluation which may result in a change to the rate of compensation. Any changes affecting this position will be communicated as information becomes available.

Exciting things are happening at the City of Brampton. Watch our Join Our Team video to hear what our employees say about working here. For insight about Brampton's future, take a peek at what renowned urban planner Larry Beasley has to say.

**Various tests and/or exams may be administered as part of the selection criteria.

Job status: Permanent

Job Type: Non-Union

Applications must be received by: March 25, 2019

Alternate formats will be provided upon request.

If this opportunity matches your interest and experience, please apply online at: www.brampton.ca/employment quoting reference #103321 by March 25, 2019 and complete the attached questionnaire. We thank all applicants; however, only those selected for an interview will be contacted. The successful candidate(s) will be required, as a condition of employment, to execute a written employment agreement.

Please be advised, the City of Brampton uses email to communicate with their applicants for open job competitions. It is the applicant's responsibility to include an updated email address that is checked daily and accepts emails from unknown users. As we send time sensitive correspondence via email (i.e. testing bookings, interview dates), it is imperative that applicants check their email regularly. If we do not hear back from applicants, we will assume that you are no longer interested in the Job Competition and your application will be removed from the Competition.

The City is an equal opportunity employer. We are committed to inclusive, barrier-free recruitment and selection processes and work environments. If you are contacted for a job opportunity, please advise the Human Resources Division of any accommodations needed to ensure you have access to a fair and equitable process. Any information received relating to accommodation will be addressed confidentially.

12.5. Appendix V: Letters of Support

City of Peterborough

210 Wolfe Street, Peterborough, ON K9J 2K9

Community Services Department Tel: 705 742 7777, ext. 1441

February 25, 2019

To whom it may concern,

I am writing to express my approval and support for the creation of a Geothermal Design and Installation Program with the School of Environmental and Natural Resource Sciences and Trades and Technology at Sir Sandford Fleming College. The proposed start date of this program is September 2019.

As the Sustainability Manager for the City of Peterborough, I have been involved extensively in community and corporate environmental and sustainable projects across the City of Peterborough as well as the Greater Peterborough Area. Working closely with Peterborough Utilities, Hydro One and Enbridge Gas on renewable energy opportunities, energy conservation and consumption, we are also interested in researching, studying, and promoting new energy technology. I am excited to see the growth opportunities in local projects, such as the Geothermal Design and Installation Program at Fleming. These community led projects are especially important for enhancement of local knowledge and education, technology advancement, as well as building local trade expertise.

As the Program Manager for Sustainable Peterborough Climate Change Action Plan, our greenhouse gas baseline inventory shows that the City of Peterborough's largest emission sector is residential at 39%. The largest source of community sector greenhouse gas is natural gas at 52%, electricity at 15%, heating oil at 2%. These numbers indicate that the heating of residential homes is a major contributor of greenhouse gas and one that geothermal could quickly reduce as it would be considered a fuel switching away from a fossil fuel source.

I believe that geothermal is an up and coming heating and cooling system that will quickly takeoff in the building industry. It is a system that works with the natural environment, providing effective and efficient heating and cooling. Based on these attributes, I fully support and will keenly promote the Geothermal Design and Installation Program with the School of Environmental and Natural Resource Sciences and Trades and Technology at Sir Sandford Fleming College.

Sincerely,

Melanie Kawalec

Melanie Kawalec,
Sustainability Manager

peterborough

IGSHPA - Canada 18445 – 89 B Avenue, Surrey, British Columbia Canada V4N 3X4

February 25, 2019
IGSHPA – Canada
18445 – 89 B Avenue
Surrey, British Columbia
Canada V4N 3X4
Dean Brett Goodwin
School of Environmental and Natural Resource Sciences
Sir Sandford Fleming College
599 Brealey Drive
Peterborough, Ontario
Canada K9J 7B1
Dear Dean Goodwin,

Re:
Program name: Geothermal Systems
School: School of Environmental and Natural Resource Sciences and Trades and Technology
Proposed start date: September 2019
College: Sir Sandford Fleming

The Canadian Chapter of the International Ground Source Heat Pump Association (IGSHPA) is very pleased and honored to be involved with Fleming College in the formulation, structuring and curriculum design of their *Geothermal Design and Installation* course. The delivery of this course to the geothermal industry will address an educational void that has existed for far too long.

Ground source geothermal systems are recognized as the most efficient means for heating and cooling buildings. These systems significantly reduce CO2 emissions, are quiet, reliable, invisible and safe. These systems are gaining widespread adoption as evidenced by the following large-scale, district energy installations:

- Colorado Mesa University,
- Ball State University, Indiana
- Epic Campus, Wisconsin
- Ford World Headquarters - Dearborn, Michigan
- Missouri University for Science and Technology
- The Vancouver International Airport, British Columbia
- The Blatchford re-development – Edmonton, Alberta
- Cornell University – Roosevelt Island Campus, New York City

IGSHPA - Canada 18445 – 89 B Avenue, Surrey, British Columbia Canada V4N 3X4

Additionally, Dandelion, which is a subsidiary of Google, is actively engaged in the Hudson Valley of New York State retrofitting single family homes with ground source heat pump systems.

Geothermal ground loop systems are expensive investments which must be designed and installed correctly. When these steps are deficient, systems underperform and / or fail prematurely. This turns consumers and regulators against the technology.
Fleming college is uniquely positioned to establish itself as a thought leader and provider of practical education in the geothermal ground source market – there is simply no competing entity in North America. As the geothermal ground source industry gains momentum, properly trained personnel will be in high demand. These are well compensated employment positions with ample opportunity for advancement as the built environment transitions to a low carbon and energy efficient future.

IGSHPA – Canada and its 275 members, are fully supportive of Fleming college's initiative to deliver a meaningful and cutting-edge Geothermal Design and Installation program. IGSHPA – Canada can and will provide expert information, mentoring and guidance to Fleming college for their curriculum, drawing on hundreds of years of experience from North American and International professionals.
IGSHPA – Canada stands at the ready to assist Fleming college in this vital endeavor.

Best Regards,
Mark Metzner
President, IGSHPA - Canada

IGSHPA CANADA
Ontario Chapter

March 5, 2019

Dean Brett Goodwin
School of Environmental and Natural Resource Sciences
Sir Sandford Fleming College
599 Brealey Drive
Peterborough, Ontario
Canada K9J 7B1

Dear Dean Goodwin,

Re:

Program name:	Geothermal Design and Installation
School:	School of Environmental and Natural Resource Sciences and Trades and Technology
Proposed start date:	September 2019
College:	Sir Sandford Fleming

On behalf of the Ontario Chapter of the Canadian International Ground Source Heat Pump Association (IGSHPA - Canada), I am pleased to support the new Geothermal Design and Installation program at Fleming College. Over the past few decades, geothermal energy has become the most effective option to reduce the carbon footprint associated with heating and cooling buildings.

There are many misconceptions regarding the nature and use of geothermal energy. In addition, there is currently an educational void in addressing the interdisciplinary field of geothermal systems. We are forecasting rapid growth in the geothermal industry in all sectors of society, over the next few decades. This expected growth is largely in response to global initiatives to reduce carbon emissions and building code targets for green building design. Fleming's new geothermal program is both timely and welcomed.

Our industry needs a trained workforce that has a firm grasp of geothermal theory, as well as the real-world constraints that can impact the installation, operation and maintenance of geothermal systems. No other college or university in Canada, (or the U.S.) has developed a curriculum that covers all aspects of geothermal energy systems, from design through to commissioning.

One of the greatest uncertainties of geothermal energy lies in the science of subsurface geology and heat transfer. Fleming's highly rated drilling program offers a unique opportunity to research new methods of exploring and harnessing geothermal energy. No other school has a fleet of drill

IGSHPA CANADA
Ontario Chapter

rigs that enables exploratory drilling, as well as in - situ testing of both closed loop (borehole) and open loop (water well) installations. The new program will allow Fleming to become a world-class research centre for innovative techniques to characterize, harness and utilize geothermal energy.

The Ontario Chapter of IGSHPA - Canada is eager to assist Fleming College in developing the Geothermal Design and Installation program.

Best Regards,

Brian Beatty,
President, Ontario Chapter, IGSHPA - Canada

IGSHPA – Canada
Ontario Chapter
2175 King Rd., King City, Ontario, L7B 1G3

12.6. Appendix VI: Costing Summary

Sir Sandford Fleming College - Program Costing

Program Name: Geothermal

Gross Tuition (per semester)	$ 3,060
BOG (per yr)	$ 4,300
Attrition	5%
WFU per semester	0.70

(All values expressed in current dollars)

	Year 1 2019/20	Year 2 2020/21	Year 3 2021/22	Year 4 2022/23	Year 5 2023/24	Year 6 2024/25
Semester 1 Enrolment	15	15	33	36	36	36
Semester 2 Enrolment	0	28	14	34	34	34
Total Enrolment	15	43	47	70	70	70
Revenues						
Tuition Fees	$ 45,900	$ 131,580	$ 143,820	$ 214,200	$ 214,200	$ 214,200
MTCU Operating Grant	45,150	129,430	141,470	210,700	210,700	210,700
Total	**91,050**	**261,010**	**285,290**	**424,900**	**424,900**	**424,900**
Expenses						
Academic Direct	38,755	117,185	137,080	231,150	231,150	231,150
Program Coordinator	6,507	6,507	13,013	13,013	13,013	13,013
Technician	10,459	10,459	10,459	10,459	10,459	10,459
Course Supplies	10,000	10,000	10,000	15,400	15,400	15,400
Tuition Set Aside	2,295	6,579	7,191	10,710	10,710	10,710
Dean & Other academic costs	5,281	15,139	16,547	24,644	24,644	24,644
Total	**$ 73,296**	**$ 165,868**	**$ 194,290**	**$ 305,376**	**$ 305,376**	**$ 305,376**
Net Contribution or (Cost) of Proposed New Program before Overheads	17,754	95,142	91,000	119,524	119,524	119,524
Contribution %	19.5%	36.5%	31.9%	28.1%	28.1%	28.1%
Equipment, Pump, Reel, Borehole	63,600					
Development Costs	87,750					
Special Funding	-75,600					
College Overhead	32,095	92,006	100,565	149,777	149,777	149,777
Net Contribution or (Cost) of Proposed New Program	**($165,692)**	**$3,136**	**($9,565)**	**($30,254)**	**($30,254)**	**($30,254)**
Cumulative Cash Flow Excluding Overhead	**($133,596)**	**($38,454)**	**$52,546**	**$172,069**	**$291,593**	**$411,116**

Assumptions:

1. Dean and other academic administrative expenses allocated at 5.8% of revenue
2. Academic delivery costs are calculated based on 100% contract.
3. College overhead is allocated at 35.25% of revenue

Enrolment					Curriculum								
		SEM 1	SEM 2		SEM 1	SEM 2							
Jan-20		15	9		337	345							
Sep-20		15	14		337	345							
Jan-21		0	0		336	345							
Sep-21		15	14		337	345							
Subsequent		18	18		510	495							
								Delivery Hours					
									Year 1	337			
									2	1019			
									3	1192			
									4	2010			
Estimated Delivery Composition									5	2010			
									6	2010			
Full Time													
Contract		100%											
Average Contract Faculty Rate - Including Benefits						115							
Average FT Faculty (including benefits)						113,408.49							
Estimated Part Time Co-Ordinator Cost						6,506.67		Half cost per Trish as they will share with RDB					
						13013.347		Full Release in year 3 and beyond					
Comparable Program - Aquaculure - Fleming College													
Technician													
	Hourly Rate		25.71										
	Hours Per Week		12										
	Annual Weeks		30										
	Technician Cost		9255.6										
	Add Benefits		13%										
	Total Cost		10458.83										

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SUBMISSION TO THE BOARD OF GOVERNORS

Agenda Item 6.4

Report Title: Exception to Policy 5-502, Issuance of Diplomas & Certificates
Report to: Public Board Meeting **Meeting Date: April 24, 2019**
Requested Action: Decision / Approval
Prepared and Submitted by: Susan Kloosterman, Registrar

OVERVIEW / BACKGROUND

As Policy No. 5-502, Subject: Issuance of Diplomas & Certificates has not been updated since 2005, as such it does not reflect current regulatory standards and modernized operational efficiencies.

ANALYSIS / PROPOSED OPTIONS

The scope of analysis will depend on the nature of the issue but may include Legal Impact; Financial/HR Implications; Student Impact; Stakeholder Implications. Pros and Cons for each option should be identified as appropriate.

Recommending that the Board of Governors approve an exception to Policy No. 5-502, until the end of June 2019, which will remove the need for a live signature on Fleming College credentials and allow inscription of the Registrar's signature.

After June 2019, Policy No. 5-502, Subject: Issuance of Diplomas & Certificates would be updated in full to reflect regulatory standards and current operational processes and efficiencies.

RISK CATEGORY

Select all that apply *(to check a box, double click; from drop-down menu, select "checked" under Default Value)*

☐ External Environment ☐ Internal Environment ☐ Financial ☐ Human Resources
☐ Information Technology ☐ Legal ☒ Operational ☐ Strategic ☐ N/A

RECOMMENDATION AND/OR MOTION *(i.e. Receive the update on Winter Enrolment for information. Refer the matter to Committee for further investigation. Approve the proposed xyz program of instruction.)*

It is recommended the Board of Governors of Sir Sandford Fleming College:

Approve the proposed exception to Policy No. 5-502 Issuance of Diplomas and Certificates effective immediately until end of June 2019.

SUPPORTING DOCUMENTATION

Policy No. 5-502 Issuance of Diplomas and Certificates

Sir Sandford Fleming College
Policy Manual

Policy No. 5-502 **Page No. 1 of 1** **Date Approved: 92-09** **Motion #3**	**Approved By: Board of Governors** **Supercedes: 3-314**

SUBJECT: ISSUANCE OF DIPLOMAS & CERTIFICATES

The authority for issuing diplomas and certificates lies with the College Board of Governors. Through policy 5-502 the Board of Governors delegates this authority to the college Registrar.

The Registrar shall publish a set of procedures for the issuance of diplomas and certificates that will:

- Describe the authority, accountability and responsibility of the various offices involved.
- Provide a standard for the various levels of diplomas and certificates issued.
- Prescribe the wording to be used and the use of College insignia.
- Prescribe the use of authorizing signatures.

PROCEDURE: DIPLOMAS & CERTIFICATES 5-502

1. The authority for issuing diplomas and certificates lies with the College Board of Governors. Through policy 5-502 the Board of Governors delegates this authority to the College Registrar.

2. The Academic Team Leader is accountable for specifying the courses required for successful completion of a program.

3. It is the responsibility of the Registrar or his/her designee to determine, using the records at his/her disposal, whether or not individual students meet those requirements and to review general College requirements related to graduation eligibility.

4. Once satisfied that all academic and general conditions have been met it is the responsibility of the Registrar or his/her designee to certify this eligibility by issuing the appropriate diploma or certificate.

5. In order to be eligible to receive a diploma or certificate in any given graduation year, the student must have completed all diploma/certificate requirements by June 30th. After this date, the diploma/certificate will be issued at the next year's Convocation. Diplomas/Certificates are not issued prior to the Convocation ceremony.

6. Sir Sandford Fleming College shall certify achievement through the use of the following eight distinct levels of certification.

6.1 "Ontario College Advanced Diploma"

This diploma will be awarded to graduates of Board of Governors approved programs as defined by the Ministry of Training for Colleges and Universities binding policy directive – Framework for Programs of Instruction.

Examples:

Business Administration – Marketing
Fish & Wildlife Technology
Massage Therapy

Format:

Each "***Ontario College Advanced Diploma"*** shall contain both the College crest and the College seal prominently displayed.

The following wording shall be used:

The Board of Governors upon the recommendation of the faculty of the College hereby awards to

JOHN STEPHEN DOE

In witness of the successful completion of the prescribed Program of Study, this Ontario College Advanced Diploma in

Fire Systems Engineering Technology

Given at Peterborough, (Lindsay, Haliburton) Ontario this _____ day of_____, 20_____.

Each **"Ontario College Advanced Diploma"** shall be inscribed with the signatures of:

Chair, Board of Governors
President
Vice-President, Academic
Registrar

~~The live signature of the Registrar shall certify eligibility for graduation.~~

6.2 "Ontario College Diploma"

This diploma will be awarded to graduates of Board of Governors approved programs as defined by Ministry of Training for Colleges and Universities binding policy directive – Framework for Programs of Instruction.

Examples:

Early Childhood Education
Police Foundations
Environmental Technician

Format:

Each **"Ontario College Diploma"** shall contain both the College crest and the College seal prominently displayed

The following wording shall be used:

The Board of Governors upon the recommendation of the faculty of the College hereby awards this Ontario College Diploma to

JANE SUSAN DOE

In witness of the successful completion of the prescribed Program of Study in

Practical Nursing

Given at Peterborough, (Lindsay, Haliburton) Ontario this _____ day of____, 20____.

Each **"Ontario College Diploma"** shall be inscribed with the signatures of:

Chair, Board of Governors
President
Vice President, Academic
Registrar

~~The live signature of the Registrar shall certify eligibility for graduation.~~

6.3 "Ontario College Graduate Certificate"

This certificate will be awarded to graduates of Board of Governors approved programs as defined by Ministry of Training for Colleges and Universities binding policy directive – Framework for Programs of Instruction.

Examples:

Museum Management and Curatorship
Natural Resources Technology – Law Enforcement

Format:

Each **"Ontario College Graduate Certificate"** shall contain both the College crest and the College seal prominently displayed.

The following wording shall be used:

The Board of Governors upon the recommendation of the faculty of the College hereby awards this Ontario College Graduate Certificate to

JANE SUSAN DOE

In witness of the successful completion of the Program of Study in

Museum Management and Curatorship

Given at Peterborough, (Lindsay, Haliburton) Ontario this____ day of_____, 20_____.

Each **"Ontario College Graduate Certificate"** shall be inscribed with the signatures of:

Chair, Board of Governors
President
Vice President, Academic
Registrar

~~The live signature of the Registrar shall certify eligibility.~~

6.4 "Ontario College Certificate"

This certificate will be awarded to graduates of Board of Governors approved programs as defined by Ministry of Training for Colleges and Universities binding policy directive – Framework for Programs of Instruction.

Examples:

Personal Support Worker
Pre-Service Firefighter Education & Training

Format:

Each **"Ontario College Certificate"** shall contain both the College crest and the College seal prominently displayed.

The following wording shall be used:

The Board of Governors upon the recommendation of the faculty of the College hereby awards this Ontario College Certificate to

JOHN STEPHEN DOE

In witness of the successful completion of the prescribed Program of Study in

Artist Blacksmith

Given at Peterborough, (Lindsay, Haliburton) Ontario this _____ day of_____, 20_____.

Each **"Ontario College Certificate"** shall be inscribed with the signatures of:

Chair, Board of Governors
President

Vice President, Academic
Registrar

~~The live signature of the Registrar shall certify eligibility for graduation.~~

6.5 "Certificate of Successful Completion"

This certificate will be awarded to graduates of approved programs who have successfully completed a program of study which has an evaluative mechanism with grades allocated, and/or evidence of successful completion of performance objectives or required competencies.

Examples:

Apprenticeship Programs
Computerized Office
Spa Esthetics

Format:

Each **"Certificate of Successful Completion"** shall display the College crest.

The following wording shall be used:

Sir Sandford Fleming College of Applied Arts and Technology certifies that

JANE SUSAN DOE

has successfully completed prescribed program requirements in:

Developmental Services Certificate

Dated:

Each **"Certificate of Successful Completion"** shall be inscribed with the signatures of:

Vice President, Academic
Registrar

~~The live signature of the Registrar shall certify eligibility for graduation.~~

6.6 "Statement of Recognition"

A **"Statement of Recognition"** will be awarded for successful completion of a course which was delivered under formal agreement by the College to an outside party. The course must have an evaluative mechanism with grades allocated and/or evidence of successful completion of performance objectives or required competencies.

Example:

Global Positioning Systems for Ontario Licensed Well Technicians

Format:

Each **"Statement of Recognition"** shall display the College logo.

The following wording shall be used:

This confirms that

JOHN STEPHEN DOE

has successfully completed the

Air Brake 'Z' Endorsement Course

Dated:

Each **"Statement of Recognition"** shall be inscribed with the signature of:

Registrar

~~The live signature of the Registrar shall certify eligibility.~~

6.7 "Statement of Participation"

A **"Statement of Participation"** will be awarded for participation in a learning activity which was delivered under formal agreement by the College to an outside party for which some form of recognition is appropriate but for which no formal assessment was conducted.

Examples:

Use of Helicopter in the Natural Resource Sector
Supervisory Communications

Format:

Each **"Statement of Participation"** shall display the College logo.

The following wording shall be used:

This confirms that

SUSAN JANE DOE

has participated in the

Supervisory Communications Workshop

Dated:

Each **"Statement of Participation"** shall be inscribed with the signature of:

Registrar

~~The live signature of the Registrar shall certify eligibility.~~

6.8 "Joint Certification"

In support of our desire to develop partnerships which meet the needs of our clients and enhance the reputation of Sir Sandford Fleming College, the College will enter into **"joint certification"** agreements with institutions/associations where the College shares in determining the acceptable level of knowledge, competency and skill required for certification and in the design and delivery of curriculum.

Requests for **"joint certification"** will be documented by the Registrar and submitted to the Academic Planning & Development Committee for approval.

The design of joint diplomas/certificates will be on an individual basis, but must comply with the graphic standards of the College. Each document shall be inscribed with the appropriate signatures as detailed in sections 6.1 through 6.7.

7. **Graduation Collars:** Each graduate will receive a Graduation Collar during the Convocation ceremony. This is a keep-sake for each graduate. The colour of the collar coincides with the level of the Diploma/Certificate being awarded. The **Gold** collar is for the Ontario College Graduate Certificate programs; the **Three Stripe Gold and Green** (gold/green/gold) collar is for Ontario College Advanced Diploma programs; the **Two Stripe Gold and Green** (gold outside stripe/green inside stripe) collar is for Ontario College Diploma programs and the **Green** collar is for the Ontario College Certificate programs.

8. It is the responsibility of the Registrar to see that the procedures are properly enforced and to negotiate any alterations to the procedures as required. She/he draws the authority for this from the Board Policy on the Issuance of Diplomas and Certificates #5-502, formerly #3-314, dated September, 1992.

Revised August/2005

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SUBMISSION TO THE BOARD OF GOVERNORS

Agenda Item 7.1

Report Title: Public Infrastructure Asset Management Certificate Program Approval
Report to: Board Committee Meeting Meeting Date: April 24, 2019
Requested Action: For Information / Discussion
Prepared and Submitted by: Eva Rees and Brent Wootton

OVERVIEW / BACKGROUND

Fleming College's School of Flexible Delivery and Contract Training seeks to add a part-time Fleming College Certificate in Public Infrastructure Asset Management offered online through Ontario Learn, to its program mix.

Municipal governments have the responsibility of providing infrastructure and infrastructure dependent services to their communities. Good asset management planning helps municipalities make well-informed and evidence-based decisions about their infrastructure assets. Asset management planning is part of a strategic planning process that is integrated with budgeting processes and long-term financial planning. Population change, aging assets and the impacts of a changing climate are putting increased pressure on the ability of many municipalities to ensure the long-term sustainability of their infrastructure.

According to the 2016 Canadian Infrastructure Report Card, municipalities own 60% of infrastructure assets (valued at $1.1 trillion) that are critical to quality of life and competitiveness of our country. Of this infrastructure, 1/3 is in fair, poor, or very poor condition (totaling $388 billion). The Federal Government has committed to spending more than $120 billion on infrastructure over the next ten years. Ontario has focused on municipal asset management planning since 2012 when it introduced Building Together: Guide for Municipal Asset Management Plans. Ontario's 444 municipalities seeking provincial capital funding are now required to prepare a detailed asset management plan and show how its proposed project fits within its plan. Ontario introduced an asset management regulation in December 2017 that requires that all municipalities have a comprehensive asset management plan in place by July 1, 2024.

To support municipalities in this area, Fleming launched the Centre for Sustainable Municipalities (CSM) in 2017. The vision for the CSM is to be a world-class centre of excellence that assists municipalities to build capacity and achieve high service levels from their municipally-owned infrastructure, while meeting financial and environmental targets. The CSM draws on renowned experts in the areas of advanced asset management, information acquisition, management and interpretation, financial decision-making associated with infrastructure and assets, and environmental decision-making associated with meeting greenhouse gas targets.

Municipalities need to develop advanced asset management capabilities in order to:

- Acquire the right information about their assets and operations
- Have decision support tools and trained staff
- Find efficiencies and cost-savings of expenditures while achieving GHG reduction targets
- Comply with Government legislation and support infrastructure funding requests.

ANALYSIS / PROPOSED OPTIONS

The scope of analysis will depend on the nature of the issue but may include Legal Impact; Financial/HR Implications; Student Impact; Stakeholder Implications. Pros and Cons for each option should be identified as appropriate.

The proposed 5-module (approx. 240 hour) Public Infrastructure Asset Management Certificate program will provide graduates with a Fleming College Certificate credential in the field and supplied needed skills to municipal employees and others servicing this need.

A certificate in Public Infrastructure Asset Management will increase the employment opportunities and potential for career mobility for those working in this field. Since this is offered as a part-time program and online program, this provides a flexible pathway to ongoing career enhancement and increased specialization within this field.

PROGRAM DESCRIPTION

The Fleming College Certificate in Public Infrastructure Asset Management is offered online through OntarioLearn and is designed to provide municipal employees with specific skills-based training in asset management. New provincial regulations require an asset management plan for every municipality in Ontario which means that skilled municipal asset management is in high demand Students will develop the knowledge and skills to develop and maintain an asset management system and create a comprehensive asset management plan that complies with provincial regulations.

Program Vocational Learning Outcomes (VLOs)

The graduate has reliably demonstrated the ability to:

- Describe and explain current provincial asset management environment including provincial regulations.
- Identify and manage the data and information required for an asset management system.
- Organize, develop and maintain the components of an asset management strategy.
- Prioritize asset management actions using level of service, risk management indicators and cost benefit analysis as part of an effective asset management system.
- Prepare a comprehensive municipal asset management plan that complies with Ontario Regulation 588/17.

Course 1 - An Introduction to Asset Management

In this course participants will gain a general understanding of the principles of asset management, the different terminology, the role asset management has in the businesses of the municipality, and how to initiate an asset management program. This will allow participants to grasp the fundamentals of asset management and the benefits of an effective system for municipalities. Participants will work with provincial regulations, governance structures, policy objectives, and competency requirements for an asset management system by working through interactive online learning.

Course Learning Outcomes

Upon successful completion of this course, students will be able to:

- Describe the requirements of the Provincial asset management regulation Ontario Regulation 588/17 as it relates to municipal asset management.
- Articulate the components of an asset management system and their interrelationship within an integrated and changing environment.
- Maintain a responsive asset management policy that aligns to the organization’s vision, infrastructure planning and operational processes.
- Describe the competencies required of an organizational asset management coordinator to develop, implement, and improve the various parts of an asset management system.

Course 2 - The Asset Information System

This course will familiarize participants with the components of an asset information system and how they are organized. A reliable asset information system is the foundation of good asset management planning and decision making and therefore an important part of the asset management system. Time will be spent exploring how to use tools and strategies to assess and improve the current state of a municipality’s asset information system. Participants will become familiar with the process of working with stakeholders to identify improvement opportunities and develop a strategy to enhance data, processes and technology to improve an organization's information management system.

Course Learning Outcomes

Upon successful completion of this course, students will be able to:

- Describe the parts of an asset information system including data life cycle processes, policy, staff competencies and technology
- Outline the objectives of an asset information strategy to determine the systems terms of reference
- Identify and engage stakeholders such as technology, data management, asset management staff and leadership managers that contribute to the asset information strategy
- Assess current system needs to develop the data, people, processes and technology that will improve the asset information system
- Organize assets into hierarchies to improve planning, reporting and projecting future system needs

Course 3 - Assessing the Infrastructure
The objective of this course is to apply suitable tools, frameworks and measures that determine the current state of the infrastructure and asset priorities. Understanding the current state of a municipality's infrastructure portfolio is the first step in determining the infrastructure gap between the current state of infrastructure and the desired state of infrastructure. Participants will apply tools and spreadsheets to analyze an infrastructure portfolio case study. Governance structures that shows the role of stakeholders including Council, service managers and experts, as well as engineering, operations and finance managers and experts will be used in the discussions. This will build capacity for working with stakeholders to set levels of service and assess asset risks and priorities.
Course Learning Outcomes
Upon successful completion of this course, students will be able to:

- Engage in processes, techniques and tools to determine levels of service measures for customers and assets
- Determine the technical information required to support appropriate levels of service measures
- Develop suitable tables, risk descriptions and measures to assess asset risks
- Apply levels of service and risk measures to prioritize asset management actions
- Identify appropriate risk management options to respond to high risk/high priority assets

Course 4 - Forecasting Infrastructure Needs and Expenditures
The objective of this course is to guide participants on working with stakeholders and experts to predict asset life cycles and develop maintenance and rehabilitative treatment strategies during the life cycle of the assets to maximize asset value. Development of asset life cycles and life cycle strategies is fundamental for determining future asset management actions, costs and to plan for infrastructure sustainability. Participants will learn how to develop cost estimates for the asset maintenance, rehabilitation and replacement life cycle activities for different asset types and then apply these activities to a infrastructure portfolio case study. As a result, students will be able to estimate the total costs of asset ownership in the infrastructure portfolio case study and to use that information to forecast long range capital, maintenance and operating expenditures.
Course Learning Outcomes
Upon successful completion of this course, students will be able to:

- Work with stakeholders and experts to identify typical maintenance and rehabilitative treatment actions to maximize asset life span and value
- Develop cost estimates for typical asset maintenance, rehabilitation and replacement activities
- Develop fully costed asset lifecycle strategies to achieve and maintain levels of service targets
- Develop long range expenditure forecasts that cover at least a ten year span
- Optimize cost/affordability and benefit to infrastructure by adjusting levels of service and risk tolerances.

Course 5 - Developing an Asset Management Plan
The objective of this course is to guide students on how to prepare an optimized asset management plan that complies with Ontario Regulation 588/17. The asset management plan is the primary objective of the asset management system. The asset management plan outlines the municipality's most feasible strategy for sustaining its assets and services and is used to inform and support the annual budget and forecast. Students will continue to utilize the infrastructure portfolio case study including its information outputs used in previous courses and will add additional case study information on available finances and tools. Using this case study information they will develop a prioritized asset management plan that optimizes available financial resources.
Course Learning Outcomes
Upon successful completion of this course, students will be able to:

- Determine the expenditures required to sustain current levels of service and achieve desired levels of service
- Forecast varying infrastructure conditions and risks based on differing expenditure forecasts and financial limitations
- Assess and prioritize expenditures using risk management and cost benefit.
- Develop a prioritized asset management plan that meets the requirements of the Provincial Regulation
- Demonstrate how the asset management plan can be used to inform the capital plan and operating programs/budgets

MARKET DESCRIPTION
Asset management training has been driven by specific occupational needs. Provision of education and training has been filled primarily by professional organizations and the private sector. There is no regulatory need for a formal post-secondary certification or credential although some organizations are advertising a "certificate" or "certification" not recognized by MTCU or any professional bodies. Most students are already employed and are seeking specific skills based training, through part time or online offerings. The need for asset management training in Ontario and in Canada is growing. Generally offerings in the market are of marginal quality and are focused on information sharing, best practices, and helping municipal employees on an immediate needs basis. For example, Ontario municipalities facing the requirement to have asset management plans will access webinars on how to write a plan. In addition, Ontario municipalities are relying on out of country training to develop capacity in their workforce (i.e. Institute for Asset Management in the United Kingdom, or IPWEA courses out of Australia). These offerings are not specific to Ontario regulations and are not focused on the Canadian context.
Humber College offers an asset management program in association with Plant Engineering and Maintenance Association of Canada (PEMAC) through online learning. This program is tailored to the private sector and focuses on management of plant infrastructure as opposed to the broader scope of municipal infrastructure (which includes roads, bridges, parks, water and wastewater infrastructure, transit systems, etc.).
Fleming's Flexible Delivery and Contract Training school was contracted in 2018-2019 to provide asset management training to the Ontario Clean Water Agency's 1000 employees, supporting municipalities across the province. This is representative of the growing need for training in this field.

STUDENT BENEFITS, SELLING ARGUMENTS, APPLIED RESEARCH
The objective of this Asset Management program will be to understand the integration of disciplines and processes in an asset management program. The student does not need to have specific knowledge of the various disciplines or how to manage assets, but to understand the process to assemble and evaluate the information to develop an asset management plan. The program would be delivered online and will follow an applied learning and case study format.

Applied Research for Technology Advancement in Asset Management
Fleming's Centre for Sustainable Municipalities has already received over $800,000 in funding to support applied research activities with partners in the area of asset management. Applied research in this area is continuing to expand at Fleming which will provide opportunities for faculty involved in this program to engage in research projects. Students will be exposed to ongoing research projects and may have opportunities to participate (although given the program will be online – these opportunities will be smaller compared to on campus programs). The CSM undertakes projects with partners in the following areas: data acquisition and collection; database development, data storage, and utilization; analytics and analysis; dashboarding, communication, and interpretation. Fleming was recently awarded an NSERC Industrial Research Chair in Water Network Analytics ($1 million NSERC matched by $1 million in cash and in-kind from industry). The Industrial Research Chair is a unique area of research among colleges in Canada and will complement this unique certificate program.

ADDITIONAL INFORMATION
This program will be offered online through Ontario Learn. Fleming will be the sole provider of this subject matter on Ontario Learn.
Target Launch date: January 2020
Credential: Fleming College Certificate

RISK CATEGORY
Select all that apply *(to check a box, double click; from drop-down menu, select "checked" under Default Value)*

☐ External Environment ☐ Internal Environment ☒ Financial ☐ Human Resources
☐ Information Technology ☐ Legal ☐ Operational ☐ Strategic ☐ N/A

RECOMMENDATION AND/OR MOTION *(i.e. Receive the update on Winter Enrolment for information. Refer the matter to Committee for further investigation. Approve the proposed xyz program of instruction.)*

It is recommended the Board of Governors of Sir Sandford Fleming College:

Receive the Preliminary Proposal for a Fleming College Certificate in Public Infrastructure Asset Management, offered through Ontario Learn with an implementation date of January, 2020 for information feedback.

Operational Framework

Governance

- Strategic Planning
- College Organizational Structure
- Board of Governors UPDATE
- Committee Structure

Policy & Procedure

- Quality Assurance focused Development & Redesign

Legend:

- Proceeding well; Completion by end of 2018/2019
- Underway, additional resources required; Completion by end of 2019
- Work in Progress; Anticipated completion 2020

Click here to download additional definitions and terminology

Click here to download Quality Assurance detailed plan with updates

Accountability

Develop Annual Auditing Processes

- Curriculum Mapping
- Program Advisory Committees (PAC)
- Annual & Cyclical Program Review (APR/CPR)
- Professional Development Plans

Access to Policy & Procedure

- External Access
- Improved Access for Students

Administrator Accountability

- Consideration of Quality in Annual Performance Review

Systems & Measurement

Data Management Systems

- Program Advisory Committee (PAC) Recommendations
- VLO/EES Mapping in Evolve
- Annual & Cyclical Program Review (APR/CPR)
- Teacher and Course Evaluations
- Program Efficacy Review UPDATE
- Gen Ed Mapping
- Service Area Quality Assurance Evaluation Process
- Risk Registry
- Professional Development Plan Tracking

Professional Development

Orientation & Onboarding

- Full-time faculty
- Contract faculty
- Support staff
- Administrators

Ongoing Human Resource Development

- Coordinator's Toolkit
- Faculty Evaluation Process
- Organizational Professional Development Plan

Supports to Program Quality

- Development of Academic Plan
- Increased awareness of Curricular Excellence Model
- Work Integrated Learning Assessment Best Practices
- Implementation of Student Advising Model
- VLO focussed Faculty Professional Development
- Assessment Mapping Processes for Program Review

Fleming College

Fleming College

PRESIDENT'S REPORT

Public Board Meeting – Wednesday, April 24, 2019 **Agenda Item 7.4**

The following is a summary of key updates of the President to the Board of Governors since the March 2019 Board meeting.

College System Update

The Ontario Budget was tabled on April 11, 2019. While many details are yet to be communicated regarding implications for the college system, it is clear that there will be an increased focus on KPI's as well as differentiated funding. It is expected that the number of KPI's will be reduced and that funding will be tied more closely to results.

The concept of Centres of Excellence has also been introduced where colleges specialize in certain programming such that not all colleges offer all of the same programming. This is consistent with the strategic planning for Fleming College that is underway.

Technical briefings will follow later this month that will provide further details and implications for the system and Fleming specifically.

Government Relations

Fleming was well represented at College Day at Queens Park by the Vice Chair and President. Meetings with Fleming and political leaders included the Minister of Labour, Minister of Training Colleges and Universities and Ministry of Children, Community and Social Services (Parliamentary Assistant).

There was also an opportunity to attend Question Period where all college representatives were acknowledged by their local MPP's.

Fleming attended several MOU signings in Panama City from April 10 to 14th. Fleming was accompanied by Trent University for part of this very successful trip.

Fleming signed 4 MOU's; 3 with the government of Panama and 1 with the newly established technical school in Panama that opened for the first time on April 15th. It is expected that we will receive 15 Panamanian students in the Fall of 2019 and several more in January 2020 (approx. 20 – 25 additional students).

Fleming Strategy

The first draft of the new 5-year strategy for Fleming College is being presented to the Board during this meeting under a separate cover. The process has been engaging and feedback to date has been exceptionally positive.

Pending the review of the Board, a final version will be presented at the May Board meeting with a finalized plan for roll out.

A Business Plan that is required to be submitted to the Ministry is under development and will be based on the Strategic Plan and the input of the Board. This will be submitted to the Ministry in June 2019.

Fleming Operations

Planning for convocation is well underway. Board involvement is very appreciated, and Sarah Beirness and Sandra Armstrong will co-ordinate directly with Board members regarding their availability.

The Vice President, Academic Experience and the Vice President, Student Experience started in their new roles on April 15, 2019. A separate overview of the evolution of the organizational construct will be presented during this meeting.

The results of the Voluntary Exit Option Program will be analysed the week of April 22, 2019. A verbal update will be provided at the Board meeting based on the information that is available at that time.

In Our Community

The President attended a round table discussion with the Lieutenant Governor of Ontario, the Honourable Elizabeth Dowdeswell. The event was hosted by the City of Peterborough's Mayor Therrien and the theme of the discussion was, "Looking Forward: Water and the Environment in the age of Climate Change". A diverse group of community representatives came together to share ideas and make connections.

The President was invited to tour the residences at Centennial College and was accompanied by Sheldon Levy, former Deputy Minister, Ministry of Training, Universities and Colleges and former President of Ryerson University.

The Board Chair and the President attended a recognition event in honour of former MPP, Jeff Leal. The event was attended by many community leaders and members of the public.

Many of these events are highlighted on social media (my Twitter feed is @Fleming_Pres) but highlights include:

- Thank you for being exceptional role models for our students, we are very proud to honour our community partners in policing.
- Thank you @kensteele for visiting @FlemingCollege and discussing labour market demands and the need to prepare college students with interdisciplinary programs. #TenWithKen #newFleming
- Very pleased to work with our educational partners @trentu to explore even more opportunities in educational research. Thank you @MiAmbientePma ,@EmilioSempris and @LillyNichollsL for this brilliant opportunity.
- Promoting educational opportunities in Peterborough alongside our partners @TrentUniversity and @centennialedu at the @IFARHU education fair in Panama City. Impressive crowds exploring study abroad options.
- Thank you to everyone who visited #FlemingOpenHouse this past weekend. I would like to extend a special thank you to our fabulous students, staff and faculty for volunteering and showcasing our first-class campuses.
- Very proud of our Culinary team for representing Fleming College at College Day at Queen's Park. Thank you for being tremendous ambassadors for Fleming and showcasing your talent to the highest standards.

- A wonderful tribute video created by our students for their dedicated teachers, technicians and staff from Fleming's 2019 forestry programs at Frost Campus. Thank you to our fabulous students for putting this video together.

- We celebrated a tremendous milestone yesterday as we officially opened our newly renovated A-Wing and @FlemingSAC Transit Lounge at Sutherland Campus. Thanks to @MaryamMonsef @DianeNTherrien @ptbo_transit and members of Fleming's Board of Governors for helping us cut the ribbon.

- It was great to be part of this very important event this morning. Thanks to our community partners and Fleming faculty and staff for their support

Fleming in the News

Peterborough police, Fleming host Women in Policing day
Peterborough Examiner | March 23, 2019

Fleming hosts athletic banquet Thursday
Peterborough Examiner | March 26, 2019

Grand opening held for renovated transit lounge at Fleming College in Peterborough
Peterborough Examiner | March 27, 2019

Fleming College officially opens newly renovated A-Wing in Peterborough
Global News | March 28, 2019

Fleming College hands out hardware for athletes
Peterborough Examiner | March 28, 2019

Peterborough now fastest-growing community in Canada
Peterborough Examiner | March 29, 2019

Fleming students create new Peterborough museum exhibits
Peterborough Examiner | March 31, 2019

Fleming is poised to be the anchor for the Greater Peterborough Area
MyKawartha.ca | April 1, 2019

Explore Fleming College at their Spring Open House April 6
PTBOCanada.com | April 2, 2019

Fleming College Innovation and Technology Showcase Award Winners
Educationnewscanada.com | April 3, 2019

Fleming College hosting Tree Climbing Competition on Tuesday in Lindsay
Peterborough Examiner | April 3, 2019

Fleming Paramedic Students Train With Port Hope Firefighters
Todays Northumberland | April 3, 2019

Lt. Governor Elizabeth Dowdeswell chairs round table in Peterborough on climate change
Global News | April 4, 2019
Fleming College Open House
Global News | April 7, 2019

Program delivers thousands of nutritious meals in Brighton every year
Northumberland News | April 8, 2019

Battle with emerald ash borer tree beetle continues in City of Kawartha Lakes
Global News | April 9, 2019

Nishawbe Aski Police Service names new chief
CBC.ca | April 9, 2019

Special Day at BML to get girls into trades
Mymuskokanow.com | April 9, 2019

Fleming College students reach new heights at tree climbing competition
Global News | April 11, 2019

Fleming College students reach new heights at tree climbing competition
MSN.com | April 11, 2019

Fleming students recognized for leadership at Peterborough awards ceremony
Peterborough Examiner | April 11, 2019

Seven officers honoured by Fleming College for contributions, actions
Peterborough Examiner | April 15, 2019

Fleming College Sporting Goods Business students CSGA Applied Project wins award
CSGA.ca | April 15, 2019