



BCIT Renew:
Five-Year Capital Plan
2012 to 2017

BCIT

BCIT Five-Year Capital Plan: Overview

BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY (BCIT)

Established in 1964, the British Columbia Institute of Technology comprises six schools of study that operate at five campus locations. With 48,000 full and part time students, BCIT is one of the largest post-secondary education institutions in BC.

This Five-Year Capital Plan highlights the urgent need to provide modern, flexible facilities to support the delivery of education and research programs to ensure BCIT graduates are job-ready. In addition, the proposed capital plan supports institute priorities to address critical deferred maintenance, seismic safety, and operational and energy efficiency issues associated with 1960s-70s era buildings.

VISION

BCIT: Integral to the economic, social and environmental prosperity of British Columbia.

MISSION

The Mission of BCIT is to serve the success of earners and employers:

- By providing high quality technical training, and professional education and training, that supports our graduates as practitioners and as citizens; and
- By advancing the state of practice.

FACILITY RENEWAL

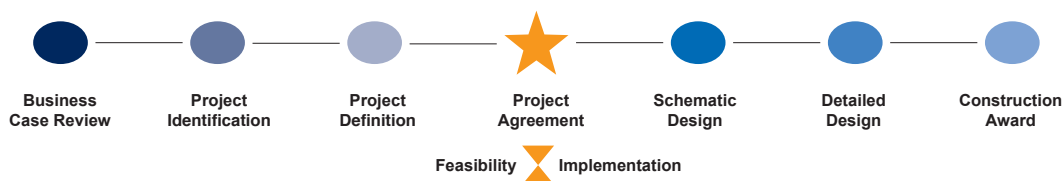
The focus of the Five-Year Capital Plan is to renew facilities at the Burnaby Campus. Apart from the recently completed Gateway Project, the Burnaby Campus has undergone limited capital renewal of buildings over the past two decades. The Burnaby Campus requires an injection of capital investment to enable BCIT to continue to meet its educational mission:

- The Burnaby Campus consists of many buildings that are more than forty years old;
- The deferred maintenance value of the buildings is very large with a total value of \$265 million (VFA – including soft costs);
- Two-thirds of Burnaby Campus buildings (29 of 40) are rated within the high seismic retrofit priority category (H1, H2, H3). The total cost of structural upgrades is estimated at \$74.5 million.
- Several buildings are functionally inadequate, and challenge the ability to advance the state of practice consistent with BCIT’s mission.
- Energy efficiency and carbon reduction projects are featured in the capital plan as a means of achieving sustainability objectives, and reducing operating expenditures.

BCIT Renew: Five-Year Capital Plan is a cost effective mix of projects that blends new construction with building renewal and upgrades. It is aligned with the provincial government’s key policies and priorities, including “BC Jobs”. The programs benefiting from this investment are for occupations projected to experience growth, and where training is needed, in the province.

PROJECT MANAGEMENT FRAMEWORK

The Capital Plan has been developed within BCIT’s Project Management Framework that provides a consistent approach to facility analysis, planning and development. All capital investments will follow this process.



RENEWAL PRIORITIES

School of Health Sciences (SoHS)

Top priority for BCIT is the renewal and consolidation of School of Health Sciences facilities, including the construction of a new Centre for Simulation. This integrated and comprehensive renewal program will advance health education workflow training, and facilitate inter-professional collaboration.

The comprehensive plan includes complete renewal of buildings SW03 and SW01, which are rated very high seismic retrofit priority, and have deferred maintenance costs estimated at \$67.8 million (including soft costs). These large buildings form the core of the BCIT campus, and together comprise 350,000 sf (32,500 m²). Preliminary cost estimates indicate the two buildings can be renewed at 53% and 61% of their replacement costs, respectively.

Renewal of these buildings, along with the construction of the Centre for Simulation building, will enable consolidation of the SoHS, and provide functional improvements for a number of other BCIT programs that share these facilities.

Motive Power Transportation

Motive Power Transportation is a key training facility in BC. Phase One of this renewal involves relocating the Heavy Duty Motive Power Program from its leased space at the Great Northern Way Campus (GNW), to a new building at the Burnaby Campus. The annual lease costs for the GNW facility are over \$1 million.

The Phase One proposal is directly linked to the potential development of a new Emily Carr University of Art & Design (ECAD) facility at the GNW site. The ECAD proposal, and related space for digital media enterprises, requires land and building area currently utilized by the BCIT Motive Power Program. As the HD Motive Power Program has highly specialized shop requirements, a purpose-built replacement facility is required to continue offering this industry-based training program.

Phase Two involves consolidating existing Motive Power programs (Automotive and Motorcycle Transportation) at the Burnaby Campus, and co-locating the program with Phase One to form a new integrated Centre for Motive Power Transportation. Phase Two consolidation will enable the demolition of six obsolete buildings that have a deferred maintenance and seismic deficiencies totaling \$17.5 million.

Library Commons/Media and Creative Communications

These two integrated projects involve structural upgrades and renovations to meet deferred maintenance upgrades, and functional inadequacies associated with existing buildings. The Library Renewal project includes an addition that will increase the capacity for student project learning, and enhance connections with the Media and Creative Communications program by linking both facilities with student and staff project collaboration spaces.

Learning and Teaching Centre/Information Technology

Building SE12 accommodates the Learning and Teaching Centre, School of Computing and Academic Studies, and Information Technology. This building is rated very high seismic retrofit priority, and has an estimated renewal cost of \$48 million, approximately 80% of replacement cost. Therefore, a smaller, more efficient building is proposed to replace SE12. This new building would primarily serve the Learning and Teaching Centre and IT Services, and include facilities for BCIT's primary data and communications infrastructure.

Capital Innovation Projects

Two innovation projects are proposed to introduce new technologies to existing facilities, and achieve energy use, waste disposal, and carbon offset reductions:

- NE08 – Welding Ventilation Energy Efficiency Upgrade: Installation of an intelligent “on-demand” ventilation system to reduce energy costs, improve indoor air and noise quality, and reduce outdoor emissions.
- NE02 – Wood Waste Reduction and Biomass Power Generation: Installation of a biomass boiler system to burn waste wood material from carpentry shops, reduce energy consumption and carbon offsets, and reduce waste disposal. The biomass energy will be integrated into a campus heating system, and function as a “Living Laboratory” demonstration project.

CAPITAL PLAN SUBMISSION

In accordance with Ministry instructions, capital plan submission forms have been completed for each of these projects, and are listed in order of overall priority. In total, the Five-Year Capital Plan includes ten projects with a value of \$278.5 million, spread over the 2012 to 2017 timeframe. Cashflow projections for each project are summarized in the *Prioritized List of Proposed Projects*, included on the following page.

This capital plan strives to provide modern, flexible facilities that support the delivery of education and research programs required to prepare job-ready BCIT graduates. This plan also addresses critical deferred maintenance, seismic safety, and operating/energy use issues associated with older buildings at BCIT’s Burnaby Campus.

Total Cashflow Forecast											
#	Project Description	Project Category	Anticipated Construction Start Date	Anticipated Occupancy Date	Total Project Budget	2012/13	2013/14	2014/15	2015/16	2016/17	Outgoing Years
1	Health Sciences Centre for Simulation	1. New Priority	Oct 2014	Apr 2016	\$59,880,000	\$530,000	\$7,500,000	\$19,350,000	\$32,500,000	\$0	\$0
2	Health Sciences Renewal - SW03	2. Whole Asset Renewal	Jul 2016	Dec 2017	\$43,250,000	\$250,000	\$300,000	\$4,700,000	\$24,000,000	\$14,000,000	\$0
3	Health Sciences Renewal - SW01	2. Whole Asset Renewal	Oct 2016	Dec 2017	\$52,250,000	\$250,000	\$400,000	\$500,000	\$3,350,000	\$21,110,000	\$26,640,000
4	Motive Power Transportation Centre (Phase 1)	1. New Priority	Jun 2014	Dec 2015	\$26,000,000	\$250,000	\$1,000,000	\$9,250,000	\$15,500,000	\$0	\$0
5	Welding Ventilation Energy Efficiency Upgrade - NE08	3. Capital Innovation Fund	Apr 2014	Sep 2014	\$2,000,000	\$100,000	\$1,900,000	\$0	\$0	\$0	\$0
6	Wood Waste Reduction & Biomass Power Generation - NE02	3. Capital Innovation Fund	Jun 2013	Mar 2014	\$1,500,000	\$300,000	\$1,200,000	\$0	\$0	\$0	\$0
7	Library Centre Renewal & Addition - SE14	2. Whole Asset Renewal	Jun 2016	Dec 2017	\$21,280,000	\$100,000	\$200,000	\$500,000	\$2,800,000	\$9,160,000	\$8,520,000
8	Centre for Media & Creative Communications Renewal - SE10	2. Whole Asset Renewal	Jan 2017	Jun 2018	\$8,600,000	\$0	\$0	\$100,000	\$300,000	\$2,200,000	\$6,000,000
9	Motive Power Transportation Centre (Phase 2)	1. New Priority	Oct 2016	Mar 2018	\$27,600,000	\$0	\$0	\$250,000	\$1,140,000	\$9,650,000	\$16,560,000
10	Teaching & Learning Centre/Information Technology - SE12	1. New Priority	Jan 2017	Jun 2018	\$56,100,000	\$0	\$0	\$200,000	\$2,500,000	\$7,100,000	\$26,300,000
						\$1,780,000	\$12,500,000	\$34,850,000	\$82,090,000	\$63,220,000	\$84,020,000

Project 1 – BCIT Five-Year Capital Plan

Health Sciences Centre for Simulation

1.0 PROJECT DESCRIPTION

The proposed new Health Sciences Centre for Simulation represents one component of a comprehensive and integrated facility renewal plan for BCIT's School of Health Sciences (SoHS). A project identification report, dated March 2012, was provided to the Ministry, and describes the need for this new facility, plus the renewal of buildings SW03 (Priority #2) and SW01 (Priority #3).

The project includes a new simulation-based learning centre to consolidate and modernize BCIT's School of Health Sciences (SoHS) priority programs. The four-storey building, totaling 100,643 sf (9,350 m²) gross, is designed to facilitate inter-professionalism, and to replicate workflows, such as those found at hospitals or community clinics, while incorporating flexibility for future changes in education practices.

2.0 PROJECT CATEGORY

Category One: New Priority Projects

3.0 PROJECT PRIORITY NUMBER

(1) of 4 Category One Projects

4.0 PROJECT OBJECTIVES

- Maintain BCIT's lead role in health education in British Columbia.
- Address the highest space needs for the School of Health Sciences.
- Consolidate SoHS programs.
- Provide a new simulation-based learning centre.
- Create an innovation centre that facilitates inter-professionalism, and replicates hospital or community clinic workflows, while incorporating flexibility for future changes in education practices.
- Replace deficient facilities with modern, flexible and sustainable facilities.
- Offer training opportunities with other healthcare providers, e.g. Fraser Health, SFU/UBC.

Needs Assessment

BCIT is a leader in healthcare in the province, delivering the largest number of nursing graduates annually, and supplying between 80-100% of graduates in Diagnostic Technologies, Specialty Nursing, Medical Laboratory Technology, Medical Radiography, and a series of allied health programs.

The School is severely challenged by functional inadequacy, seismic condition, and deficient building conditions associated with existing facilities.

Functional Adequacy

SoHS facilities are located in seven different buildings distributed across the Burnaby campus. Fifty-five percent of current space is considered "unsatisfactory" or "completely unsatisfactory" by educators.

Seismic Condition Assessment

The *structural analysis* (coordinated by Bush Bohlman & Partners) for the whole campus shows the buildings used by SoHS were largely constructed in the 1960s and 1970s and have a very high seismic retrofit priority (H1).

Building Conditions

The VFA facility condition audit concluded three buildings primarily utilized by SoHS (SW01, SE12 and SW03) were “poor or very poor”, and have approximately \$75 million (including soft costs) in urgent deferred maintenance that should be addressed within a five-year timeframe.

Alignments

The Health Sciences Centre for Simulation Project is aligned with BC government priorities and strategies:

- Health occupations are projected to have the strongest growth in the province over the next ten years, with an annual growth rate of 2.4% (*BC Labour Market Outlook 2010-2020*).
- The project supports the *Ministry of Health’s 2010/2011-2012/2013 Service Plan*, particularly “Goal 4: Improved innovation, productivity, and efficiency in the delivery of health services”.
- A new building will also permit the SoHS to explore partnering with other parties, including health authorities and universities. Conversations have begun with all health authorities, UBC and SFU.

Supported Programs

Programs accommodated in the proposed facility:

- Cardiology
- Clinical Genetics
- Diagnostic Medical Sonography
- Medical Laboratory
- Medical Radiography
- Nuclear Medicine
- Nursing RN
- Prosthetics Orthotics
- Radiation Therapy
- Specialty Nursing

FTEs

The total projected student FTE for the facility is approximately 1,585 students. The project would not directly generate a need for additional FTEs.

Project Size

The proposed gross building area is approximately 100,643 sf (9,350 m²).

5.0 PROJECT OUTCOMES

- Improve health education program delivery, and maintain BCIT’s provincial leadership role.
- Provide new simulation space for health education and the shortage of practice education time at Lower Mainland hospitals.
- Provide a new model for health education and practice.
- Provide on-site opportunities for education and health delivery partnerships.
- Create opportunities for distance learning partnerships with other institutions.
- Provide seismically safe and modern facilities for students and staff.
- Provide swing space that will enable renewal of adjacent buildings (SW03 Priority #2 and SW01 Priority #3).

6.0 PROJECT FUNDING

\$59.9 million – Total estimated project cost.

7.0 KEY RISKS

- Current facilities do not allow the full use and potential of simulation training to ensure effective practice (clinical) education is achieved.
- Limitations to BCIT’s leadership role and responsibility to health education in BC
- Limitations to education practice and student exposure to healthcare innovation and best practice delivery.
- Limitation to educational training partnerships (on-site and distance).

8.0 PROJECT SCHEDULE

- **Anticipated construction start date:** October 2014
- **Anticipated occupancy date:** April 2016.

PROJECT PHASES	2012				2013				2014				2015				2016				2017		2018		
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1
1. Planning/Program Development			■	■	■																				
2. Design Development						■	■																		
3. Working Drawings								■	■																
4. Procurement & Permits										■	■														
5. Construction													■	■	■	■	■	■	■						

Proposed Site of SoHS Centre



Project 2 – BCIT Five-Year Capital Plan

Health Sciences Facility Renewal – SW03

1.0 PROJECT DESCRIPTION

The proposed renewal of Building SW03 represents one component of a comprehensive and integrated facility renewal plan for BCIT’s School of Health Sciences. A project identification report, dated March 2012, was provided to the Ministry, and describes the need for this renewed facility, the development of the Health Science Centre for Simulation (Priority #1), and the renewal of building SW01 (Priority #3).

Renewal of the second largest building at the Burnaby Campus will include functional improvements, structural upgrades, energy efficiency upgrades, and deferred maintenance mitigation. The building has three separate wings. Structural upgrades will enable the development of additional space through the enclosure of a breezeway, and a more efficient layout of existing spaces. A fully upgraded building will provide gross space of 146,000 sf (13,500 m²) at 53% of replacement cost.

2.0 PROJECT CATEGORY

Category Two: Whole Asset Replacement & Renewal

3.0 PROJECT PRIORITY NUMBER

(1) of 4 Category Two Projects

4.0 PROJECT OBJECTIVES

- Seismic safety structural upgrades.
- Upgrade critical deferred maintenance conditions identified by VFA.
- Provide modern, flexible learning and research facilities.
- Create more efficient and functional space design.
- Consolidate SoHS programs.
- Renew a key facility situated in the core academic precinct.
- Reduce energy use and operating costs.

Needs Assessment

- SoHS facilities are located in seven different buildings distributed across the Burnaby Campus. This proposal enables consolidation of SoHS programs into three adjacent buildings.
- 55% of current space was rated “unsatisfactory” or “completely unsatisfactory” by educators.
- Seismic structural analysis conducted by Bush, Bohlman & Partners classified the building as H1 – very high seismic retrofit priority.
- The building has a VFA Facility Condition Index of **0.42 FCI**.

Alignments

The Project is aligned with BC government priorities and strategies:

- Health occupations are projected to have the strongest growth in the province over the next ten years, with an annual growth rate of 2.4% (*BC Labour Market Outlook 2010-2020*).
- The project supports the *Ministry of Health’s 2010/2011-2012/2013 Service Plan*, particularly “Goal 4: Improved innovation, productivity, and efficiency in the delivery of health services”.
- The Project is also aligned with BCIT’s Strategic Vision and Campus Development Plan.

Supported Programs

Currently, the following programs are located within SW03:

- Basic Health Sciences
- Health Sciences Dean's Office
- Health Care Management
- Food Technology
- Medical Laboratory
- Medical Radiography
- Nursing RN
- Prosthetics Orthotics
- Specialty Nursing
- Occupational Health & Safety

Other Supported Programs

- School of Computing & Academic Studies
- School of Construction & Environment
- School of Energy

FTEs

No additional student FTEs are associated with this proposal.

Project Size

The proposed facility size is 146,000 sf (13,500 m²).

5.0 PROJECT OUTCOMES

- Improve health education program delivery and maintain BCIT's provincial leadership role.
- Provide necessary support space for the Health Science Centre for Simulation.
- Provide seismically safe accommodation.
- Upgrade entire building to modern standards and services (VFA report).
- Permit consolidation of SoHS programs.
- Improve program utilization through more efficient and flexible functional design.
- Support BCIT Burnaby Campus Development planning objectives.

6.0 PROJECT FUNDING

\$43.3 million – Total estimated project cost; 53% of the whole asset replacement cost.

7.0 KEY RISKS

- Inadequate swing space available to allow for programs to be decanted from the building during renewal – disruption to program delivery.
- Hazardous materials mitigation.
- Disruptions to program continuity in the event of a seismic event/deferred maintenance.

8.0 PROJECT SCHEDULE

- **Anticipated construction start date:** July 2016
- **Anticipated occupancy date:** December 2017

PROJECT PHASES	2012				2013				2014				2015				2016				2017				2018	
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2
1. Planning/Program Development																										
2. Design Development																										
3. Working Drawings																										
4. Procurement & Permits																										
5. Construction																										

SW03 Context Map



Project 3 – BCIT Five-Year Capital Plan

Health Sciences Facility Renewal – SW01

1.0 PROJECT DESCRIPTION

The proposed renewal of Building SW01 represents one component of a comprehensive and integrated facility renewal plan for BCIT’s School of Health Sciences. A project identification report, dated March 2012, was provided to the Ministry, and describes the need for this renewed facility, the development of the Health Science Centre for Simulation (Priority #1), and the renewal of building SW03 (Priority #2).

Renewal of the balance of the SW01 Main Wing base building will address deferred maintenance, as will the structural seismic upgrade of the East Wing. This renewal project will complete outstanding renewal items that were not included in the scope of the recently completed Gateway Project (the western portion of SW01).

2.0 PROJECT CATEGORY

Category Two: Whole Asset Replacement & Renewal

3.0 PROJECT PRIORITY NUMBER

(2) of 4 Category Two Projects

4.0 PROJECT OBJECTIVES

- Leverage the capital investment in the Gateway SW01 project.
- Seismic safety structural upgrades.
- Upgrade critical deferred maintenance conditions identified by VFA.
- Provide modern, flexible learning and research facilities.
- Create more efficient and functional space design.
- Consolidate SoHS programs.
- Renew a key facility situated in the core academic precinct.
- Reduce energy use and operating costs.

Needs Assessment

- SoHS facilities are located in seven different buildings distributed across the Burnaby Campus. This proposal enables consolidation of SoHS programs into three adjacent buildings.
- 55% of current space was rated “unsatisfactory” or “completely unsatisfactory” by educators.
- Seismic structural analysis conducted by Bush, Bohlman & Partners classified the building as H1 – very high seismic retrofit priority.
- The building has a VFA Facility Condition Index of **0.55 FCI**.

Alignments

The Project is aligned with BC government priorities and strategies:

- Health occupations are projected to have the strongest growth in the province over the next ten years, with an annual growth rate of 2.4% (*BC Labour Market Outlook 2010-2020*).
- The project supports the *Ministry of Health’s 2010/2011-2012/2013 Service Plan*, particularly “Goal 4: Improved innovation, productivity, and efficiency in the delivery of health services”.
- The Project is also aligned with BCIT’s Strategic Vision and Campus Development Plan .

Supported Programs

Currently, the following programs are located within SW01:

- Biomedical Engineering
- Clinical Genetics Technology
- Environmental Health Technology
- Medical Laboratory
- Occupational Health & Safety
- Prosthetics Orthotics
- Radiation Therapy
- Medical Radiography

Other Supported Programs

- School of Construction & Environment
- School of Computing & Academic Studies
- Food Process Resource Centre
- School of Energy
- Student Services
- Administration

FTEs

No additional student FTEs are associated with this proposal.

Project Size

The building area is approximately 208,245 sf (19,350 m²).

Structural seismic deficiencies exist within 26,230 sf (2,440 m²) of the single-storey portion of the East Wing, whereas base building renewal work is required on the full 208,245 sf (19,350 m²).

5.0 PROJECT OUTCOMES

- Complete the modernization of SW01 – Gateway Project.
- Improve health education program delivery, and maintain BCIT's provincial leadership role.
- Provide necessary support space for the Health Sciences Centre for Simulation.
- Provide seismically safe accommodation.
- Upgrade entire building to modern standards and services (VFA report).
- Permit consolidation of SoHS programs.
- Improve program utilization through more efficient and flexible functional design.
- Support BCIT Burnaby Campus Development planning objectives.

6.0 PROJECT FUNDING

\$52.3 million – Total estimated project cost; 61% of the whole asset replacement cost.

7.0 KEY RISKS

- Inadequate swing space available to allow for programs to be decanted from the building during renewal – disruption to program delivery.
- Hazardous materials mitigation.
- Disruptions to program continuity in the event of a seismic event/deferred maintenance.

8.0 PROJECT SCHEDULE

- **Anticipated construction start date:** October 2016
- **Anticipated occupancy date:** December 2018

PROJECT PHASES	2012				2013				2014				2015				2016				2017				2018			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2		
1. Planning/Program Development																												
2. Design Development																												
3. Working Drawings																												
4. Procurement & Permits																												
5. Construction																												

SW01 Context Map



Project 4 – BCIT Five-Year Capital Plan

Motive Power Transportation Centre – Phase 1

1.0 PROJECT DESCRIPTION

The proposed relocation of the Heavy Duty Motive Power Transportation Program from leased facilities at the Great Northern Way (GNW) Campus to a new facility located at the Burnaby Campus.

The Phase One proposal is directly linked to the potential development of a new Emily Carr University of Art & Design (ECAD) facility at the GNW site. The ECAD proposal, and related space for digital media enterprises, requires land and building area currently leased by the BCIT Heavy Duty Motive Power Program. As the program has highly specialized shop requirements, a replacement facility is required to continue offering this industry based training program.

Phase One requires construction of a new purpose-built 75,000 sf (6,968 m²) building at the Burnaby Campus, including mechanic workshops, classroom spaces, vehicle storage, and support facilities. Advanced technologies and teaching methods will be incorporated into the facility design. Siting of the proposed facility needs to be determined during the schematic design phase.

The new building will be designed to permit subsequent integration of a second phase of development for other Motive Power programs currently located on the Burnaby Campus, creating a Centre for Motive Power Transportation.

The following programs will be accommodated in Phase One:

- Heavy Equipment
- Commercial Transport
- Mobile Forklift Equipment
- Diesel Engine
- Rail Conductor

2.0 PROJECT CATEGORY

Category One: New Priority Projects

3.0 PROJECT PRIORITY NUMBER

(2) of 4 Category One Projects

4.0 PROJECT OBJECTIVES

- Consolidate Motive Power programs on the BCIT Campus adjacent to existing automotive programs, and achieve operational and building space economies.
- Improve accessibility with a central location to better serve students that reside in communities east of Vancouver.
- Replace existing buildings that are functionally inadequate and in poor condition.
- Provide modern facilities that employ new technologies in Motive Power education.
- Relinquish the current GNW facility lease of \$1 million per year.

Needs Assessment

- The current location is now deemed temporary pending the ECAD/GNW campus development proposal.
- The existing building is not purpose-designed for modern teaching methods, and is isolated from other Motive Power programs located at the Burnaby Campus. This satellite facility arrangement creates significant operational issues for the School of Transportation.

Alignments

The Project is aligned with BC Government priorities and strategies:

- Supports the BC Government’s goal of investing in transportation throughout BC – see “*Service Plan for 2011/12-2013/2014, Ministry of Transportation and Infrastructure*”.
- Trades, transportation, equipment operators, and related occupations are expected to experience 153,000 job openings from expansion and replacement between 2010-2020 (*BC Labour Market Outlook 2010-2020*).
- Motive Power faculty work closely with industry, and have affiliations with fourteen private and public sector organizations in land transportation.

FTEs

No additional student FTEs are associated with this proposal.

Project Size

The proposed facility size is 75,000 sf (6,968 m²).

5.0 PROJECT OUTCOMES

- The new building will provide a purpose-designed facility that enables advanced instructional practice and technologies.
- The Burnaby Campus location permits consolidation synergies with existing automotive programs and resources, which lowers operating costs, and leverages access to existing student resources and campus infrastructure.

6.0 PROJECT FUNDING

\$26 million – Total estimated project cost.

7.0 KEY RISKS

- Delays in funding and construction risk disrupting programs due to the anticipated GNW redevelopment scheme.
- Lease termination and continued annual lease expenditures.
- Continued higher operational inefficiencies and cost.

8.0 PROJECT SCHEDULE

- **Anticipated construction start date:** June 2014
- **Anticipated occupancy date:** December 2015

PROJECT PHASES	2012				2013				2014				2015				2016				2017				2018			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2		
1. Planning/Program Development			■	■																								
2. Design Development					■	■																						
3. Working Drawings							■	■																				
4. Procurement & Permits									■	■																		
5. Construction											■	■	■	■	■	■												

Site of Motive Transportation Centre, Phase One, to be determined.



Project 5 – BCIT Five-Year Capital Plan Welding Ventilation Energy Efficiency Upgrade – NE08

1.0 PROJECT DESCRIPTION

Design, purchase and installation of a new variable-speed intelligent ventilation system for the NE08 welding shop to serve arc welding, oxy-acetylene and materials handling. The project will reduce energy use, green house gas emissions (GHGs), improve air quality for staff and students, improve exhausted air quality, and decrease shop noise.

2.0 PROJECT SCOPE

Replacement of existing ventilation units that serve 80 stations for arc welding, oxy-acetylene and materials handling, with new intelligent technology, including ventilation sensors that provide a more efficient “on-demand” service.

Design and installation of the system requires a 12-month timeframe.

3.0 PROJECT PRIORITY NUMBER

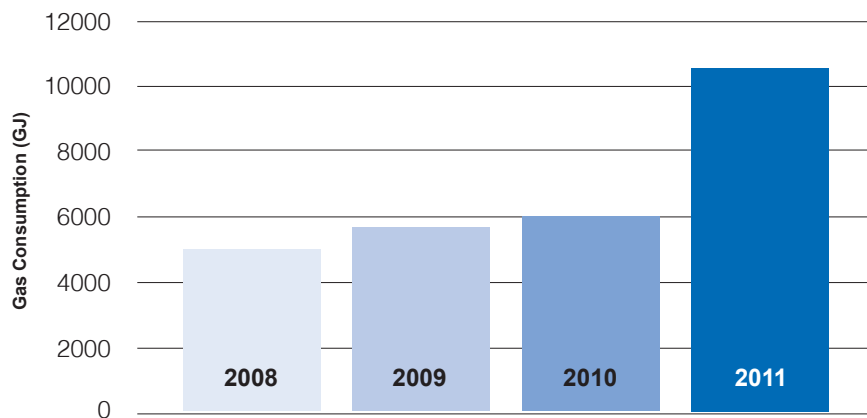
(1) of 2 Category Three – Capital Innovation Fund Projects

4.0 PROJECT OBJECTIVES

- Improve the working environment for staff and students (indoor air quality and noise reduction).
- Provide greater flexibility and variety for welding instruction.
- Reduce energy consumption (hydro and natural gas).
- Reduce Green House Gas emissions (GHGs).
- Reduce maintenance and repair costs associated with an obsolete system.

Needs Assessment

- Improve indoor air quality for students and staff.
- Existing system places operating restrictions on staff and students to ensure WorkSafe compliance and limits curriculum flexibility. A modern system will allow instructors to effectively cover a variety of welding techniques and set-up options.
- The existing system demands more energy to operate and maintain WorkSafe compliance.



Alignments

- Aligns with BCIT and Provincial priorities in saving energy, reducing green house gas emissions, and advancing educational standards.

FTEs

- No additional student FTEs are associated with this proposal.

5.0 PROJECT OUTCOMES

- Improved interior air and noise environment for staff and students.
- Improved instructional opportunities and teaching flexibility.
- Improved exterior air quality (GHG).

Project Annual Energy Savings

Electricity conservation (energy)	Up to \$60,000/yr
Electricity demand cost avoidance (power)	Up to \$15,000/yr
Natural gas conservation (energy)	Up to \$32,000/yr
Reduced maintenance cost	Up to \$4,000/yr
Greenhouse gas emissions reduction (avoided carbon tax and carbon offsets)	Up to \$14,000/yr
TOTAL SAVINGS	Up to \$125,000/yr

Project Environmental Benefits

Description	Value
Electricity conservation	Up to 600,000 kwh/yr or enough to fully power 67 average Lower Mainland single family homes
Natural gas conservation	Up to 5,000 GJ/yr or enough to fully heat 54 average Canadian single family homes
Greenhouse gas emissions reduction	Up to 270 tonnes of CO _{2eq} per year

6.0 PROJECT FUNDING

\$2 million – Total estimated project cost.

7.0 KEY RISKS

- Potential issues with WorkSafe air quality compliance.
- Increasing energy use and costs.
- Equipment inflexibility and program disruption.

8.0 ANNUAL OPERATING COSTS

- \$125,000 per annum energy and carbon offset cost savings
- \$4,000 per annum net maintenance and repair reduction

(estimated by BCIT School of Construction and Energy)

9.0 ANNUAL OPERATING COST REDUCTIONS

Cumulative annual savings are projected to recover the initial capital investment within a 12 to 15-year timeframe.

10.0 PROJECT SCHEDULE

PROJECT PHASES	2012				2013				2014				2015				2016				2017				2018	
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2
1. Planning/Program Development				■	■	■	■																			
2. Design Development							■																			
3. Working Drawings								■																		
4. Procurement & Permits									■																	
5. Construction										■	■	■	■													

NE08 Context Map



Project 6 – BCIT Five-Year Capital Plan

Wood Waste Reduction & Biomass Power Generation – NE02

1.0 PROJECT DESCRIPTION

The design and installation of a biomass-to-energy facility will integrate into the Burnaby Campus heating distribution system. The facility will house a 250 kw biomass boiler. Functioning as a “Living Laboratory”, the building will include an outdoor interpretative teaching space, technology viewing windows, and displays. The project targets waste reduction of 250,000 kg per annum, and greenhouse gas emission reduction of 200 tonnes of CO_{2eq} annually.

2.0 PROJECT SCOPE

The project comprises a 775 sf (72 m²) building, that houses a biomass boiler and wood fuel storage system, using construction wood waste from BCIT’s carpentry and joinery workshops. The small building will be attached to Building NE02.

3.0 PROJECT PRIORITY NUMBER

(2) of 2 Category Three – Capital Innovation Fund Projects

4.0 PROJECT OBJECTIVES

- Four to ten-fold reduction in energy and materials consumption for a portion of the Burnaby Campus, while maintaining service levels.
- Achieve carbon neutrality through a reduction in green house gas emissions resulting from the heating of the Burnaby Campus.
- Reduce Burnaby Campus emission offset payments.

Alignments

- BC Ministry of Environment emission and waste reduction targets.
- 2010 BC Government carbon neutrality requirements for all public service agencies.
- Metro Vancouver target an 80% reduction in urban wood waste at the landfill by 2020.
- Supports BCIT’s “Living Laboratory” program to demonstrate new technology.

FTEs

- No addition student FTEs are associated with this proposal.

5.0 PROJECT OUTCOMES

- Reduce energy consumption for heating campus buildings.
- Net operation cost reduction savings: natural gas, carbon offset, and waste management (incremental operations and maintenance cost).
- Demonstrate the viability of using construction wood waste in a biomass system and meet local emission standards.

6.0 PROJECT FUNDING

\$1.5 million – Total estimated project cost.

- BC Bioenergy Network has provided a **\$130,000 grant** to showcase best-in-class technologies.
- BC Ministry of Environment has provided a letter of support for this project.

7.0 KEY RISKS

- Increasing energy costs.
- Increasing wood waste removal costs.

8.0 ANNUAL OPERATING COSTS

\$13,000 per annum net operating and maintenance cost increase.

(estimated by BCIT School of Construction and Energy)

9.0 ANNUAL OPERATING COST REDUCTIONS

- Waste reduction of 250,000 kg per annum.
- Greenhouse gas emission reduction of 200 tonnes of CO_{2eq} per annum.
- \$44,000 net energy consumption and carbon offset savings.

10.0 RETURN ON INVESTMENT

Cumulative annual savings are expected to recover the initial capital investment within a 25 to 30-year timeframe.

11.0 PROJECT SCHEDULE

PROJECT PHASES	2012				2013				2014				2015				2016				2017				2018	
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2
1. Planning/Program Development			■																							
2. Design Development				■																						
3. Working Drawings						■																				
4. Procurement & Permits							■																			
5. Construction								■	■	■	■	■														

Biomass Plant Proposed Site



Project 7 – BCIT Five-Year Capital Plan

Library Centre Renewal and Addition – SE14

1.0 PROJECT DESCRIPTION

The Library Centre Renewal and Addition project comprises structural upgrades to the existing library building and building envelope, building systems upgrades, and an addition of multi-functional collaboration spaces. The addition component will also improve the integration of Media and Creative Communications facilities within SE14 and SE10.

2.0 PROJECT CATEGORY

Category Two: Whole Asset Replacement & Renewal Projects

3.0 PROJECT PRIORITY NUMBER

(3) of 4 Category Two Projects

4.0 PROJECT OBJECTIVES

- Increase student resource and collaboration spaces.
- Improve integration between the library, and Media and Creative Communication facilities.
- A seismically upgraded library facility.
- Upgrade mechanical and electrical systems.
- Improved operating costs efficiency.

Needs Assessment

- The Library Centre is a key and central resource for BCIT. Currently, each year more than 600,000 students use the facility to study, and 5,000+ students visit the building as an instructional space.
- The 2005 BCIT Library Student Survey identified the need for additional group study spaces, and more unscheduled computer lab spaces, such as is offered in the 24-hour “eh Pod” facility.
- Structural analysis of the building performed by Bush, Bohlman & Partners, rated the building as H3 – high seismic retrofit priority.
- The VFA Facility Condition Index (**FCI**) rating for the library building is **0.24**, and indicates required mechanical and electrical system upgrades.

Alignments

- The project is aligned with BCIT priorities: Strategic Plan and Campus Development Plan.

FTEs

No additional student FTEs are associated with this proposal.

Project Size

The renewed facility would have a total area of 114,475 sf (10,635 m²), including the proposed addition of 40,000 sf.

5.0 PROJECT OUTCOMES

- Improve student access to library services and collaboration study facilities.
- Improve integration of the library, and Media and Creative Communication facilities.
- Improve building seismic safety.
- Provide swing space to facilitate the renewal of SE10.

6.0 PROJECT FUNDING

\$21.3 million – Total estimated project cost.

7.0 KEY RISKS

- Mechanical failure and seismic impacts on program continuity.
- Limitations on student access to library services and study needs.

8.0 PROJECT SCHEDULE

- **Anticipated construction start date:** July 2016
- **Anticipated occupancy date:** December 2017

PROJECT PHASES	2012				2013				2014				2015				2016				2017				2018			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2		
1. Planning/Program Development					█																							
2. Design Development													█															
3. Working Drawings															█													
4. Procurement & Permits																	█											
5. Construction																					█							

SE14 Context Map



Project 8 – BCIT Five-Year Capital Plan

Centre for Media and Creative Communications Renewal – SE10

1.0 PROJECT DESCRIPTION

A renewed centre for the Broadcast and Media Communications Department, and the Digital Arts Department in the School of Business. The Centre will be created through a renewal of the existing building, including seismic upgrading, upgrading of physical conditions, re-purposing of interior spaces to achieve a commons area, and improving circulation, equipment and studio space. These improvements will also be integrated with a 40,000 sf addition proposed for the Library Building (SE14).

This upgrade will enable programs to maintain educational integrity, permit continued program development, adopt new technologies, and respond to the rapidly changing environment for graduates and employers.

2.0 PROJECT CATEGORY

Category Two: Whole Asset Replacement & Renewal Projects

3.0 PROJECT PRIORITY NUMBER

(4) of 4 Category Two Projects

4.0 PROJECT OBJECTIVES

- Increase student project collaboration spaces, and improve integration between the library, and Media and Creative Communications facilities.
- Provide modern learning and production spaces for broadcasting, media, and digital arts.
- Enhance opportunities for partnerships with the private sector.
- Seismic and deferred maintenance renewal.
- Reduce building operating and energy use costs.

Needs Assessment

- Demand for media and creative communication skills are growing in BC. The sector employs 16,000 people, with two-thirds of the jobs located in Metro Vancouver.
- The existing facility has constrained spaces for instruction, equipment, and student collaboration areas.
- Structural analysis of the building performed by Bush, Bohlman & Partners rated the building H3 – high seismic retrofit priority.
- The VFA Facility Condition Index (FCI) rating for SE10 is 0.38, and indicates \$4.8 million in deferred maintenance upgrades (including soft costs).

Alignments

- Aligns with BC Government policy: BC Film + Media has a mandate to expand and diversify this sector through tax credits, development funding, and marketing.
- Aligns with BCIT Strategic Plan and Campus Development Plan.

FTEs

No additional student FTEs are associated with this proposal.

Project Size

The renewed facility will have a total area of 29,900 sf (2,780 m²), plus additional space provided in the SE14 addition.

5.0 PROJECT OUTCOMES

- Improve student access to collaboration project spaces.
- Improve integration of the Media and Creative Communication facilities with the adjacent library facility.
- Support a high value industry.
- Improve building seismic safety.

6.0 PROJECT FUNDING

\$8.6 million – Total estimated project cost.

7.0 KEY RISKS

- Mechanical failure and seismic impacts on program continuity.
- Quality of space impacting student and faculty work environment satisfaction.

8.0 PROJECT SCHEDULE

- **Anticipated construction start date:** January 2017
- **Anticipated occupancy date:** June 2018

PROJECT PHASES	2012				2013				2014				2015				2016				2017				2018					
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2				
1. Planning/Program Development													■	■	■	■														
2. Design Development																	■	■	■	■										
3. Working Drawings																					■	■	■	■						
4. Procurement & Permits																									■	■	■	■		
5. Construction																													➔	➔

SE10 Context Map



Project 9 – BCIT Five-Year Capital Plan

Motive Power Transportation Centre – Phase 2

1.0 PROJECT DESCRIPTION

Develop the second component of an integrated Motive Power Transportation Centre. Phase Two involves the relocation of existing automotive programs from buildings in poor condition to a purpose-designed replacement facility of similar size.

The new facility will include automotive workshops, classrooms, vehicle storage, and support facilities. Siting the proposed facility needs to be determined during the schematic design phase.

This proposal addresses significant deferred maintenance, and seismic retrofit priorities issues associated with six older transportation program buildings situated on the Burnaby Campus.

2.0 PROJECT CATEGORY

Category One: New Priority Projects

3.0 PROJECT PRIORITY NUMBER

(3) of 4 Category One Projects

4.0 PROJECT OBJECTIVES

- Replace existing buildings that are functionally inadequate and in poor condition.
- Provide modern facilities that employ new technologies in Motive Power education.
- Support campus renewal by enabling the demolition of single-storey buildings that utilize a large footprint of land in the academic core of the Burnaby Campus.
- Consolidate programs into one integrated facility, and achieve programmatic and operating efficiencies.

Needs Assessment

The existing buildings have functional deficiencies for program instruction, such as large distances between shop areas and classrooms instructional areas, and poor supervision sight lines for instructors.

Six Motive Power buildings on the Burnaby Campus have seismic and deferred maintenance deficiencies that require a combined investment of approximately \$17.5 million over the next five years.

	Seismic Retrofit Priority Rating	VFA Facility Condition Index
Building NE 16:	High seismic retrofit priority (H2)	FCI = 0.52
Building NE 18:	High seismic retrofit priority (H2)	FCI = 0.51
Building NE 20:	Medium seismic retrofit priority (M)	FCI = 0.39
Building NE 22:	High seismic retrofit priority (H2)	FCI = 0.63
Building NE 24:	Very high seismic retrofit priority (H1)	FCI = 0.63
Building NE 28:	Very high seismic retrofit priority (H1)	FCI = 0.65

Alignments

The Project is aligned with BC Government priorities and strategies:

- Supports the BC Government’s goal of investing in transportation throughout BC – see “*Service Plan for 2011/2012 - 2013/2014, Ministry of Transportation and Infrastructure*”.
- Trades, transportation, equipment operators, and related occupations are expected to experience 153,000 job openings from expansion and replacement between 2010-2020 (*BC labour market Outlook 2010-2020*).
- Motive Power faculty work closely with industry, and have affiliations with fourteen public and private organizations in land transportation.

Supported Programs

Current programs that would be the subject of this change are:

- Automotive Mechanic/Technician
- Motorcycle and Marine Engine
- Auto Collision
- Power Equipment

FTEs

No additional student FTEs are associated with this proposal.

Project Size

The proposed facility size is 80,000 sf (7,432 m²).

5.0 PROJECT OUTCOMES

- The new building will provide a purpose-designed facility that enables advanced instructional practice and technologies.
- The Burnaby Campus location permits consolidation synergies with existing automotive programs and resources, lowers operating costs, and leverages access to existing student resources and campus infrastructure.

6.0 PROJECT FUNDING

\$27.6 million – Total estimated project cost.

7.0 KEY RISKS

- Risk of program disruption through obsolete building system break-downs.
- Continued education programmatic and operational inefficiencies.
- High energy costs associated with operating six separate, in-efficient buildings.

8.0 PROJECT SCHEDULE

- Anticipated construction start date: October 2016
- Anticipated occupancy date: March 2018

PROJECT PHASES	2012				2013				2014				2015				2016				2017				2018			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2		
1. Planning/Program Development													■	■														
2. Design Development														■	■													
3. Working Drawings															■	■												
4. Procurement & Permits																	■	■										
5. Construction																					■	■	■	■	■	■		

Site of Motive Power Transportation Centre, Phase Two, to be determined.



Project 10 – BCIT Five-Year Capital Plan

Teaching and Learning Centre/Information Technology – SE12

1.0 PROJECT DESCRIPTION

The Teaching and Learning Centre/Information Technology replacement project mitigates significant functional and structural seismic deficiencies associated with Building SE12. The building's unique structural design is not economical to renovate. Demolition of the building is proposed, replacing it with a building 70% of the current size. The project includes demolition and hazardous material abatement.

The replacement building will accommodate existing programs in SE12, such as the School of Computing and Academic Studies, the Teaching and Learning Centre, and Information Technology. Health Sciences programs currently occupy the fourth floor of the building, and will be accommodated in the proposed Health Sciences Renewal scheme (new Centre for Simulation + SW03 + SW01).

2.0 PROJECT CATEGORY

Category One: New Priority Projects

3.0 PROJECT PRIORITY NUMBER

(4) of 4 Category One Projects

4.0 PROJECT OBJECTIVES

- Replacement of an existing structurally and functionally obsolete building.
- Construction of a modern building to serve the Teaching and Learning Centre, the School of Computing and Academic Studies, and IT services.
- Modernize computer data server and communication facilities.
- Maintain BCIT's leadership role in computer science education.
- Reduce building operating costs.
- Enable redevelopment of the SE12 site to improve campus circulation routes.

Needs Assessment

- *Natural and Applied Science*, and related occupations, is one of the three employment groups identified as having the strongest growth in demand (*BC Labour Market Outlook 2010-20*). Some 62% of this occupational grouping is located in the Mainland/South West part of BC. Computer Information System professionals account for 50% of jobs in this grouping.
- The School of Computing offers more than 30 programs, and has 5,000+ full and part-time registrations per year.
- The existing SE12 building is functionally, structurally and physically obsolete, with estimated renewal costs of 80% of total replacement value.
- Structural analysis performed by Bush, Bohlman & Partners, revealed significant structural deficiencies. The building is rated H1 - very high seismic retrofit priority.
- The building has a VFA Facility Condition Index (**FCI**) of **0.39**, and an estimated deferred maintenance cost of \$16.6 million (including soft costs).

Alignments

The Project is aligned with BC Government priorities and strategies:

- Supports the BC Government's "Jobs Plan".
- Computer Sciences, and related occupations, is one of the three employment groups identified as having the strongest growth in demand.
- Project aligned with BCIT priorities: Capital Plan 2012, Strategic Plan and Campus Plan.

Supported Programs

The new building will accommodate:

- School of Computing and Academic Studies
- Teaching and Learning Centre
- General purpose classrooms
- Information Technology

Health Sciences programs accommodated in SE12 will be relocated as part of the Health Sciences Renewal proposal (new Centre for Simulation + SW03 + SW01):

- Nuclear Medicine
- Basic health Services
- Nursing RN
- Specialty Nursing
- Biomedical Engineering
- Biotechnology

FTEs

No additional student FTEs are associated with this proposal.

Project Size

The proposed new building is 71,900 sf (6,680 m²).

5.0 PROJECT OUTCOMES

- New building will be structurally safe.
- Purpose-designed for the School of Computer Sciences.
- More appropriate location.
- Lower operating costs.

6.0 PROJECT FUNDING

\$36.1 million – Total estimated project cost (including Hazmat abatement and demolition of SE12).

7.0 KEY RISKS

- Mechanical failure and seismic impacts on program continuity.
- Technology limitations on education programmatic.
- Reliability of Institute data and communication services.

8.0 PROJECT SCHEDULE

- **Anticipated construction start date:** January 2017
- **Anticipated occupancy date:** June 2018

PROJECT PHASES	2012				2013				2014				2015				2016				2017				2018							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2						
1. Planning/Program Development					[Blue bar spanning from Q1 2013 to Q4 2015]																											
2. Design Development																	[Blue bar spanning from Q2 2015 to Q4 2015]															
3. Working Drawings																	[Blue bar spanning from Q3 2015 to Q4 2015]															
4. Procurement & Permits																	[Blue bar spanning from Q1 2016 to Q2 2016]															
5. Construction																					[Blue arrow pointing right from Q3 2017 to Q2 2018]											

SE12 Context Map



BCIT Renew:
Five-Year Capital Plan
2012 to 2017