

In January, 2021 a CVCED Tech Sector Strategy development initiative got underway. A contractor has been hired to complete Phase 1 involving understanding of what the sector looks like in Columbia Valley, with some early strategy to create a growth path for the sector in the Valley. Phase 1 is anticipated to be completed in the summer of 2021.

### Background

One can think of the tech opportunity in Columbia Valley as a see-saw. There's desire to grow an industry sector in Columbia Valley....a fresh and dynamic sector that can capitalize on a lifestyle living competitive advantage in the valley while also transitioning beyond resource extraction traditions. Given the technology sector is most adept at decentralized enterprise and workforce, the Tech sector offers real opportunity to nurture a self-sustaining, more permanently resident valley population with all its benefits to social connection and economic prosperity. This opportunity is underscored by a pandemic that has accelerated corporate and workforce shift to online spaces and remote work. Both the resident population AND recreational property owners - comprising 50% of residential ownership in the Valley - will have much to say about what this path looks like in terms of strengths and opportunities to step into.

On the other side of the see-saw is resident and business technology capability - which can align workforce skill with technology sector opportunity, and enhance business success. "Talent" is the fuel a local technology industry will need to grow and sustain itself. Well that and advanced broadband (gigabit fibre/5G) and more lifestyle-priced housing availability which CVCED is strategically aware of and is working on.

Most broadly, the use of technology is as an enabler for all industry sectors – including forestry and tourism that lead Columbia Valley's economy. The global economy is transitioning to "Industry 4.0" - defined as automation, advanced connectivity, artificial intelligence or robotics so as to fully perform mechanical tasks or analysis previously done by people. This is creating disruptive economic and workforce demand change. Columbia Valley and BC will need to participate to stay competitive.

The grow the Columbia Valley technology sector first requires fundamental understanding of what it currently is in Columbia Valley.

"Technology" encapsulates very broad economic activity.

### **As a start, BC sector strengths are:**



**Information and Communications Technology (ICT)**  
Information & Communications Technology companies include those specializing in software, cloud computing, information technology, telecommunications, and electronics manufacturing.



**Lifesciences (LS)**  
Lifesciences companies include those commercializing pharmaceuticals, medical devices, research, and testing platforms.



**Interactive and Digital Media (IDM)**  
Interactive and Digital Media companies specialize in new platform technologies for mobile applications, social media marketing, augmented and virtual reality, film and video game and digital animation.



**Cleantech (CT)**  
Cleantech companies develop solutions related to alternative energy generation, storage, environmental remediation, and resource management systems.



**Engineering Services (ES)**  
Engineering Services companies specialize in information technology, engineering, and environmental services.

Src: [https://www.workbc.ca/getmedia/8d38ac6f-82d4-4db1-b0bf-ac0f77d78af5/2016\\_TechTalentBC\\_Report.pdf.aspx](https://www.workbc.ca/getmedia/8d38ac6f-82d4-4db1-b0bf-ac0f77d78af5/2016_TechTalentBC_Report.pdf.aspx)

2) Characterization of the Tech Sector in Columbia Valley. This has two parts:

- a) Document the current Technology Sector Ecosystem in Columbia Valley (talent, business)
- b) Understand local technology adoption – Columbia Valley interviews to create technology adoption strategy
- c) Understand What the Technology Sector Looks Like in Columbia Valley on a Data Basis
- d) Create Tech Sector development strategy from the preceding

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## Columbia Valley Tech Sector Analysis

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EMSI ([www.economicmodeling.com](http://www.economicmodeling.com)) industry and workforce data was accessed in April, 2021 for an aggregate of the seven Columbia Valley communities. This data is the latest available: June, 2020 Canadian Business Patterns data with an October, 2020 release date. To quantitatively determine Technology sector presence and performance in Columbia Valley, the 53 NAICS industry and 32 NOCS occupation codes identified in the BC Tech Talent Report as describing the Tech sector in BC (Src: [https://www.workbc.ca/getmedia/8d38ac6f-82d4-4db1-b0bf-ac0f77d78af5/2016\\_TechTalentBC\\_Report.pdf.aspx](https://www.workbc.ca/getmedia/8d38ac6f-82d4-4db1-b0bf-ac0f77d78af5/2016_TechTalentBC_Report.pdf.aspx)) were used to analyze data over time (a ten-year period – 2012 to 2021) to establish trends.

The Tech industry crosses all sectors and will increasingly become important in Columbia Valley’s leading industries like forestry, tourism, and agrifood. This industry necessitates very good broadband and the talent to develop tech solutions to industry challenges.

“British Columbia has established itself as one of the leading tech ecosystems in the country, boasting a host of successful companies in information and communications technology, interactive and digital media, cleantech, life sciences, and engineering services. Growing by a compound annual growth rate (CAGR) of 6% over a 10-year period ending in 2014, BC’s tech sector revenue growth has outpaced tech sector revenue growth in Ontario and Québec. Spurred by business growth and employer demand for top talent, BC’s tech sector employment, defined in this report by 32 key occupations, reached approximately 149,000 jobs in 2015, and is on pace to grow to more than 165,500 by 2021, adding 16,500 net new jobs at an average annual growth rate of 1.8%.”

Src: [https://www.workbc.ca/getmedia/8d38ac6f-82d4-4db1-b0bf-ac0f77d78af5/2016\\_TechTalentBC\\_Report.pdf.aspx](https://www.workbc.ca/getmedia/8d38ac6f-82d4-4db1-b0bf-ac0f77d78af5/2016_TechTalentBC_Report.pdf.aspx)

### THE BC TECH SECTOR

- \$15B sector (2016 – latest data presented).
- 7% of BC GDP.
- Same size as healthcare and manufacturing.
- 10,000 businesses.
- 106,000 jobs – more than mining, oil and gas, and forestry sectors combined
- \$5.8B in annual good and services exports.
- Average wages 84% higher than BC average.
- 3.5% sector GDP growth in 2016.
- “In most years, the sector outperforms the BC economy as a whole.”
  
- **BUT – third ranked sector in Canada and share of employment and GDP lags more than half the U.S. states.**

Src: Profile of BC Tech Sector, 2017  
<https://news.gov.bc.ca/factsheets/bc-stats-report-profile-of-the-british-columbia-technology-sector-2017-edition-1>

Information and communications technology is an enabler for all industry. A pandemic has shone a light on corporate and workforce shift to online spaces and remote work – a trend that can have direct economic potential for rural BC. A key enabler – broadband – is required. But not just connectivity. Gigabit broadband via fibre and 5G broadband will be considered baseline infrastructure requirement for successful rural economies, like roads were in previous generations.

The global economy is transitioning to “Industry 4.0” - defined as automation, advanced connectivity, artificial intelligence or robotics so as to fully perform mechanical tasks or analysis previously done by people. This is creating disruptive economic and workforce demand change. Castlegar & District and BC will need to participate to stay competitive.

“Talent fuels the BC tech industry. Building a solid foundation of human capital, whether home grown or globally sourced, is a critical success factor. However, worldwide competition for the best talent is fierce and intensifying. BC tech companies are expressing a deepening concern that they are not able to access the talent they need, and that the gap between talent supply and demand is constraining their growth.”

Src: [https://www.workbc.ca/getmedia/8d38ac6f-82d4-4db1-b0bf-ac0f77d78af5/2016\\_TechTalentBC\\_Report.pdf.aspx](https://www.workbc.ca/getmedia/8d38ac6f-82d4-4db1-b0bf-ac0f77d78af5/2016_TechTalentBC_Report.pdf.aspx)

As a talent-driven sector, key workforce development foundations like College of the Rockies are of immense importance to future growth of a technology sector in the Columbia Valley.

BC’s Tech sector is concentrated in Vancouver metro and Victoria regions. While BC Tech sector growth was 22% between 2011 and 2018, growth outside these two geographies has been equivalent but over a much more extended period of 2006-2018. Key to growing BC’s tech sector is to expand its geographic footprint in BC to capitalize on key core infrastructure opportunities like data centres, and to ensure lifestyle affordability – which is currently pressuring the industry in Silicon Valley.

Data centres will be core sector development enabling infrastructure as roads and an Internet backbone were in previous generations. Columbia Valley has an unusual rural BC competitive advantage in this regard with Iris Energy in Canal Flats (sustainable bitcoin mining, <https://irisenergy.co/>).

Tech sector development connects a number of strategic dots for BC amidst societal shift:

- The third pillar of BC’s Strategic Plan (2018/19 – 2021/22) is “building a strong, sustainable economy.” There is mention of tourism, resource-based, and creative industries helping drive the economy. There is identification of key economic sectors: tourism, forestry, energy, and agrifood/seafood. Given ICT enables the performance and competitiveness of all economic sectors, there is potential for a Tech Strategy to add an enabling foundation to this strategic plan.
- Canadian society is aging. Connectivity, advanced broadband infrastructure, and technology company presence and innovation creates new opportunities in areas like eHealth and Intelligent Homes that enables aging in place and quality of life enhancement.
- Millennials and Gen Z – the heart of workforce numbers and global workforce talent attraction - are more technologically connected and driven.
- Advanced ICT enables all economic sectors by enhancing productivity and competitiveness.
- Key BC sectors can be linked to technology strategy that enhances their competitiveness.
  - E.g. Agriculture could add \$11B a year to Canada’s GDP by 2030 <https://www.thestar.com/business/2019/08/27/agriculture-could-add-11b-a-year-to-canadas-gdp-by-2030-report.html>. Ag tech as a sub-sector opportunity. Fintech as a growth sector.
- Availability of advanced ICT services is rising in importance as a corporate site selection criteria (Src: <https://www.areadevelopment.com/Corporate-Consultants-Survey-Results/Q1-2018/32nd-annual-corporate-survey-14th-annual-consultants-survey.shtml>).
- The Columbia River Basin provides over 40% of B.C.’s electrical power. The Columbia Basin Trust was established to generate an investment-focused legacy in return for damming of the Columbia River. Use of hydro and/or residual forest fibre power to establish a next generation economy in the Columbia Valley/Kootenays – including power needed for digital currency, edge computing, high performance computing, and bitcoin among other applications - successfully brings this story full circle.

- There is a strong core value proposition in Columbia Valley: legacy industrial site (Canal Flats), green (hydro) power, lifestyle and cost of living advantage, “Goldilocks” climate, and data security.

Tables 1, 2, and 3 identify Technology industry sector (as per BC definition of the sector) presence and job change for Columbia Valley compared to the CBT Region, and BC minus YVR and Capital Region for a broad period of 2012-2021 that captures strong emergence of technology in the economy. The technology sector has a significant presence in Columbia Valley at 10% of total jobs (5674 total jobs in Columbia Valley – 2021), below the CBT Region at 13.9% and BC (less YVR/Fraser Valley and Capital) at 12.6%. However, both total number of jobs in the Tech sector in Columbia Valley is close to the CBT average and exceeds BC (less YVR/Fraser Valley and Capital), and occupation counts – while still small – reveal a much higher growth rate than other BC geographies. Sub-sector comparative strengths (LQ above 2 (a value of 1 = similar to other places, >1.4 suggests competitive advantage due to more concentrated presence than a comparative geography)) are utility system construction (5.37), residential building construction (1.53), automotive repair and maintenance (2.16), and management, scientific and technical consulting services (1.44). While concentration can be leveraged, the data also reveals a challenge are in heavy sub-sector concentration in 9 of 53 tech sector industry sub-sectors.

Given the growing critical importance of technology contribution to all industry sectors, and growing technology-based workforce in BC, Canada and globally, there is urgent need to consider investment attraction, business ecosystem, and workforce development strategies that seek to enhance use of, and work in, technology in Columbia Valley. The potential is present, particularly: 1) significant recreational property investment from Alberta in particular – some of which can be expected to have tech sector presence; 2) the enduring impact of the pandemic on nature and location of work; 3) presence of College of the Rockies and Selkirk College and their role in technology workforce development and sector development (e.g. recent Selkirk College funding for Technology Access Centre to build competitiveness of advanced manufacturing and materials companies in the Kootenay region); 4) the long-term existence of KAST (<https://kast.com/>) and its role in technology ecosystem development, 5) a lifestyle value proposition in Columbia Valley; and 6) the presence of a key anchor enabler in Iris Energy and the Columbia Lake Technology Center in Canal Flats.

**Table 1: Change in Number of Jobs in Technology Sectors – 2012-2021**

Region	2012 Jobs	2021 Jobs	Change	% Change
Columbia Valley	484	568	84	17.4%
CBT Region	9,613	11,393	1,780	18.5%
Province (Less YVR & Capital)	94,176	104,607	10,431	11.1%
BC	345,081	420,440	75,359	21.8%

Source: EMSI Analyst 2020.Q4, NAICS Codes

**Table 2: Change in Employment by Occupation in Technology Sectors – 2012-2021**

Region	2006 Jobs	2018 Jobs	Change	% Change
Columbia Valley	86	149	63	73%
CBT Region	2,371	3,365	994	42%
Province (Less YVR & Capital)	27,251	34,573	7,322	27%
BC	148,245	220,426	72,181	49%

Source: EMSI Analyst 2020.Q4, NOCS Codes

**Table 3: Number of Jobs in Technology Sectors Compared to Other Regions (2021)**

Industry	Description	Columbia Valley	% of Tech Workforce	CBT Region	% of Tech Workforce	BC Minus Greater Vancouver Fraser Valley and Capital	% of Tech Workforce	BC	% of Tech Workforce
2361	Residential building construction	126	22.3%	1,150	10.1%	16,081	15.4%	54,781	13.0%
2371	Utility system construction	110	19.4%	259	2.3%	3,245	3.1%	6,625	1.6%
8111	Automotive repair and maintenance	98	17.3%	1,245	10.9%	8,136	7.8%	20,621	4.9%
5416	Management, scientific and technical consulting services	79	13.9%	1,047	9.2%	8,001	7.6%	32,586	7.8%
2131	Support activities for mining, and oil and gas extraction	30	5.3%	484	4.2%	4,540	4.3%	7,787	1.9%
5419	Other professional, scientific and technical services	28	5.0%	832	7.3%	5,038	4.8%	17,252	4.1%
5413	Architectural, engineering and related services	17	3.0%	1,445	12.7%	8,401	8.0%	40,666	9.7%
5415	Computer systems design and related services	13	2.4%	540	4.7%	4,739	4.5%	44,874	10.7%
5191	Other information services	12	2.0%	140	1.2%	1,366	1.3%	5,543	1.3%
2211	Electric power generation, transmission and distribution	10	1.8%	519	4.6%	2,737	2.6%	8,898	2.1%
7115	Independent artists, writers and performers	5	0.9%	311	2.7%	3,426	3.3%	14,736	3.5%
5414	Specialized design services	5	0.9%	66	0.6%	1,691	1.6%	8,697	2.1%
5621	Waste collection	5	0.9%	129	1.1%	1,137	1.1%	3,505	0.8%
8113	Commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance	5	0.9%	578	5.1%	5,413	5.2%	9,772	2.3%
2213	Water, sewage and other systems	5	0.9%	59	0.5%	571	0.5%	1,481	0.4%
5112	Software publishers	5	0.9%	54	0.5%	973	0.9%	9,806	2.3%
3344	Semiconductor and other electronic component manufacturing	5	0.9%	52	0.5%	112	0.1%	1,944	0.5%
5622	Waste treatment and disposal	5	0.9%	124	1.1%	867	0.8%	2,024	0.5%
6115	Technical and trade schools	5	0.9%	25	0.2%	622	0.6%	2,717	0.6%
3353	Electrical equipment manufacturing	5	0.9%	33	0.3%	249	0.2%	1,330	0.3%
2373	Highway, street and bridge construction	5	0.9%	565	5.0%	5,203	5.0%	8,571	2.0%

2379	Other heavy and civil engineering construction	0	0.0%	134	1.2%	2,919	2.8%	7,493	1.8%
3359	Other electrical equipment and component manufacturing	0	0.0%	15	0.1%	54	0.1%	2,284	0.5%
3351	Electric lighting equipment manufacturing	0	0.0%	5	0.0%	21	0.0%	654	0.2%
4831	Deep sea, coastal and Great Lakes water transportation	0	0.0%	98	0.9%	2,316	2.2%	7,370	1.8%
3342	Communications equipment manufacturing	0	0.0%	0	0.0%	5	0.0%	1,016	0.2%
3341	Computer and peripheral equipment manufacturing	0	0.0%	0	0.0%	24	0.0%	672	0.2%
3336	Engine, turbine and power transmission equipment manufacturing	0	0.0%	5	0.0%	30	0.0%	198	0.0%
3346	Manufacturing and reproducing magnetic and optical media	0	0.0%	0	0.0%	5	0.0%	15	0.0%
3343	Audio and video equipment manufacturing	0	0.0%	0	0.0%	23	0.0%	116	0.0%
3333	Commercial and service industry machinery manufacturing	0	0.0%	14	0.1%	45	0.0%	1,472	0.3%
4173	Computer and communications equipment and supplies merchant wholesalers	0	0.0%	28	0.2%	440	0.4%	5,136	1.2%
4832	Inland water transportation	0	0.0%	5	0.0%	5	0.0%	5	0.0%
4851	Urban transit systems	0	0.0%	20	0.2%	876	0.8%	8,779	2.1%
4852	Interurban and rural bus transportation	0	0.0%	5	0.0%	85	0.1%	440	0.1%
5174	Satellite telecommunications	0	0.0%	0	0.0%	5	0.0%	49	0.0%
5179	Other telecommunications	0	0.0%	0	0.0%	76	0.1%	947	0.2%
3334	Ventilation, heating, air-conditioning and commercial refrigeration equipment manufacturing	0	0.0%	5	0.0%	243	0.2%	1,341	0.3%
5417	Scientific research and development services	0	0.0%	135	1.2%	1,015	1.0%	9,112	2.2%
3323	Architectural and structural metals manufacturing	0	0.0%	133	1.2%	1,309	1.3%	7,298	1.7%
3254	Pharmaceutical and medicine manufacturing	0	0.0%	25	0.2%	339	0.3%	3,356	0.8%
3251	Basic chemical manufacturing	0	0.0%	25	0.2%	128	0.1%	619	0.1%
8112	Electronic and precision equipment	0	0.0%	80	0.7%	1,180	1.1%	3,634	0.9%

	repair and maintenance								
6215	Medical and diagnostic laboratories	0	0.0%	124	1.1%	991	0.9%	4,208	1.0%
5182	Data processing, hosting, and related services	0	0.0%	49	0.4%	227	0.2%	2,857	0.7%
5152	Pay and specialty television	0	0.0%	0	0.0%	5	0.0%	26	0.0%
5151	Radio and television broadcasting	0	0.0%	102	0.9%	1,104	1.1%	3,558	0.8%
5121	Motion picture and video industries	0	0.0%	98	0.9%	1,189	1.1%	16,441	3.9%
3391	Medical equipment and supplies manufacturing	0	0.0%	5	0.0%	251	0.2%	2,658	0.6%
3345	Navigational, measuring, medical and control instruments manufacturing	0	0.0%	5	0.0%	281	0.3%	2,408	0.6%
2362	Non-residential building construction	0	0.0%	493	4.3%	5,253	5.0%	17,194	4.1%
2212	Natural gas distribution	0	0.0%	124	1.1%	922	0.9%	2,366	0.6%
5629	Remediation and other waste management services	0	0.0%	21	0.2%	698	0.7%	2,503	0.6%
	<b>Total</b>	<b>568</b>		<b>11,393</b>		<b>104,607</b>		<b>420,440</b>	

Source: EMSI Analyst 2020.Q4. Note: <10 = 5 for calculation purposes.

**Table 4: Technology Sector Compared to Other Industry Sectors (2021)**

Note: the Tech sector is not a Statistics Canada specifically defined sector. BC-specific Tech sector NAICS codes were aggregated to illustrate where the Tech sector would sit compared to other sectors in terms of importance to the Columbia Valley economy. This should be used with caution as a rough gauge given the Tech sector for purpose of this comparison “pulls” jobs from other sectors.

**Isolated as its own sector, the Tech sector would be the 4<sup>th</sup> largest industry sector (of 20 industry sectors) in Columbia Valley in 2021, but with only the 10<sup>th</sup> fastest growth rate.**

Group	2012 Jobs	2021 Jobs	% of total Columbia Valley Jobs	Change	% Change
Professional, scientific and technical services	201	346	6.1%	145	72%
Health care and social assistance	342	580	10.2%	238	69%
Public administration	175	260	4.6%	85	49%
Educational services	222	311	5.5%	89	40%
Administrative and support, waste management and remediation services	157	219	3.9%	62	39%
Finance and insurance	49	64	1.1%	15	30%
Accommodation and food services	907	1,141	20.1%	233	26%
Retail trade	587	731	12.9%	143	24%
Other services (except public administration)	201	249	4.4%	48	24%
Arts, entertainment and recreation	334	384	6.8%	50	15%
Wholesale trade	40	45	.8%	5	12%
Manufacturing	342	356	6.3%	14	4%
Construction	518	483	8.5%	(35)	(7%)
Transportation and warehousing	61	54	.9%	(8)	(12%)



Information and cultural industries	24	15	.2%	(9)	(36%)
Mining, quarrying, and oil and gas extraction	96	54	.9%	(42)	(44%)
Agriculture, forestry, fishing and hunting	365	191	3.4%	(174)	(48%)
Utilities	29	14	.2%	(15)	(52%)
Real estate and rental and leasing	179	67	1.2%	(112)	(62%)
Management of companies and enterprises	5	0	0	(5)	(100%)
Total Columbia Valley Jobs (2021): 5674					
Technology	484	568	10%	85	17.4%