Request for Council Approval for CGSCDC Funding: Cambrian College Battery Electric Vehicle Laboratory

Report Date: December 9, 2020
Council Meeting Date: January 12, 2021

Summary

In alignment with the Operating Agreement between the City of Greater Sudbury and the City of Greater Sudbury Community Development Corporation (operating as the Greater Sudbury Development Corporation, or GSDC), any funding commitments that exceed $250,000 are to be brought to Council for approval.

This report is seeking Council's endorsement and authorization for funding totaling $250,000 from the GSDC's Community Economic Development (CED) program, to be provided to Cambrian College for the development of the Battery Electric Vehicle Laboratory. Once approved, and conditional upon confirmation of other funding sources, this funding will be disbursed over two years.

The GSDC funding will support construction, renovation costs, and the purchase and installation of specialized research infrastructure and equipment necessary to advance this project.

The development of the Battery Electric Vehicle Laboratory at Cambrian College is particularly significant given current trends in the mining industry as battery electric vehicles are replacing diesel-powered equipment with increasing frequency. This emerging opportunity brings with it an array of important new challenges and prospects, and Greater Sudbury is well positioned to develop its competitive advantages in this growing sector. The Battery Electric Vehicle Laboratory is a key component of this effort.

Background

On October 30, 2020, Cambrian College presented to the Community Economic Development (CED) Committee of the Greater Sudbury Development Corporation (GSDC) seeking one-time funding support of $250,000 less the requisite 10% hold back.

This funding will support a $2.8 million project comprising the renovation, expansion and equipment purchase for a proposed battery electric vehicle laboratory (BEVL) at Cambrian College. The GSDC funding will leverage Cambrian's own internal funding sources as well as requested support from the Ontario Research Fund and the Canada Foundation for Innovation.

Following the CED Committee's endorsement of Cambrian's request, at the regular meeting of the GSDC Board of Directors on November 10, 2020, the GSDC Board passed Motion 2020-080 supporting the project unanimously. This funding is conditional on Cambrian receiving approval of contributions from the other funding sources and includes a provision that the City of Greater Sudbury's contribution be recognized on all communication materials including a specific media event onsite.

As per the agreed terms of partnership, any funding amounts in excess of $250,000 require the joint approval of both the GSDC and City Council.

Project Outline

This project represents an opportunity for Cambrian College to create a research facility unlike any other in Canada. It will provide a unique opportunity for Greater Sudbury to attract and retain, vehicle technology companies and professionals who require specialized equipment for product development and commercialization in the battery electric vehicle space.

In 2019, Cambrian was awarded a Technology Access Centre (TAC), a specialized research hub, by the Natural Sciences and Engineering Research Council of Canada (NSERC). Cambrian's TAC is known as the Centre for Smart Mining (CSM) and is just one of just two Technology Centres focused on mining out of all 60 TACs in Canada.

Working out of Cambrian's Applied Research arm, known as Cambrian R&D, the mandate for the Centre for Smart Mining is to assist companies in the mining sector adopt, develop, and demystify new technologies by accessing specialized equipment and expert personnel at the college. The establishment of Cambrian's Centre for Smart Mining is the culmination of years of experience in mining research with private sector partners and a demonstration of Cambrian's proven track record in applied research.

In order to stay ahead of these technological trends occurring in the mining sector, Cambrian College is seeking to provide the most up-to-date research and development services to its partners. Mines are swapping diesel-powered equipment for battery electric vehicles at an ever-increasing rate and this trend brings with it a host of technological challenges and technical barriers that need to be addressed.

Thus Cambrian R&D and the Centre for Smart Mining have proposed the creation of the Battery Electric Vehicle Lab (BEVL).

By facilitating access to new equipment and research techniques related to battery electric vehicles and equipment in the mining sphere, Cambrian College will accelerate this important trend in the industry and better prepare partners to replace diesel and adopt clean technologies that will benefit the Canadian economy and the health and safety of underground mining workers.

The GSDC funding will support construction, renovation costs, and the purchase and installation of specialized research infrastructure and equipment necessary to advance this project. The funding request of $250,000 from the GSDC is entirely for capital and capital development for the BEVL and is not operational in nature. As Cambrian will realize revenue from training and the use of the BEVL, the new facility will support the development of additional revenue streams to support their operations.

Previously, the GSDC approved Cambrian College for $20,000 in 2009 towards the Sustainable Energy Centre (now the Glencore Centre for Innovation) which helped make the now $6M facility a reality. The GSDC also provided funding support of $25,000 in 2015 to Cambrian College to study how microbes can break down mine tailings. The successful completion of this project has paved the way towards a current scoping analysis of a proposed Centre for Mine Waste Biotechnology being conducted by Laurentian University, a project also supported by the GSDC through a $60,000 contribution.

Economic Impact

The project will create three permanent positions including two lab technicians as well as a potential creation of a BEV Industrial Research Chair position with further support requested

from either NOHFC and/or NSERC. The BEV Research Chair will become the research lead for all activities at the BEVL.

During the renovation and construction phase of the project, it is estimated that six temporary jobs will be created between March 2021 and March 2022. Long-term, the creation of the BEVL will result in a variety of contract positions for students working on specific projects within the lab. The project anticipates the creation of dozens of in the first five years of operation given the BEVL's ability to attract students from a variety of backgrounds including electrical engineering, mechatronics, heavy duty technician, welding, machining, Internet of Things (IoT), data analytics and more.

In addition to the employment benefits and project leverage already noted, the BEVL will support long-term revenue streams for Cambrian's Centre for Smart Mining as clients will contribute to use the facilities. These in turn have the ability to leverage additional research dollars that will support operations and possible contract employment at the facility.

Beyond employment and leverage, the BEVL will have a long-term economic benefit for the City of Greater Sudbury. This includes:

- Supporting a global market of 'off-highway' or non-commercial vehicle electric equipment that is expected to grow to $17.5 billion by 2025. This comes with significant demand for research and innovation related to BEVs ramping up from both mining companies and the mining supply and services sector.

- Promoting the adoption of BEV innovation to the mining sector and highlighting Greater Sudbury as a leader internationally in this space (in turn supporting efforts to create a globally recognized BEV Mining Hub locally).

- Supporting the necessary BEV skills development and address the current gap of qualified BEV technicians that is already a concern for many companies in mining or supporting the mining industry.

- Creating a new focus for investment attraction as companies will consider locating to Greater Sudbury given access to the BEVL (and in turn giving staff another selling point to attract investment to the City).

Finally, there is significant potential for added economic benefits given the rapid shift to BEV technology in other sectors including, for example, the City's desire to adopt battery electric buses. Of course, the project supports Council's vision of achieving net carbon neutrality by 2050 and will serve to highlight Sudbury's rapidly developing green economy.

Project Financing

Partner	Total Funding
Cambrian College (Cash)	$385,461
Cambrian College (In Kind)	$27,812
Ontario Research Fund (ORF)	$1,000,000
Canada Foundation for Innovation (CFI)	$1,000,000
Vendor In-Kind Contribution *Battery emulator and powertrain test bench*	$163,964
GSDC CED Funding	$250,000
Total	$2,827,237

Conclusion

Cambrian College, and specifically Cambrian R&D which includes the Center for Smart Mining, has demonstrated their capacity to deliver on previous GSDC funded projects with long-term legacy outcomes. Similarly, the capital invested in this project will result in long-term, sustainable revenue for the college and the project will cement Greater Sudbury's status as a battery electric hub for the mining industry and beyond.

The BEVL will also serve to transform the local workforce by up-skilling students going into heavy industry who can be introduced to the cutting-edge equipment and trends that are driving the battery industry.

The total cost of the project is $2,827,237 and the amount of $250,000 requested from the GSDC represents 8.8% of the total project budget.

On November 10, 2020, the GSDC Board of Directors approved the requested funding of $250,000 based on a completed due diligence review of the project completed with Economic Development staff support and the subsequent recommendation of the Community Economic Development Committee. A copy of the resolution passed at this meeting is attached.