

Report to Council



Date: July 7, 2025
To: Council
From: City Manager
Subject: Annual Update – City of Kelowna and University of British Columbia Okanagan Research Partnership
Department: City of Kelowna UBCO Research Alliance

Recommendation:

THAT Council receives for information the report from the City of Kelowna UBCO Research Alliance, providing a progress update regarding various collaborative research initiatives.

Purpose:

To receive an annual progress update regarding the City of Kelowna UBCO Research Alliance.

Background:

The City of Kelowna (City) and the University of British Columbia Okanagan (UBCO) have a long history of collaboration, which was formalized in 2021 through the *Framework for Enhanced Collaboration*. This framework included the establishment of a Steering Committee and a Collaborative Research Fund, with each organization contributing \$100,000 annually to support research projects. Five projects have been funded since its inception.

To further strengthen the partnership, the City and UBCO have expanded and formalized the collaboration with a two-year pilot program called the City of Kelowna UBCO Research Alliance (the Alliance) that seeks to advance Kelowna's priorities through applied research and innovation. This Alliance has dedicated staff from both organizations who support project advancement and implementation. It operates as a cross-disciplinary platform, fostering collaboration and knowledge exchange among various stakeholders and engaging external partners to enhance its outreach and impact.

This year's annual report provides an update regarding research initiatives currently underway and provides details on the City of Kelowna UBCO Research Alliance, which is the next step in the applied research partnership between the City and UBCO.

Previous Council Resolution

Resolution	Date
THAT Council receives for information the report from the City / UBCO Research Collaboration Joint Steering Committee, providing a progress update regarding various collaborative research initiatives.	November 20, 2023

Discussion:

Current Research Projects – Annual Update:

Five approved research projects are currently in progress. Four are expected to be completed within the next 14 months, while the fifth has a scheduled completion date of 2027.

1. **Assessing the Potential Demand for Alternative Transit along the Rail-Trail Corridor connecting Major Urban Destinations:** This project focuses on improving the connectivity of the UBC Okanagan Campus, Kelowna International Airport (YLW) and the downtown area alongside the Okanagan Rail Trail corridor using existing and emerging alternative travel modes. A stated preference survey has been completed, and current efforts are focused on developing a travel mode choice model and preparing simulations to forecast potential demand for an Autonomous Transit Service (ATS). Upcoming work includes assessing cost and social impacts, simulating transportation network effects, and developing policy recommendations. This project may inform the City's planning for future transit alongside the Okanagan Rail Trail corridor or other corridors between UBCO/YLW and downtown by providing data on public preferences, projected demand, and the feasibility of an ATS. With a budget of \$306,500 and leveraged funding ratio of 3:1, the project is scheduled for completion by June 2026. This project aligns with Council's priorities of *transportation* and *climate & environment*.
2. **EV Charging – Bus Electrification:** This project focuses on analyzing the technological, financial, and environmental feasibility for developing rapid battery charging for transit and fleet vehicles in Kelowna. Travel and energy demand models have been developed and life cycle assessment comparing diesel and electric buses is complete. Ongoing work includes infrastructure feasibility analysis, modeling, optimization and environmental analysis. The research may inform the City's transition to a fully electric transit fleet by providing analysis of the infrastructure, costs and environmental benefits of rapid battery charging. With a budget of \$198,000 and leveraged funding ratio of 4:1, the project is scheduled for completion by April 2026. This project aligns with Council's advocacy priority for the development of the new *Transit Operations Centre* and a fully electric bus fleet, while also aligning with broader *transportation* and *climate & environment* Council priorities.
3. **Feasibility Study of Solar Energy:** This project includes the evaluation of the feasibility of solar energy in the region by analyzing socio-techno-economic barriers and regulatory barriers, using software and real-time operational data. It is actively progressing across several areas, including community engagement, geospatial and technical modeling, and policy analysis. Key activities such as photovoltaic system modeling and rooftop solar potential mapping are underway, while survey data analysis, evaluating energy storage options, and launching a market research study are in progress. The research may inform the design and retrofitting of City buildings, as well as the viability of solar energy adoption across municipal operations and the broader community.

With a budget of \$330,000 and leveraged funding ratio of 13:1, the project is scheduled for completion by August 2026. This project aligns with Council's priority of ***climate & environment***.

4. **Biochar Blended Clay Bricks: an Innovative Solution for Landfill Waste:** This project includes the evaluation of the potential for, and development of standard techniques to, convert wood waste into "biochar bricks", a value-added product that also promotes atmospheric carbon capture and sequestration. Research has been focused on the conversion of wood waste into biochar as well as incorporating it into different mixtures to determine optimum mix design, which could help support the development of sustainable, low-carbon construction materials. This research may help the City explore innovative ways to reduce landfill waste and support low-carbon construction. With a budget of \$90,000 and leveraged funding ratio of 3:1, the project is scheduled to be completed by September 2025. The project aligns with Council's priority of ***climate & environment***.
5. **Sustainable Aquatic Centre Operations:** This project includes the formulation of optimal operational strategies which consider how level of disinfectant use, air and water circulation and water temperature influence the quality of the aquatic centre environment and user experience. Sampling of water and air quality is underway, and predictive models for disinfection by-products are in development. Building energy models and occupant surveys are also in progress, while the next phase – focused on health risk assessments, optimization strategies, and a real-time "ePool" dashboard – is set to begin later this year. This research may help the City improve the health, energy efficiency and environmental performance of its aquatic centres. Tools like the "ePool" dashboard could also enable real-time monitoring and smarter facility management. With a budget of \$691,000 and leveraged funding ratio of 12:1, this project is scheduled to be completed by December 2027. This project aligns with Council's priority of ***climate & environment***.

City of Kelowna UBCO Research Alliance

The City of Kelowna UBCO Research Alliance, formerly referred to as the Centre for Excellence, is a partnership between the City of Kelowna and UBCO that aims to enhance and coordinate applied research efforts between the two organizations. This collaboration will promote new project ideas, streamline partnership management, and address applied research challenges and opportunities. The alliance focuses on conducting cutting-edge research in various locally-relevant domains and strategic themes, aligning with Council and Corporate priorities, including climate change mitigation and adaptation, renewable energy sources and systems, alternative transportation, and sustainable urban planning, among others.

To ensure the partnership delivers meaningful outcomes, several strategic key performance indicators (KPIs) have been established for the Alliance term. A key goal is for at least 80% of funded projects to leverage financial contributions from both the City of Kelowna and UBCO, reinforcing a shared investment in collaborative innovation. The partnership also aims to maintain a minimum 2:1 leverage ratio for the City's contributions to the Collaborative Research Fund, maximizing the impact of municipal funding. Each project awarded through the fund will be required to include a research translation or mobilization plan, ensuring that outcomes are accessible, actionable, and aligned with community and City needs. To support continuous improvement, feedback mechanisms will be implemented to enable ongoing consultation with stakeholders, fostering transparency, accountability, and a culture of learning.

The Alliance is currently investigating opportunities for new research partnership projects that will be funded by the Collaborative Research Fund. It is the intent of both parties to extend the term of the Alliance beyond 2026 and for both organizations to continue their commitment of collaboration on applied innovative research that contributes to the well-being of our community and beyond.

Conclusion:

The City of Kelowna and UBCO Research Partnership has been successful in stimulating interest from the research community and generating projects which fulfill both civic and academic objectives. Through relationship building and an intentional approach, both institutions have gained unique insights into leveraging resources to further mutual priorities.

The City of Kelowna UBCO Research Alliance is an evolutionary step in the relationship, fostering collaboration while broadening applied research opportunities and driving innovation to address the City's challenges and opportunities. This partnership is poised to make a lasting impact on the community, paving the way for a brighter, more sustainable future for Kelowna.

Internal Circulation:

Communications
Strategic Transportation Planning
Infrastructure
Facilities
Energy Management
Climate Action and Environment
Landfill & Compost Operations

Considerations applicable to this report:

Existing Policy:

Imagine Kelowna:

Principle 1: Collaborative

A community where people of all backgrounds work together to meet collective challenges.

Principle 2: Smarter Support innovation that helps drive inclusive prosperity.

Financial/Budgetary Considerations:

Commencing with the 2022 budget, each party began investing \$100,000/yr each, which has been leveraged 3 to 13 times, towards the partnership projects. Funding is allocated to projects evaluated and approved by the Joint Adjudication Group pursuant to the Collaborative Research Agreement. Project proposals which demonstrate significant leverage of funds through other sources such as the Natural Sciences and Engineering Research Council of Canada (NSERC) and Mitacs¹ are prioritized for funding. Leverage can be 2:1 or significantly higher depending on the type of project and funding criteria.

Considerations not applicable to this report:

Legal/Statutory Authority:

¹ Mitacs connects the private sector, municipalities and non-profit organizations with post-secondary institutions to drive research and development which solves organizational challenges and develops Canada's innovation capacity.

Legal/Statutory Procedural Requirements:

Consultation and Engagement:

Communications Comments:

Submitted by: M. Kam, Partnerships Office Director

Approved for inclusion: D. Edstrom, Divisional Director Partnerships & Investments

cc:

S. Currie, Vice-Principal, Research and Innovation UBCO

D. Maines, Manager Research Development, UBCO

A. Sheehan, Partnerships Development Specialist UBCO

M. Logan, General Manager, Infrastructure

R. Baines, Energy Manager

C. Ray, Climate Action and Environment Manager

N. Carswell, Strategic Transportation Planning Manager

S. Therrien, Transportation Planner

S. Hoekstra, Landfill & Compost Operations Manager

S. Perry, Facilities Manager

V. Trevino, Partnership Manager

K. Brunet, Partnerships Development Coordinator