Artificial Intelligence Applications for Water Management Terms of Reference

Approved by the Alberta Water Council on: October 23, 2025

CONTEXT

In recent years, there has been tremendous growth in the application of new technologies, particularly artificial intelligence, to support data-driven operations and decision-making in many sectors. These applications include supply chain optimization, energy management, predictive maintenance, quality control, production planning, and many others. Several sectors, including those represented on the Alberta Water Council (AWC), are working to develop, test, and use new technologies such as artificial intelligence in water management processes but are largely doing so in isolation.

Sharing information on the successes and challenges across different sectors and application types could support better integration of these technologies, encourage innovative new applications and approaches, and allow Albertans to use lessons learned from other sectors to more successfully navigate their own technology implementation and avoid pitfalls.

This project would represent the first step on cross-sector technology education and planning and will likely help identify future project areas for the AWC, such as more focused workshops on specific challenges or opportunities being faced by AWC members and supporters.

STRATEGIC INTENT (GOAL)

To advance understanding of artificial intelligence as a decision support tool for water management through a combination of virtual information sessions and an in-person workshop.

OBJECTIVES AND KEY TASKS

The overall objective of the project is to host a webinar series and subsequent workshop to improve participants' understanding of artificial intelligence as a decision support tool for water management, based on the latest and best understanding of their application.

The working group envisions that the work would be carried out with the combined efforts of two groups, both supported by AWC staff: a project team and a communications subgroup. The project team would be the overarching entity for decision-making and approval for any project-related matters (besides broader project scope and work-related considerations which would fall under the purview of the AWC board). The communications subgroup would provide relevant expertise on any communications-related tasks for the webinars and workshops. The subgroup would meet separately from the project team but any decisions the subgroup makes would be subject to project team review and approval.

The objectives and key tasks are outlined below. The suggested group to lead each key task is listed in brackets.

Objective 1: Plan webinars
The first task is to gather and review information, resources, and materials for the webinar series.

The project team would provide input and direction in several areas such as:
- the desired outcomes of the webinars
- the overall format of the webinars and workshop and topics that should be covered
- identifying relevant speakers or experts for the engagement
- identifying the target audience for the engagement
- oversight and direction on project budget and workplans

The communications subgroup would be involved in preparing communications and engagement materials for the webinars based on the direction set by the project team, such as event advertising or calendar invitations.

The webinars may also require moderators, facilitators, or other experts with specific technical knowledge for panel discussions or similar activities. The project team should assess whether they have the expertise and capacity for this role among the members, or whether a third party should be engaged.

AWC staff would be the lead in coordinating speakers and moderators, event invitations, project team meetings, and other administrative matters.

The ad hoc group and working group discussed potential information sharing and discussion topics, which are listed below for the project team's consideration. The working group's vision for flow of information was that there would be one or two introductory webinars with basic overview content, followed by information sharing through case studies and deeper dives into specific topics, and ending with a "summary" webinar or webinars to tie the content together. Example topics identified included:

- An introduction to artificial intelligence and the high-level benefits and challenges of applying artificial intelligence to water management operations and as a decision support tool.
- Highlighting real-world examples of applying artificial intelligence to managing water quality (e.g., treatment for drinking water or industrial use, impacts on aquatic ecosystems), and water quantity (e.g., floods; timing; droughts; water conservation, efficiency, and productivity; and smart metering).
- Data needs for water management decisions (e.g., water quality, asset management, operational priorities), and how that data can be collected and stored.
- Exploring the effect of adopting artificial intelligence on the people working in the sector.
- New skills and resources needed for water managers to effectively integrate new technologies into their operations and decision-making.
- Identifying cross-sector opportunities for future work.

Key tasks:
- Gather information and review concepts around artificial intelligence applications for water management (Project Team).
- Identify desired outcomes, topics, and speakers for information sharing (Project Team).
- Identify the target audience for the webinars and workshop (Project Team).
- Assess the ability of project team members to support delivery of the webinars and workshop and engage third parties as necessary for moderation and facilitation (Project Team).
- Prepare any engagement materials (event advertising, invitations, etc.) (Communications Subgroup).
- Engage and coordinate webinar speakers and moderators (AWC staff).

Objective 2: Host a webinar series on the use of artificial intelligence for water management

The second step is for the team to host the webinar series. AWC staff could introduce and close the webinars and lead simple Q&A sessions, but a moderator or facilitator (within the team or a third party) may be required if in-depth technical discussions are desired.

Key task:
- Host the webinars (AWC staff or a moderator or facilitator).

Objective 3: Plan a workshop based on webinar outcomes

The third objective is to plan for an in-person workshop to bring together the information from the webinars to identify gaps, opportunities, next steps, key messages, and other relevant outcomes. The team should first determine the value of this step based on the webinar attendance and feedback to date, and where efforts should be prioritized. optional.

Similar to objective 1, the project team would determine the desired outcomes, topics, and speakers, and determine if a professional facilitator or moderator is needed. The communications subgroup would prepare any engagement materials such as pre-reading or invitations, and AWC staff would coordinate and provide administrative and logistical support.

In addition to presenters and speakers, to help support the cost of the workshop, established vendors (i.e., those with a demonstrated and viable product) should be invited to participate in an exhibition at the workshop. AWC staff, supported by the project team, would be involved in vetting any vendors and AWC staff would coordinate their participation in the event.

Key tasks:
- Determine if a workshop is still valuable based on webinar attendance and feedback (Project Team).
- Determine whether a professional facilitator or moderator is required and hire if needed (Project Team).
- Identify desired outcomes, topics for discussion, speakers, participants (Project Team).
- Prepare any engagement materials (e.g., pre-reading, invitations) (Communications Subgroup).
- Arrange workshop logistics (e.g., venue, catering, timing, invitations, vendors) (AWC staff).
- Prepare a draft "what we heard" report based on the webinar outcomes (Project Team and AWC staff).

Objective 4: Host a workshop

The fourth objective is to host the in-person workshop.

Key tasks:
- Host the workshop, including an exhibition section with established vendors (AWC staff).
- Update the "what we heard" report based on the workshop outcomes (Project Team and AWC staff).

Objective 5: Final report

Once the engagement is complete, the project team should prepare a final report that includes the project background, methodology, results, and any recommendations or next steps.

Key tasks:
- Summarize the team's work and develop any recommendations for next steps or future work.
- Finalize and incorporate the "what we heard" report into the final report, either as an appendix or within the body of the final report.

Objective 6: Develop a communications plan

Early in the project, a communications subgroup should be established to prepare a communications plan. This plan would support the webinar and workshop objectives by defining what information should be communicated, who it should be communicated to, how, and when. After the engagement tasks are complete, the communications plan should add information about the project outcomes and provide advice on tools to share the information.

Key task:
- Develop a communications plan that includes the following elements:
    - The information to be communicated, including key messages.
    - The appropriate audience, how the material will be communicated to them, and when.
    - Existing communication channels that can be leveraged to share project information.
    - Communication tools such as message maps, factsheets, or presentations.
    - Messaging on the outcomes of each project objective for project team members to communicate relevant information to their constituents.

DELIVERABLES

The project deliverables are:
- A webinar series and workshop on the use of artificial intelligence for water management.
- A recording of each webinar made publicly available and hosted online.
- A final report summarizing the project outcomes (including the "what we heard" report) and any recommendations for future work.
- A communications plan outlining the project team's approach for communicating about the work and its outcomes.

PROJECT SCHEDULE

The project is expected to start in January 2026 and be complete by February 2028. The Gantt chart below shows the timeline broken down by objective.

Objectives and Milestones	2025			2026												2027												2028	
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb
1. Plan webinars	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■														
2. Host webinars								■	■	■	■	■	■	■	■														
3. Plan workshop													■	■	■	■	■	■											
4. Host workshop																			■										
5. Final report																				■	■	■	■						
5. Communications plan	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■						
Sector Review of Project Deliverables																									■	■	■		
Board Decision																													■

BUDGET

The project is estimated to require $17,500 in core funds and $30,000 in additional project funds. The table below includes a breakdown of the estimated costs.

The project team should provide the board with an updated budget once the final costs for AWC are determined as there are several factors which could significantly impact the budget, including:

- Potential cost-sharing with Alberta Innovates
- Speaker and moderator or facilitator costs (rates, scope of work, and number involved)
- In-person workshop costs (e.g., venue and food, which will depend on the number of participants) and offsets from vendor participation or ticket sales

Item	Estimated Cost
Core Funds	
Stakeholder support and travel/accommodation*	$10,000
Hosting	$2,500
Communications (final report preparation)	$5,000
Total Core Funds	*$17,500*
Project Funds	
Speaker fees	$5,000
Moderator or facilitator fees	$5,000
Workshop costs (venue, audiovisual, linens, food, etc.)	$20,000
Total Project Funds	*$30,000*
Total Estimated Costs	**$47,500**

*Based on 20 meetings, where two are held in person and the remaining 18 are half-day remote meetings, and two team members are eligible for stakeholder support.

MEMBERSHIP

Project team members should include technical experts or those with a stake or interest in the project outcomes. The working group suggests that the following groups should be engaged as project team members:

- AWC members and partners
  - In particular, Alberta Innovates as a project partner for administrative and communications support for the engagement tasks and co-hosting the webinars and workshop
- Industry and government representation beyond AWC members, as users or potential users of artificial intelligence for water management.
- Canadian Water Network, who is currently undertaking a water-related artificial intelligence engagement project targeted at municipalities.[1]
- An individual with a strong background in artificial intelligence in relation to water management (consultant or similar) to inform discussions about topics that should be covered and to potentially moderate discussions at webinars and the workshop.

The communications subgroup should include communications and engagement experts within the organizations of the AWC membership. As the communications subgroup is a critical component of the project's success, the call for members should include a call for engagement experts, to avoid delays in identifying them through a subsequent call for members process.

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[1] https://cwn-rce.ca/project/harnessing-the-power-of-data/