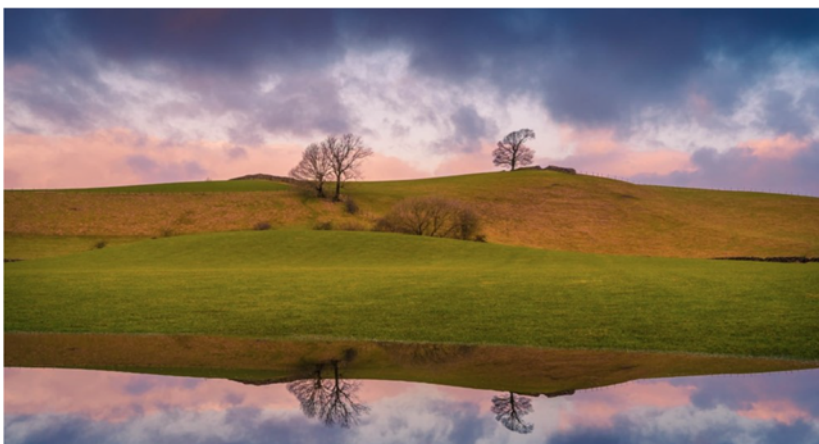


## Study of Water Impacts of Hydrogen Development in Alberta

The transition to net zero 2050 is both an opportunity and a major challenge. It is critical that approaches are deployed to identify and manage the water-energy-food nexus trade-offs that may arise. The emerging hydrogen industry is an exciting opportunity for Alberta, however, little attention is being paid to environmental trade-offs of hydrogen production, especially for water. Given the opportunity associated with hydrogen development, we must better understand potential impact to water resources, including how context specific water availability may limit development. This project will analyze how Alberta's developing hydrogen economy may impact our shared water resources.



**RECIPIENT:**  
**WaterSMART  
Solutions Ltd.**



**PARTNERS:**  
**ATCO, Capital Power,  
MD of Greenview,  
Kiwetinohk Energy  
Corp, Hydrogen  
Naturally**



**TOTAL BUDGET:**  
**\$100,000**



**AI FUNDING:**  
**\$50,000**



**PROJECT DATES:**  
**NOV 2022 –  
MAY 2023**



**PROJECT TRL:**  
**Start: N/A  
End: N/A**

## APPLICATION

Alberta's policy- and decision-makers may use this work to inform policies, regulations, and investments which best enable the hydrogen industry's growth, while strategically managing nexus trade-offs. Additionally, project developers and investors may utilize results to inform where water supply can be considered acceptable for hydrogen projects. As the transition to net-zero 2050 occurs, this project serves as a model for how to assess water availability and risks for other resource sectors key to the transition.



# ALBERTA INNOVATES CLEAN RESOURCES

## ENVIRONMENTAL INNOVATION

### WATER INNOVATION

## PROJECT GOALS

Through a science-based, two-step approach, this project will assess and document the potential water impacts of hydrogen development in Alberta, while also laying the groundwork for future analysis of how the transition to a net-zero 2050 in all resource sectors may impact Alberta's water resources.

## BENEFITS TO ALBERTA

For hydrogen producers, and other producers in the resource sector, it is important to consider the amount of water that can be diverted from watersheds without negatively impacting the ecosystem and existing water users. The results from this study will provide clear guidance on the amount of water available for use in Alberta which could be allocated for development in the resource sector at the present time, and in the future. Especially in southern Alberta, where there is existing stress on water availability, it is paramount to understand the availability of this critical resource. Upon completion of the study and report, the approach that was taken for this analysis will be documented and can be repeated for any future iterations of this study in the hydrogen space or in other resource industries.



**1 Publication**



**1 New Policy  
Informed**

## CURRENT STATUS

### MAR 2023

The project team is compiling watershed-related data to provide critical context for regions in Alberta expected to host significant hydrogen development. This includes current and future water availability, accounting for climate change. Comparing this water availability information to expected hydrogen-related demand will indicate where water demand has the potential to exceed supply and where management decisions in a water-energy-food nexus context will be required.