

Reducing Fresh-Water in Hydraulic Fracturing: A Comparison of Alternative Technologies and their Geological, Geographical and Economic Considerations.

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Hydraulic fracturing is a water-intensive treatment for the extraction and development of unconventional hydrocarbon resources. Due to recent advances in this treatment, there is a growing demand for fresh-water by this industry. In Alberta, the fresh-water used in hydraulic fracturing treatment normally comes from surface or groundwater sources. The extraction of large amounts of fresh-water from their sources can impact the health of aquifers, of aquatic ecosystems, and can limit the availability of potable water sources to adjacent communities. For responsible and sustainable development of unconventional resources, alternative technologies that reduce the necessity for fresh-water in hydraulic fracturing must be introduced.

Aside from cutting reliance on fresh-water consumption, utilizing alternative technologies could significantly improve the productivity of formations compared to water-based hydraulic fracturing methods. Using the Montney formation in Alberta, this project aims to investigate, assess, and compare traditional fresh-water fracturing methods with alternative fracturing technology, including: (1) cryogenic fluids; (2) oil-based fluids; and (3) energized fluids or foams, taking into account geological, geographical and economic considerations.

*Scientific poster submission to: 27th IUGG General Assembly (<http://iugq2019montreal.com/>) February 2019.
Public policy paper abstract to be posted in April, 2019.*