

Changes in Water Use in Alberta's Upstream Oil and Gas Sector between 2004 and 2013, and the Significance of Unconventional Oil and Gas Development



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ABSTRACT

The sustainability of current and future uses of water in Alberta is a topic of ongoing conversation with concerns increasingly being raised regarding the availability of supply compared to the nature of demands for water resources. This presentation will examine uses of non-saline water in Alberta's upstream oil and gas sector between 2004 and 2013. This time period is one of the busiest in Alberta's oil and gas development history and marks a clear transition from conventional to unconventional styles of development. The water uses discussed are: non-saline water use in drilling, use in enhanced recovery, use in multistage hydraulic fracturing and use in oil sands extraction or in situ development. While not the biggest user of non-saline water in Alberta, the upstream oil and gas sector uses appear to be increasing over this time period. Greatest water uses for upstream oil and gas purposes are largely located within the oil sands areas of the province. An emerging trend of increased water use for multistage hydraulic fracturing and drilling of horizontal wells marks a new phase of oil and gas development in Alberta. These trends further solidify the shift in Alberta's resource development trajectory from one dominated by conventional development using vertical wells, to an unconventional future reliant upon oil sands development, along with horizontal drilling of lower permeability rocks that require multistage fracturing for optimal resource extraction. These types of development strategies require higher volumes of water than more conventional means of resource extraction. A careful examination of water resource availability continues to be warranted as Alberta transitions into this new era of resource development.