

Water Use Performance in the In Situ Oil Sands Sector

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Abstract

In May 2017, the Alberta Energy Regulator (AER) launched its Water Use Performance Report for the energy sector, and has updated the report in January 2018 and February 2019. The purpose of the report is to ensure companies develop energy resources in an environmentally responsible manner, which involves minimizing nonsaline make-up water use, using alternative water sources where possible, and maximizing produced water recycling throughout their life cycle. Key performance indicators selected for the program include nonsaline water use intensity (NWUI = fresh water / bitumen production) and recycled water use (RWU = produced water – disposal). Between 2003 and 2017, NWUI decreased from approximately 1.0 to 0.2 bbl of fresh water per bbl of oil equivalent, and RWU increased from 72% to 87%. Over this 15 year period, major improvements in performance have resulted from produced water recycling and brackish (saline) water sourcing initiatives. It is also observed that mature projects (approx. 5 years or more since first steam) tend to have high produced water to steam ratios, and have greater opportunity to supplement fresh water use with recycled produced water. Other factors that contributed to this successful performance stem from the scale of production, limitations associated with water sources and disposal zones, and policy direction. Reservoir engineering and water treatment improvements, and geological heterogeneity also affect performance. Future improvements for water use performance in the In Situ sector are expected to continue to be driven by initiatives to replace nonsaline make-up water with recycled produced water and/or alternative sources.

References

AER 2019, <https://aer.ca/protecting-what-matters/holding-industry-accountable/industry-performance/water-use-performance>