

Tu Deh-Kah Geothermal: Lessons Learned and Next Steps

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Summary

Indigenous communities across Canada have a critical role in defining industrial activities in their territories and developing natural resources to provide clean, sustainable economies. Tu Deh-Kah Geothermal (TDKG) in Northeast British Columbia is a compelling example. The geothermal project is 100% Fort Nelson First Nation (FNFN) owned and led. Uniquely, Tu Deh-Kah means “water in the form of steam” in Dene; being gifted a name in the Dene language gives life and spirit to this project. FNFN feels the name comes with a responsibility to support the project to live up to its full potential.

The diminishing Clarke Lake gas field is being transformed into a sustainable, geothermal energy project. The oil and gas industry, along with the good record keeping of the BC Oil and Gas Commission provided a legacy of Clarke Lake reservoir data offering a nearly fully explored geothermal resource. This has substantially reduced the costs and risks normally required of geothermal developments. Project development began in 2021 with the drilling and completion of a full-size geothermal production well, drilled through the Precambrian and Devonian carbonate reservoir and into the Precambrian granite basement. The work also completed the deepening and repurposing of an existing gas well into a full-scale injection well. This resource characterization test-doublet forms the start of the geothermal well field anticipated to comprise of at least 4 production and three injection wells.

The region of Fort Nelson is non-integrated with the BC Hydro transmission grid and primarily dependent on gas fired for electrical generation. The 7 MW TDKG will at a minimum provide enough clean baseload power for all the domestic needs of the region. This is enough clean electricity to power the equivalent of 14,000 households and reduce 25,000 tonnes of greenhouse gas emissions annually. The project is currently in the proof-of-concept stage with over \$40M in capital raised. The commercial operation date is schedule to be in the summer of 2025.

The socio-economic goals of TDKG are amongst the most important measures of success to FNFN. This geothermal energy project has allowed FNFN to envision how an abundance of base-load electricity, an excess of geothermal heat and mineral rich brine can help accomplish goals such as food security and economic development. Training and employment are a critical focus. A steering committee of members, industry and education partners is in place to ensure these priorities of the Nation are met.