

# Queenstown Power Plant

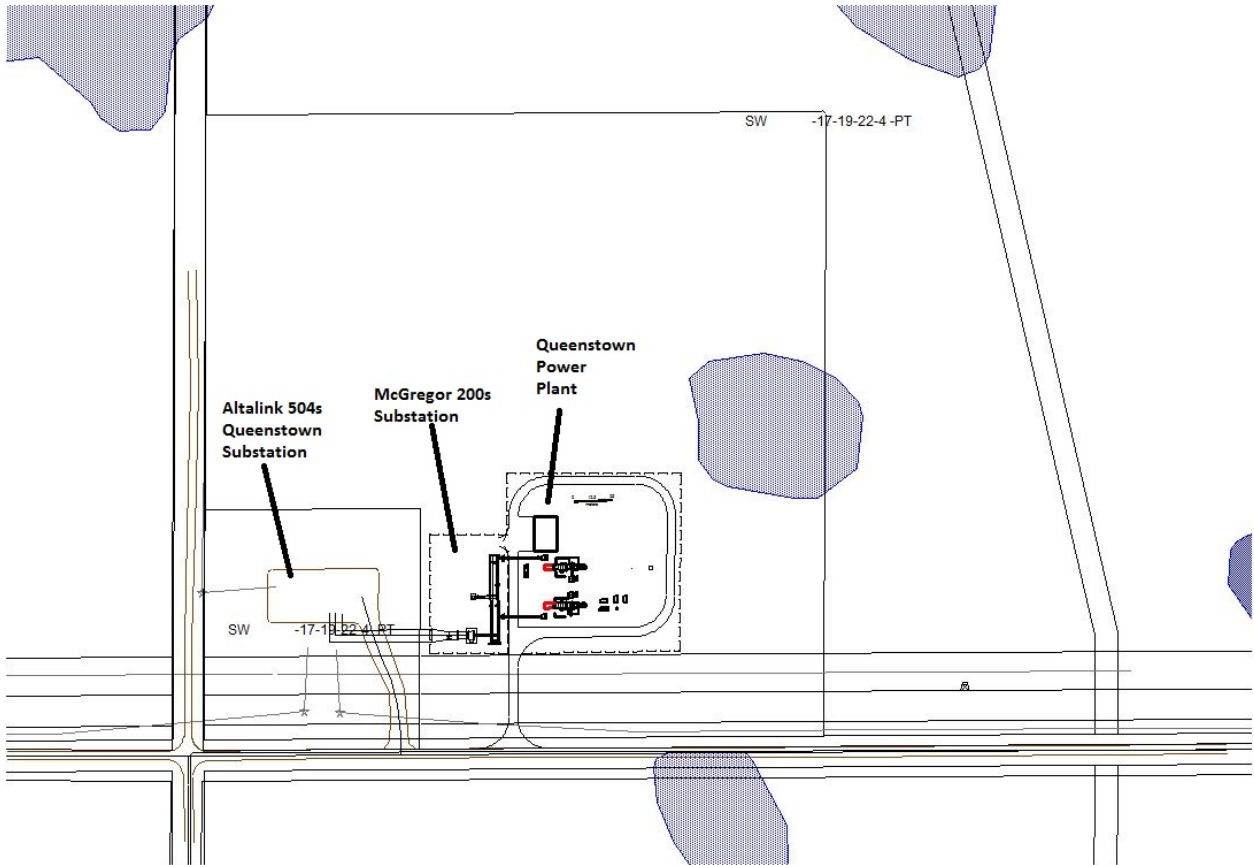
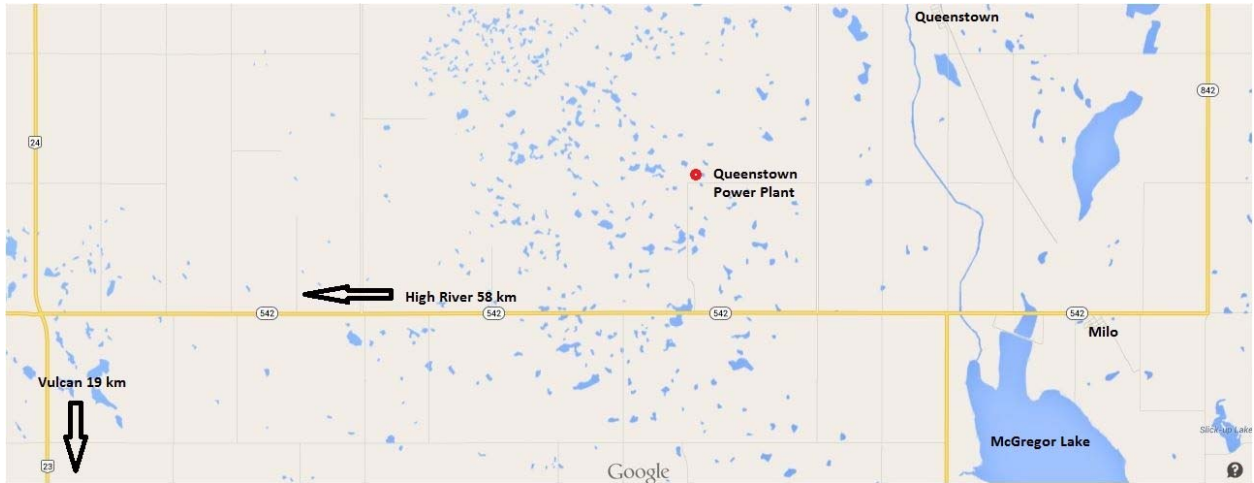
Peaking Power Plant for Alberta's Changing Power Requirements

May 2014





Plant will be the McGregor Substation which will abut the adjacent Existing Altalink 504s Queenstown Substation and comprise an area of 1 acre.



## **Helping Meet Alberta Unique Power Needs**

The power project is being developed to meet Alberta's unique future power needs and the increasing concentration of renewable power generation in the province. Requirements for new generation are being supported by economic growth and the retirement of Alberta substantial coal fired fleet by 2030, coal generation currently representing 40% or 6271 MW of Alberta total installed power generation capacity. Compounding the need for new dispatch-able fast acting generation within the province is a significant increase in wind generation. Wind generation can not be dispatched to meet varying load requirements throughout the day, rather, this type of generation demands additional fast acting dispatch-able generation resources to respond to uncontrollable generation changes associated with wind speed changes. BowArk is designing this plant specifically to meet the rapid generation response requirements of Alberta future grid. A plant which will be capable of rated output with only 10 minutes notice and equipped to participate in the numerous ancillary services required to support the changing grid demands. The plant has been strategically located close to the Calgary and High River load centres to minimize transmission losses and adjacent to existing transmission infrastructure to minimize the requirement for added transmission lines.

## **Generation Technology**

The plant will be comprised of two natural gas fired, 49 megawatt (MW), General Electric, LM6000, turbine generator sets operating in simple or open cycle. The plant being open cycle requires no water for cooling nor discharges any waste cooling water.

Electricity generated by each of the two identical generators will be transmitted from the project's new McGregor substation to the Altalink existing 504s Queenstown substation immediately East of the generation site. The resultant new 138kV transmission circuit will run approximately 70 meters (m) on lands owned by BowArk and Altalink. Interconnection within Altalink 504s substation will be facilitated by an existing 138 kV bus position which was abandoned as a result of the Southern Transmission Reinforcement system project.

Natural gas will be supplied to the plant via a high pressure buried 7.5 km transmission line which will be connected to TransCanada's existing line. Separate regulatory approval will be required for this gas line.

## **Environmental Performance**

Fired on natural gas the plant will incorporate advanced emission controls systems providing clean, reliable, flexible and responsive generation. The General Electric LM6000 PF generator set proposed for this project incorporates the most advanced emission control technology GE offers in this work horse unit with total Nitrogen Oxide (NOx) production of 15 part per million (ppm). The advanced dry low NOx combustion system of the LM6000 PF utilizes a staged burner system to achieve extremely low emission level thus avoiding requirements for makeup water typical of other emission control systems. Further,

as the engines are open or simple cycle, there is no need for cooling water typically required of combined cycles. Generator and auxiliary cooling will also be via dry closed aerial coolers, further conserving limiting water resource consumption.

### **Participant Involvement Program**

BowArk Energy Ltd. is committed to sharing information on the Project and receiving input from our neighbours and stakeholders. BowArk has commenced this process by developing several opportunities for information exchanges. These include:

- Project information mailed to local landowners and other stakeholders.
- Project information on BowArk Energy's Web Site ([www. Bowark.com](http://www.Bowark.com)).
- Face to face meeting with local land owners and stakeholders.

### **Project Schedule**

BowArk Energy anticipates submitting regulatory application for the Project in the fall of 2014. Applications will be made to the Alberta Utilities Commission and Alberta Environment and Sustainable Resource Development. Prior to construction we will be applying to the County of Vulcan for all necessary development and building permits.

No Provincial land use restrictions or setbacks are anticipated for lands adjacent to the Queenstown Power Plant development. Vulcan County requires the following land use restriction and setbacks for the proposed Queenstown Power Plant development: [Note to Draft, awaiting feedback from County Development Office]

BowArk has commissioned numerous environmental and historical land use studies to facilitate the various applications including but not limited to: air quality, water, soil, wildlife, noise and cultural heritage. We will be posting the results of these studies on our web site ([www.bowark.com](http://www.bowark.com)) as they are published for stakeholder review and communicating personally with stakeholders directly affected by the results.

BowArk started the regulatory electrical interconnection process for this project in 2012 and anticipates Alberta Utility Commission Permit and License for electrical interconnection to be issued early in 2015. Interconnection of this project is subject to Alberta Electric System Operator (AESO) and Altalink's (Transmission Facility Owner) completion of local area transmission improvements expected to be complete early in 2016.

Pending a successful outcome of the regulatory review, we anticipate construction to begin early in 2016. Construction is anticipated to be complete within the year with commercial operation late in 2016.

## **We Want to Hear From You**

BowArk Energy values your input into the proposed Queenstown Power Plant. We have launched a participation involvement program to share information with stakeholders and obtain input on our proposal.

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