



September 10th, 2019

Patrick Wruck
Commission Secretary
British Columbia Utilities Commission
Suite 410, 900 Howe Street
Vancouver, BC V6Z 2N3

Subject: British Columbia Utilities Commission (“BCUC”) Project No. 1598998 Indigenous Utilities Regulation Inquiry
Kitselas Geothermal Inc. (“KGI”) Responses to Information Requests by Commercial Energy Consumers Association of British Columbia (“CEC”)

Dear Mr. Wruck,

Please find enclosed Kitselas Geothermal Inc.’s responses to the Information Requests by the Commercial Energy Consumers Association of British Columbia.

If you have any questions, please do not hesitate to contact me.

Warm Regards,



Tim Thompson
Director
Kitselas Geothermal Inc.

British Columbia Utilities Commission Indigenous Utilities Regulation Inquiry

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“First Nations turn Opportunity into Economy”

“The Solution is already there – it’s a matter of will.”

-- Edison Bolton, Kitselas First Nation

Information Requests by CEC

1. Reference: Exhibit C6-3 KGI Written Evidence page 5 and page 8

BC's electricity market is an oligopoly. Entry into this market is restricted.

Collectively, these five points connect reconciliation with energy market participation. As such, for this to be meaningful, IUs cannot be subject to 'normal' market forces which otherwise might push them out of the market.

This distinction is also important as many IUs will reside in jurisdictions and operational contexts where 'normal' BCUC adjudication is unnecessary, unwanted, and/or too expensive.^{8,9}

1.1 Please describe the characteristics of the market that KGI believes makes the BC electricity market an oligopoly.

We define an oligopoly as “a state of limited competition, in which a market is shared by a small number of producers or sellers.”¹ The tell-tale metric for oligopolies is market share. Currently, the top 2 electrical producers (BC Hydro and FortisBC) serve between 80-90% of BC's electricity market.^{2,3}

Competition is limited, as is evidenced by the existence of the BCUC, who has a mandate in such circumstances and currently regulates the activities of these electricity producers. From time to time, their activities are exempted from regulation by the BCUC.

1.2 Please explain how KGI believes that regulation is appropriately utilized in an oligopolistic market and why.

For clarities sake, we are rephrasing this question to read “please explain how KGI believes that an oligopolistic market should be regulated and why”.

KGI would suggest that two points are central to how the BC electricity market should be regulated going forward:

1. The public interest will need to expand beyond that solely put forward by the Government of BC to include those interests of Indigenous Nations (and Indigenous Utilities) as their treaties rights are recognized. Implicitly, this will require broader market access for Indigenous Utilities;
2. That the Government of BC is not above “being aligned” by the regulator. This may entail examining critical issues such as market operation and export sales.

¹ "Oligopoly", Lexico Dictionary powered by Oxford, retrieved online September 5, 2019 <<https://www.lexico.com/en/definition/oligopoly>>

² *Why The British Columbia Energy Market is Regulated*, retrieved online September 4, 2019, <<https://energyrates.ca/british-columbia/why-the-british-columbia-energy-market-is-regulated/>>

³ Canada's Renewable Power Landscape 2016 – Energy Market Analysis, retrieved online September 6, 2019 <<https://www.cer-rec.gc.ca/nrg/sttstc/lctct/rprt/2016cndrnwblpwr/prvnc/bc-eng.html>>



In Scott Hempling's paper, he suggests that:

We use regulation to align private behavior with the public interest, in situations where private behavior, unregulated, would conflict with the public interest.⁴

KGI very much endorses this perspective. The key elements of this that we will explore, in the context of the question posed, are "the public interest" and "aligning private behaviour".

Expanding Public Interest

KGI has suggested elsewhere in its testimony that any go forward view of the BC electricity market will need to manage a 'fragmentation of control'. We believe this is well put by the Nisga'a Nation, in their submission, at page 1, lines 8-11, they state:

As explained in this submission, that jurisdiction and governance authority distinguish a Nisga'a Nation utility from other Indigenous Utilities. These distinctions should be reflected in the definitions and regulatory approach that is applied to Nisga'a⁵

KGI's view is this circumstance will continue to develop, as other Indigenous Nations conclude their own treaties with the Government of BC.

Practically, we suggest that this will fundamentally alter definitions of "the public interest", from reflecting solely the perspective of the Government of BC, to a multiplicity of perspectives, where each Indigenous Nations' interest, will become dominant within its own territory.

In this context, we would suggest that the regulatory mandate needs to broaden, in order to accept these current and coming changes. There may also be operational implications related to this fragmentation of control, but we are not in a position to elaborate upon those here.

Further, as we argue elsewhere in our responses, this will require ceding to Indigenous Utilities, sufficient market to allow 'scale', or normally profitable operation.

Aligning Private Interests

It is KGI's view that Indigenous Utilities are equivalent to other crown corporations operating within the Province. They have mandates with respect to serving their constituent customers and jurisdictions.

As such, KGI would suggest that the regulator should not give primacy to any of the IU or the Crowns interests, but rather seek to integrate them in a meaningful and constructive fashion.

⁴ BCUC Indigenous Utilities Regulation Inquiry Exhibit A-8, page 2.

⁵ BCUC Indigenous Utilities Regulation Inquiry Exhibit C21-3, page 1, lines 8-11.



KGI would suggest that this entails, within the current context, ceding to Indigenous Utilities, sufficient market share as required to develop economically competitive electricity projects, relative to what resources currently exists within their territorial jurisdictions.

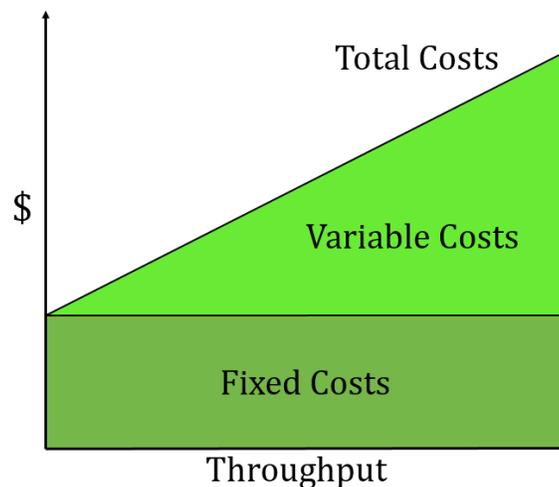
We would also suggest that this extends to discussions related to export markets. It is unclear to KGI, as to why the regulator would not consider this when examining the broader issue of market access. Many Indigenous Utilities are seeking to provide energy at an equal or lower rate than provided by the incumbent, and if BC Hydro's assertions about the relative cost of electricity in BC versus other jurisdictions are correct, then there should be no issue with respect to market access, as – based on their own submission – BC Hydro has a substantial advantage in adjacent electricity markets.

In essence, KGI would suggest that there should be no practical limit on the production and sale of low cost energy, as this will always be in the public interest; whether that is Indigenous or otherwise.

1.3 Please describe the ‘normal market forces’ of the BC market which could occur to push IUs out of the market.

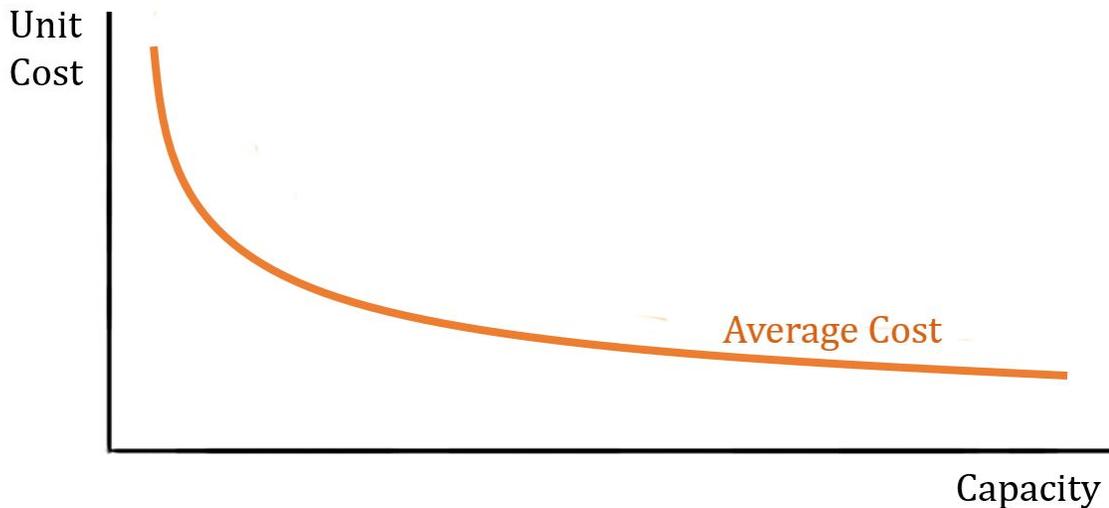
By normal market forces, we are speaking to competitive forces.

This statement speaks to the idea that energy generation and transmission systems are characterized by relatively high fixed and low variable costs and that these costs are a function of the size, or stated otherwise the capacity, of the system.



This results in what's known as a scale curve, where the unit costs of delivered energy are a non-linear function of the system's capacity, with larger systems having a significant cost advantage. This is known as the economy of scale.





From an electrical perspective this fixed cost/variable cost breakdown is true of large hydro, run of river hydro, solar, wind, tidal, geothermal power generation and also applies to electrical transmission systems. It also extends to natural gas production, gathering and transmission, propane distribution and heat pump systems.

A key outcome of this is that, in most contexts, there is a minimum ‘scale’ facility necessary to be economic in a competitive context. This minimum scale facility is a function of the energy technology, its costs, and competitive context. All of these values evolve with time and therefore are not static.

In grid connected electrical contexts, such as we are contemplating here, representative values for this might be:

Large hydro:	75 MW ⁶
Run of River Hydro:	16 MW ⁷
Wind:	100 MW ⁸
Solar:	30 MW ⁹
Geothermal:	20 MW ¹⁰
Tidal:	200 MW ¹¹

As noted in our testimony, Indigenous Nations are relatively small, with populations ranging between hundreds of members to a few thousand, some of whom might not be located on reserves and/or traditional lands. As such, their aggregate demand is far too

⁶ International Hydropower Association, *Canada statistics*, retrieved online September 9, 2019
<<https://www.hydropower.org/country-profiles/canada>>.

⁷ *Ibid.*

⁸ Lazard, *Lazard’s Levelized Cost of Energy Analysis – Version 11.0*, retrieved online September 9, 2019
<<https://www.lazard.com/media/450337/lazard-levelized-cost-of-energy-version-110.pdf>>

⁹ *Ibid.*

¹⁰ *Ibid.*

¹¹ International Renewable Energy Agency, *Tidal Energy Technology Brief*, retrieved online September 9, 2019
<https://www.irena.org/documentdownloads/publications/tidal_energy_v4_web.pdf>

small to meet the capacity needs of ‘scale’ on-grid (electric)/distribution pipeline (heat) facilities.

An example:

Kitselas First Nation: approximately 700 members

Average electrical consumption: 13.5 MWh/year/person

Installed Capacity:

$$13.5 \frac{\text{MWh}}{\text{yr} \times \text{person}} \times \frac{700 \text{ people} \times \text{yr}}{8,760 \text{ h}} = \text{installed capacity of } \sim 1 \text{ MW}$$

The result is that the Kitselas total demand would comprise of approximately 5% of that required by the smallest scale facility, for example a 20 MW geothermal plant, were those resources available to them.

As such, any energy supply sized for only themselves would be significantly uncompetitive, likely being a multiple of the scale price of energy from the existing utility provider.

We believe that these dis-economies of scale would not be sustainable in a competitive context. The Indigenous customers would not opt for significantly higher energy costs and would instead remain with their existing utility provider.

Were subsidies available, this could allow an uncompetitive Indigenous Utility to exist or a technology to be demonstrated for some period of time, but we believe that any such subsidies would ultimately be ended, as it could be easily demonstrated that they are not in the ratepayers interest.

In summary, we believe that if Indigenous Utilities were restricted to selling to only their constituent members, normal (i.e. – not subsidized or subject to other influences) competitive forces would push them out of the market, i.e. their notional customers would opt to purchase their energy from existing lower cost utilities.

1.4 Is it KGI’s position that IUs require additional protection from normal market forces?

Yes. It is KGI’s position that IUs, for various aforementioned reasons, should be ceded a segment of the electrical market, at a minimum sufficient market share to ensure IUs can competitively supply that market. Further, that IUs also have unrestricted access to that market, on an ongoing basis.

Further, it is KGI’s position that IUs be also protected from abnormal (as opposed to only normal) market forces. Notably, that the decision to construct Site C was exempted from examination by the BCUC. It is our view that any facilities brought into the market outside



of normal regulatory channels be excluded from exerting any influence on Indigenous Utilities.

In our oral testimony, we suggested that a good starting point for establishing this new “IU” market would be something in the order of the Site C project, with 1,100 MW of capacity.

In essence, we are not only suggesting that IU’s might need some protection, but also that some of the protections provided to the incumbents be removed.

1.4.1 If yes, what bodies does KGI believe are responsible for providing this additional protection?

The market regulator, in concert with the various Indigenous Nation governments and the government of BC.

1.4.2 If KGI believes that the BCUC should provide additional protection from market forces, please describe in what way.

There will be, in some cases, needs for Indigenous Utilities to develop requisite capabilities and experience within the sector. During this period of development, we would expect regulatory support in line with the individual need.

2. Reference: Exhibit C6-3, KGI Written Evidence page 9 and 10

The heat market is highly competitive. On a direct basis, despite the regulation of some participants, notably natural gas distributors and occasional strata or one-off heat projects, the market is open to competition from alternate forms of supply. At any one time, an energy buyer will have the choice of selecting from one or more supply types (electricity, natural gas – pipeline, natural gas – CNG, propane, fuel oil, diesel, solar, and/or wood) from any number of sellers.

Further, this price competition is not a function of scale (or size). For all heat providers, economically efficient equipment exists at the lowest scale. During the preparation of this submission, as articulated by a colleague, the barriers to entry for a wood stove or baseboard heating are quite low when wood is plentiful and electricity is already on site.

This is an important point, as we believe there can be more than one economically viable heat IU within any given jurisdiction. As such, internal price competition within this market is a real possibility, should market pricing diverge from readily available alternatives.

2.1 Please provide a rough estimate of the costs and time required for a customer to switch from one source of heat to another source of heat.

The answer to this is contextual, notably as to whether more than one source of heat exists and whether any second (or other) source is compatible with the first. It also depends on the type of customer and the size of the heating load being switched.



In the example above, where our colleague has a house already with both electrical baseboard heaters and a wood stove, the time to switch is literally seconds and no switching costs are involved.

Some conversions are quite simple, notably between propane and natural gas, which only require burner substitutions. Others require wholesale equipment change, for instance swapping out an oil furnace with a wood stove.

Our view is that residential substitutions can take as little as a day to install new equipment, with costs equal to replacing a furnace system.

However, larger commercial and industrial systems could take weeks to procure and install alternate systems. Costs would be commensurate with the size of the new system and also the degree to which existing heat, ventilation and air conditioning (“HVAC”) equipment would be used in either case.

3. Reference: Exhibit C6-3, KGI Written Evidence page 11

2. IUs, from our perspective, are de facto Crown corporations, indistinguishable from other Crown Corporations, and therefore should enjoy access to the market on a par with BC Hydro, a crown corporation.

Our read on Crown corporations is that they are government-owned business enterprises that can either participate or dominate within a set market to meet public policy objectives of the crown.

It would appear to us that the operation of an IU, to meet the wide variety of objectives of the local Indigenous governments, is materially indistinguishable from this and furthers the BC government objectives around self-determination, noted prior.

3.1 Please confirm or otherwise explain that KGI considers IUs to be a crown corporation of the Indigenous government and not a crown corporation of the province.

Unfortunately, KGI does not have the requisite legal resources to cogently make the case as to whether IU’s should or should not be crowns of the province or their own Indigenous governments.

Our simplistic view is that a crown corporation is a government-owned corporation that has a mandate to include government interests in its actions and operate at arm’s length.¹² These corporations are then used to advance policy objectives, however also operate in a business capacity with commercial interests and competitive pressures.¹³

Within an Indigenous Nations traditional territory, we would assert that the IU would not simply pursue corporate interests, but rather the broader interests of the Indigenous Nation.

¹² Kazi Stastna, “What are Crown corporations and why do they exist?” (1 April 2012), online: *CBC* <<https://www.cbc.ca/news/canada/what-are-crown-corporations-and-why-do-they-exist-1.1135699>>

¹³ *Ibid.*



As such, it would be acting as an Indigenous crown corporation, in an analogous manner to other crown corporations operating in the Province, who accommodate broader Provincial government mandates.

Therefore, we submit that IUs can be crown corporations of Indigenous governments.

However, we want to expand on the question to further clarify its relevance. While it might be important to some that an IU is a Indigenous or Provincial crown utility, the salient point is that it is a crown corporation. As such, by definition, it acts for the public good. Accordingly, it should have equal access to public assets in support of its mandate.

We believe this has significant consequences, as crown corporations have preferential access to both market and growth opportunities.

From a market access perspective, KGI would suggest that Indigenous crown corporations should have access to the BC electrical grid, on par with existing crown corporations, notably BC Hydro and Columbia Power Corporation.

However, from a growth perspective, we would suggest that IUs be included as a matter of course, whenever Provincial mandates expect to drive development in, on, or through Indigenous Lands.

For example, the federal government and the Province of B.C. recently signed a memorandum of understanding for the electrification of B.C.'s natural gas production and liquified natural gas sectors.¹⁴ Part of this agreement includes the two governments and the crown corporation of BC Hydro forming a committee to advance projects that increase power transmission.¹⁵ This is a major step, according to the governments, in the fight against climate change.

KGI would suggest that Indigenous Utilities, as crown corporations, are not only ready and willing to be materially involved, but should be involved, in this opportunity.

¹⁴ Lauren Collins, "Federal, provincial governments sign deal for electrification of B.C. energy sector" (29 August 2019), online: *Victoria News* <<https://www.vicnews.com/news/federal-provincial-governments-sign-deal-for-electricification-of-b-c-energy-sector/>>.

¹⁵ The Staff, "Ottawa, BC to push electrification of gas industry to cut carbon emissions" (29 August 2019), online: *Global News* <https://globalnews.ca/news/5831918/trudeau-horgan-lng/beta/?utm_expnid=.kz0UD5JkQOC06yMqxGqECg.1&utm_referrer=https%3A%2F%2Fwww.google.com%2F>



4. Reference: Exhibit C6-3, KGI Written Evidence page 12 and page 13

Table 1: Current Geothermal Regulatory Regime

Type of Regulation	Resource < 80°C	Resource ≥80°C
Rates, Customer Relations, Safety	BCUC / Technical Safety BC	Exempt / Technical Safety BC
Project Development and Pipelines to Customers	BCUC	BC Oil & Gas Commission
Energy Conversion Facilities	BCUC	Exempt

Our current exploration/drilling regulator, as of March 2017, is the BC Oil & Gas Commission (“BC OGC”). They enjoy broad powers of regulatory interpretation and have used those powers to impede project development actions which would otherwise be simpler and more cost effective to safely perform, either under alternate and adequate BC legislation, or under legislation that has been adopted and used in adjacent jurisdictions.

Table 1: Proposed Geothermal Regulatory Regime

Type of Regulation	Resource < 80°C	Resource ≥80°C
Rates, Customer Relations, Safety	BCUC / Technical Safety BC	Exempt / Technical Safety BC
Early exploration, i.e. core holes and slim wells; developments with flows from 0 to <100 l/s	BCUC	BCUC
Project Development when <u>≥80°C</u> production and injection wells are involved with flows > 100 l/s	Not applicable	BC Oil and Gas Commission
Energy Conversion Facilities	BCUC	Exempt

4.1 Please provide KGI’s understanding of the rationale for the <80°C threshold in regulation forms.

The 80°C threshold is derived from the Geothermal Resources Act, which defines a geothermal resource as producing water with a temperature of over 80°C at surface. We point the reader to CanGEA’s more comprehensive piece on this question in their September 10, 2019 submission, as well as industry views.

It is KGI’s position that the 80°C threshold needs to be re-evaluated with the values and best practices from neighbouring jurisdictions that have recently completed policy reviews. For more information, please see CanGEA’s September 10, 2019 submission.

4.2 Please identify who KGI considers would be responsible for making KGI’s proposed change in regulation.

It is KGI’s view that the BCUC could adopt this position without changing any legislation. As such, we believe that the BCUC would undertake to accomplish this on its own.



However, there is the possibility that other bodies could be responsible, including bodies responsible for the *Mines Act* and *Water Act*.

5. Reference: Exhibit C6-3, KGI Written Evidence page 22

In our view, while a 51% ownership stake and equal representation on the Board would be sufficient for inclusion, we can see instances where ownership stakes are lower but meaningful control and/or participation still exists. This is particularly true in our industry – geothermal – which is relatively capital intensive.

5.1 Please further define KGI's view of 'meaningful control and/or participation' and how identify how it might be measured by the BCUC.

Expanding on our earlier testimony, we believe that meaningful control is a necessary condition for the qualification of an Indigenous Utility. At a minimum, this would mean Indigenous control or equal control of the Board, where that Board has 'normal' corporate powers including setting the strategic direction of the firm, the capacity to approve budgets and the ability to hire the executives.

In terms of participation, we are not advancing any specific number, as Indigenous Nations may have a variety of reasons for opting to invest at levels below 51%.

In terms of measurement, the BCUC could obtain a copy of the Indigenous Utility's corporate annual return, which lists who the directors are and includes a breakdown of the shareholders and their percentage of voting shares, and determine whether the Board was invested with the necessary powers to exert control.

6. Reference: Exhibit C6-3, KGI Written Evidence page 24

We would suggest that the BCUC has a need to provide low cost regulation, where it can still apply the principles of the UCA, but at a fraction of the cost. The advent of IUs will create a number of very small utilities, who cannot engage in the same way as large utilities. The BCUC needs to consider how it might deliver its service, with a total overhead burden that, for arguments sake, need to be < \$10,000 per year – and in some cases, well lower than that.

As a potential Indigenous geothermal utility, we are concerned that the regulation of heat, and the decision matrix as to how much regulation is required, fails to capture the competitive context around geothermal heat generation, and therefore errs on the side of being overly burdensome.

6.1 Would KGI consider it appropriate for a maximum burden to be determined based on the size of the utility (either revenues, profits, customers etc.)?

KGI would submit that, in our view, the regulatory burden needs to reflect the activity and interaction with the regulator and relevant stakeholders who might appear before them. However, this burden needs to recognize the net amount of energy being regulated, as – ultimately – these costs will be borne by customers.



KGI is not entirely clear how the current BCUC overhead is shared amongst its energy providers. However, we believe it is on a pro rata basis related to some metric. We would propose that regulatory burdens should be shared across market participants based on their share of the energy sold in the BC market.

Alternatively, IU's could be a nominal annual fee to minimize the administrative burden. Bookkeeping and separate invoicing for each and every inquiry (and at different stages of the inquiries) for which an IU would have to contribute towards might be burdensome. A yearly bill from the BCUC for overhead would be more efficient.

A credit system would also be welcome where utilities that provide a benefit to the BC grid are compensated for providing said benefit, i.e. servicing new economic growth that BC Hydro cannot serve.

6.1.1 If yes, please propose a metric that KGI considers might be appropriate.

Please see the response to question 6.1. In addition, we would like to engage further on this topic, perhaps with input from Clean Energy BC and CanGEA.

6.1.2 If no, please explain why not.

