

Yukon Government Energy Framework

The Department of Energy, Mines and Resources holds the lead corporate role for energy policy on behalf of an exceptionally diverse array of Yukon Government departments, agencies and corporations. On-the-ground activity on the energy file is heating up, fuelled both by the impending end of the surplus hydroelectricity era which began with the 1998 Faro mine closure and ever increasing prices for petroleum products. This document describes the current energy landscape in the Yukon and is intended to assist the Department of Energy, Mines and Resources with effectively managing the energy file.

Submitted to:

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The logo for Vector Research features the company name in a bold, serif font. The word 'Vector' is positioned to the left of 'Research', and a horizontal line is drawn through the middle of both words, extending slightly beyond their boundaries.

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Yukon Government Departments and Agencies with a Leading Role on the Energy File			
	Energy Role(s)	Serves...	Energy Type
Energy, Mines and Resources	YG lead on energy policy and rights issuer (oil and gas)	Yukon public and resource industries	oil, natural gas, electricity, water, biomass, wind, solar, geothermal, coal,
Yukon Energy Corporation	monopoly generator and transmitter of electricity, electricity planning	Yukon ratepayers	electricity, district heat
Energy Solutions Centre	EMR storefront for energy program delivery, energy planning	Yukon public	oil, natural gas, electricity, water, biomass, wind, solar, geothermal, coal,
Economic Development	energy investment facilitator	Yukon public, national and international investors	biomass, electricity, oil, natural gas, coal, uranium
Yukon Government Departments and Agencies with a Supporting Role on the Energy File			
Yukon Development Corporation	owner of Yukon Energy, electricity bill subsidy provider	Yukon public and YG	oil, natural gas, electricity, water, biomass, wind, solar, geothermal, coal,
Yukon Housing Corporation	storefront for housing related energy efficiency	Yukon public, YG departments with community based-staff	energy efficiency
Highways & Public Works	YG building owner, large energy consumer co-lead on biomass initiatives	Yukon public	biomass, energy efficiency
Yukon Cold Climate Innovation Centre	funding partner for applied energy research	Yukon public	renewable energy
Education	energy curriculum large energy consumer	Yukon schools and households with children	energy efficiency, furnace oil
Department of Finance	fuel tax authority	Yukon public	petroleum-based fuels (gasoline, diesel, propane)
Department of Justice	oversees the Yukon Utilities Board, signs energy certificates	Cabinet	electricity, natural gas
Community Services	Our Towns, Our Future Initiative, community energy plans	Yukon public	all energy forms
Climate Change Secretariat	YG lead on climate change response	Yukon public and YG	emissions from petroleum-based fuels
Yukon Environment	monitoring of emissions from energy generation	Yukon public and YG	emissions from all forms of energy
Yukon College	large energy consumer early innovator (gasifier)	Yukon public	furnace oil
Yukon Government Committees and Working Groups			
Deputy Ministers' Energy Roundtable	to coordinate new energy initiatives, respond to energy proposals	Cabinet	all energy forms
ADM's Energy Group	to provide support to the Deputy Ministers' Energy Roundtable	Deputy Ministers	all energy forms
Yukon Energy Strategy Implementation Leads	to implement the Yukon Energy Strategy	YG departments with an energy role	all energy forms
Bioenergy Development Committee	to develop a bioenergy development framework for YG	Yukon public with an interest in biomass	biomass for heat
Yukon Energy Partners Community of Practice (YEP)	information sharing among Yukon agencies with energy interests	YG departments and Yukon-based agencies with an energy role	all energy forms

Outside YG Players: governments, organizations and private sector parties			
	Energy Role(s)	Serves...	Energy Type
Yukon Electrical Company Limited	primary distributor of electricity in Whitehorse and several Yukon communities	Yukon ratepayers in most Yukon communities	electricity electrical energy efficiency (demand and supply side)
Self-governing Yukon First Nations	potential rights holders potential funding partners	citizens of individual First Nations	all forms of energy
City of Whitehorse and other Yukon municipalities	potential supplier of waste feedstock large energy consumers	residents of the City of Whitehorse and Yukon municipalities	municipal solid waste
Non-self-governing First Nations	potential partners	First Nation members	natural gas
Northern Cross (Yukon) Limited	holds development rights to Eagle Plain oil and natural gas resources	Yukon industry Yukon consumers	oil and natural gas
North Yukon Oil and Gas Working Group	First Nation and government advisory body	northern Yukon First Nations and residents	natural gas and oil
TransCanada Pipeline	holds permits for construction of Alaska Highway gas pipeline	Canadian industry shots Canadian consumers	natural gas
Federal Energy Ministers	development of a federal/provincial/territorial energy strategy	Canadian public	all energy forms
Northern Climate Exchange	entry point for the study of climate change in the North	Yukon public Northerners	emissions from all forms of energy
Yukon Conservation Society	environmental advocacy group	Yukon public	all energy forms
Utilities Consumer Group	ratepayer watchdog	Yukon ratepayers	electricity
Yukon Forest Products Association	industry champion for forest resource development	forest industry operators	biomass (pellets, chips, logs)
Güssing Energy Technologies	private sector proponent interested in biomass energy development	Yukon government Yukon municipalities Yukon First Nations	biomass
Devon Canada Corp.	natural gas producer	Canadian industry Canadian consumers	natural gas
Outside YG Players: regulatory agencies			
Yukon Utilities Board	price-based regulator for monopoly Yukon utilities	Yukon ratepayers	electricity, natural gas
Yukon Water Board	quasi-judicial agency which issues licenses for the use of water and/or deposit of waste into water under authority of the <i>[Yukon] Waters Act</i>	all Yukon residents project proponents	all energy forms that involve the use of water
Yukon Environmental and Socio-economic Assessment Board	coordinating agency for environmental and socio-economic assessments under the <i>Yukon Environmental and Socio-economic Assessment Act</i>	all Yukon residents project proponents	all energy forms

Policy and regulatory gaps

The Yukon Government has enjoyed administrative responsibility for the development of the territories' natural resources for a relatively short period of time. And because the Yukon is located in a frontier region of Canada, low levels of industry interest has meant that implementation of policy and regulations that must necessarily accompany the development of certain types of resources has not yet occurred. Examples of types of resources for which policy and regulatory gaps exist include:

Coalbed Methane: a form of “unconventional” natural gas found in coal beds, formed as a byproduct organic material which decomposed to become coal. Coalbed methane is considered to be an unconventional source of natural gas because it requires special stimulation and/or production techniques to achieve economic production. Regulations for the development of coalbed methane in the Yukon have not yet been drafted.

Shale gas: also a form of “unconventional” natural gas, shale gas is natural gas stored in shale rock. Shale gas wells need to be stimulated through fracturing of shale formations in order to produce economic quantities of gas. Regulations for the development of shale gas in the Yukon have not yet been drafted.

Uranium: according to Energy, Mines and Resource's MINFILE, many uranium showings and prospects have been identified in the Yukon. However, advanced exploration for uranium resources has not yet been undertaken nor has the public policy discussion to consider whether the Yukon desires to become a uranium producing jurisdiction. A full public policy discussion regarding the use of radioactive fuel sources to produce electricity has also not yet occurred.

Geothermal: geothermal energy refers to the natural heat of the earth, which at hot enough temperatures can be used to generate electricity. Legislation governing geothermal title or regulating geothermal engineering is not yet in place in the Yukon.

For other types of resources, policy and regulations are not yet fully developed because there are outstanding questions around shared ownership of the resource. The negotiation of a shared **offshore resource management regime** and revenue-sharing arrangement for oil and gas resource known to exist under the Beaufort Sea is an example of this type of policy and regulatory gap.

For certain energy resources, the completion of regulatory measures will be timed to coincide with industry development. The draft **Oil and Gas Royalty Regulations** are an example of this type of situation. The regulations have existed in draft form for some years now and will not be finalized until oil and gas exploration efforts ramp up in the territory so that industry development is not stymied by a royalty regime that is out of step with royalty regimes in other jurisdictions.

As noted in the *Energy Strategy for Yukon*, the transportation sector (which includes cars, light trucks, heavy trucks, motorcycles, urban transit, airlines, marine transport, pipelines and railways) accounts for more energy use than any other single sector in the Yukon. The transportation sector is also responsible for well over half of the greenhouse gas emissions in the Yukon. While the Energy Solutions Centre, Highways and Public Works and Community Services have been tasked with implementing specific initiatives in the *Energy Strategy for Yukon*, it is not clear “**who's on first**” on the **transportation file** as it relates to the development and use of the Yukon's energy resources.

The land claim agreements now in place for 11 of 14 of Yukon's First Nations are exceptionally comprehensive and contain a variety of provisions which relate to the development of energy resources in the Yukon. While Yukon First Nations are now poised to join the Yukon Government in future energy development opportunities, a **high-level strategic analysis of the energy-related aspects of the land claim agreements** and how they might fit together with Yukon Government energy development policies has yet to be undertaken.

Near-term pressure points

A challenging aspect of the energy file for the Department of Energy, Mines and Resources is the degree to which demands on the Department are driven by factors which are outside of the control of the Department. Examples of such factors which may bring pressure to bear on EMR in the near-term include:

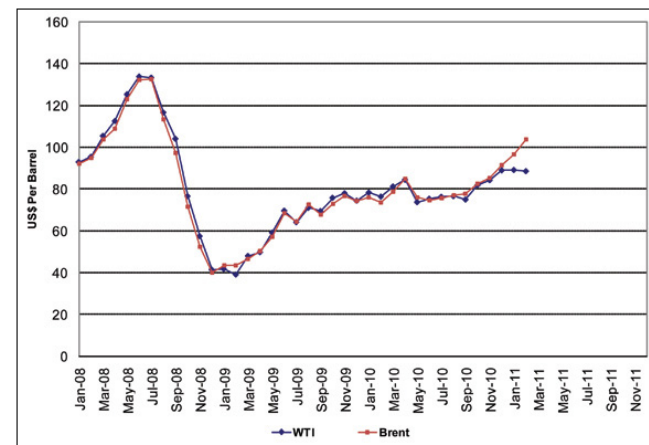
Price of Oil: as suggested by the National Energy Board chart to the right, crude oil prices may continue to increase in the near term. If oil prices do increase, expected effects include:

- an increase in industry interest in oil exploration in the Yukon;
- fuel switching from petroleum-based energy sources to electricity and biomass sources of energy; and,
- negative public response to increases in prices for food and dry goods as transportation costs increase.

End of the "Faro Surplus": the final closure of the Faro mine in 1998 brought with it a surplus of hydroelectric generation capacity. Growth in residential demand since that time and more recent increases in industrial demand at the Minto and Bellekeno mines means that if Yukon is to be able to meet demands for future industrial development, Yukon Energy needs to be supported in its ongoing efforts to create new generation capacity. Given that there has not been a greenfield generation project of significant size since 1973 when the Aishihik Hydro facility was built, the permitting, financing and construction of new legacy generation capacity presents a major challenge for all electricity players.

Shift in the Federal Fiscal Environment: as signaled in the federal government's June 2011 budget, Canada has now entering an environment of fiscal restraint at the federal level. The Yukon has enjoyed 10 consecutive years of formula financing increases in excess of 5% per year. While the overall federal transfer may not decline in absolute terms, it is likely that the annual rate of increase will fall closer to 0% per year. The shift to an era of fiscal restraint occurs at a time when the Yukon now has full administrative responsibility in all natural resource sectors.

Figure 1 - West Texas Intermediate Crude Oil Price



Source: NEB

Electricity Prices are Going to Increase: any way you slice it, electricity prices are going to increase in the Yukon within the next 2-3 years. The Yukon’s isolated electrical system is fed for the most part, for most months of the year, with electricity generated from legacy hydro-electric assets, assets for which the capital costs have been long ago been paid off. An increase in generation capacity beyond a few hydro enhancement options (e.g., Marsh Lake Fall Storage) will necessarily involve major capital spending which will in turn necessarily require higher electricity prices at least in the short term.

Independent Power Production Policy: as shown above, there are many players in the energy field in the Yukon. A substantial number of the energy players are aware of Yukon Energy’s impending “clean energy deficit” and can sense opportunities for the supply of electricity to the Yukon’s existing utilities, Yukon Energy and the Yukon Electrical Company Limited. The window of opportunity to corral the efforts of various energy interests into generation choices which will ultimately benefit all ratepayers over the long-term is likely to be time limited. While a Yukon Government IPP policy exists in draft form, completion of the IPP policy will provide guidance to the various interests and facilitate good generation choices.



















Minesite Electricity Production – Lost Opportunity for Legacy Assets?: proponents of mining projects located more than 50-80 km from the Yukon’s existing electricity transmission grid have generally signaled that it is more economic *and timely* to produce electricity on-site than to tie into Yukon Energy’s transmission grid. Where the scale of the generation capacity required is of a significant size (e.g., Casino), the ownership of generation assets by the mine proponent and not a Yukon electrical utility may result in a lost opportunity for the paying down of the capital costs on a capital-intensive generation project by a utility and the creation of a legacy generation asset.

Climate Change: provisions of the Yukon Government’s climate change policy will overlay all of the energy choices made by the Department of Energy, Mines and Resources.

Multiple Points of Entry to YG: as shown in the table below, just as there are many players in the energy field in the Yukon, there are many points of entry for those players to the Yukon Government. The actions of proponents of biomass initiatives provides but one example. Without proactive coordination of the interactions between energy players and Yukon Government departments and agencies, efforts which might better be spent addressing the energy issues at hand may be diverted to trying to simply keep track of who is doing what.

-- Energy Sector --					
Residential	Institutional	Commercial/ Industrial	Transportation	Agriculture	Electricity Generation
<ul style="list-style-type: none"> • Energy Solutions Centre • Yukon Housing 	<ul style="list-style-type: none"> • Highways and Public Works 	<ul style="list-style-type: none"> • Energy Mines and Resources • Economic Development 	<ul style="list-style-type: none"> • Energy Solutions Centre • Highways and Public Works • Community Services 	<ul style="list-style-type: none"> • EMR Agriculture Branch • EMR Corporate Policy (Biomass) • EMR Forestry Branch (Biomass) 	<ul style="list-style-type: none"> • Yukon Energy • Yukon Development

Summary of Points of Intersection Between Pressure Points and Policy/Regulatory Gaps

Pressure Points	Policy and Regulatory Gaps							
	coalbed methane	shale gas	uranium	geothermal	offshore resource management regime	draft oil and gas royalty regulations	transportation: who's on first?	high-level perspective on land claim agreements
price of oil								
end of the Faro electricity surplus								
shift in the federal fiscal environment								
electricity prices are going to increase								
independent power production policy								
mine site electricity production								
climate change								
multiple points of entry to YG							