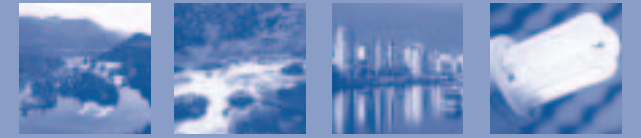


# Resource Options



November 2004

## Info sheet

Resource	NATURAL GAS	COAL	LARGE HYDRO (Facility with Reservoir)	RUN OF RIVER SMALL HYDRO	WIND/GEOTHERMAL	BIOMASS	CUSTOMER COGENERATION	POWER SMART
<b>Location</b>	No siting restrictions other than gas pipeline and transmission system access. Can be located close to loads.	East Kootenays, mid/north Vancouver Island	Northern B.C. (Peace River)	Various/throughout province (close to 900 identified potential sites)	Wind – Peace Region and North coast; Geothermal – Pemberton, Lillooet, Whistler	Various/near forestry industry	Various/near manufacturing & industry	Various/throughout province
<b>Transmission Requirements</b>	Update transmission system (depending on location), additional pipelines for natural gas supply, construction of gas storage facilities, access roads	East Kootenays - upgraded/new infrastructure may be needed; Vancouver Island – negligible as infrastructure primarily in place	Requirement for transmission reinforcements from north to south.	Numerous individual transmission inter-connections required, land clearance, new access roads, rights of way construction, etc. – all due to remoteness and inaccessibility	Numerous individual transmission inter-connections required, new access roads, rights of way construction, etc.	Negligible due to existing industry tie in to transmission lines	Negligible due to existing industry interconnection to transmission lines	No transmission reinforcement likely, since Power Smart will most likely reduce transmission constraints especially when located in the Lower Mainland and Vancouver Island
<b>Environmental Costs</b>	Greenhouse gases (global), emissions (local, such as smog), transmission requirements (as above)	Greenhouse gases (global), emissions (local, such as smog) worse than for natural gas, transmission requirements (as above)	Construction of a new dam, inundated land area, wildlife and fisheries impacts, transmission requirements (as above)	Minor in-stream disturbances, reduced flow in segments of streams, transmission requirements (as above)	Removal of vegetation/forest for wind development (40 turbines per wind development, and 40 hectares per wind development), transmission requirements (as above)	Considered neutral as it is part of the natural carbon cycle	Moderate since facilities already have heat requirements	None
<b>Capital/ Operations/ Maintenance Costs</b>	Smaller up-front capital investments, larger long-term operations & maintenance costs  Facility/plant has shorter life-span than hydro facilities (30 years versus 60 years)	Smaller up-front capital investments, larger long-term operations & maintenance costs  Facility/plant has shorter life-span than hydro facilities (30 years versus 60 years)	Largest up-front capital investment, but well defined/predictable and relatively small operations & maintenance costs	Up-front capital investment, well defined/predictable and relatively small operations & maintenance costs	Up-front capital investment, but well defined and predictable operations & maintenance costs	Relatively low/moderate up-front capital investment, well defined/predictable and relatively small operations & maintenance costs	Relatively low/moderate up-front capital investment, well defined/predictable and relatively small operations & maintenance costs	Capital costs to implement energy efficiency initiatives and projects. No long-term operations or maintenance costs
<b>Rate Impacts</b>	Over the long-term, rates would be impacted by variations in fuel prices	Coal is traditionally low cost, avoids price volatility of natural gas; over the long-term, rates could be impacted by the costs and risks associated with emissions	Low-cost generation, with minimal impact on rates over the long-term	Over the long-term, rates would increase even more if run of river was heavily relied upon to meet future needs	Over the long-term, rates would increase even more if wind/geothermal was heavily relied upon to meet future needs	Over the long-term, no significant impact on rates	Over the long-term, no significant impact on rates	Over the long-term, downward pressure on rates as there would be less growth of consumption
<b>Risks</b>	Fuel price volatility	Emissions costs uncertain due to Kyoto Protocol (and more significant than for natural gas, given emission density)	A reliable source of electricity supply, but reservoir levels may be subject to seasonal weather variations (snow pack and rainfall)	Seasonal variations in weather and thus, variation in river flows, freeze-up of rivers, electricity losses	Variations in weather patterns, availability of natural resources	Availability of fuel varies with the state of the forestry industry	Availability of fuel varies with the state of manufacturing & industry	Degree of customer participation has some uncertainty
<b>Resource Potential</b>	Abundance of natural gas inside and outside of the province, but a fossil fuel	Abundance of coal inside and outside of the province, but a fossil fuel	Very good, as a likely location for a new dam would be on an existing and proven reservoir/river system	Good, due to steepness of mountain terrain and high rainfall in B.C.	Wind - good potential, but much of it remote with difficult accessibility; Geothermal – good but limited number of sites	Limited potential, varies with the state of the forestry industry	Varies with the state of manufacturing & industry	Proven, very good potential.
<b>Dependability</b>	Near 100% dependable assuming the fuel is available. Time-outs required for maintenance.	Near 100% dependable assuming the fuel is available. Time-outs required for maintenance	Near 100% dependable	Less dependable than large hydro due to stream flows and rainfall (no reservoir)	Wind – the least dependable of all resources due to variable wind, terrain and weather; Geothermal - dependable	Near 100% dependable assuming the fuel is available	Near 100% dependable assuming the fuel is available	Short-term dependability, long-term variable dependability due to natural conservation catching up with induced conservation

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