

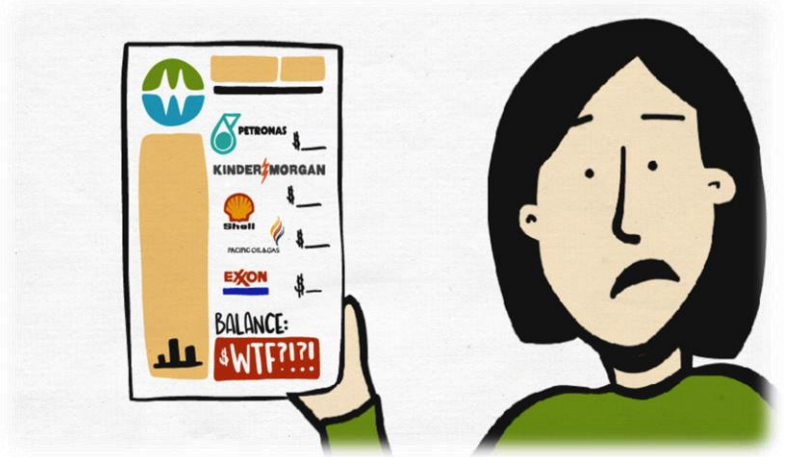
HYDRO BILL MADNESS

The BC Government Goes For Broke With Your Money

BC Hydro ratepayers can expect continued rate hikes thanks to the BC government's single-minded fixation on expanding fracking and developing a Liquefied Natural Gas (LNG) export industry. BC's pursuit of LNG investors, against bad and worsening odds, is resulting in poor financial decisions with long term consequences like the approvals of the Site C dam and the Kinder Morgan tar sands pipeline and tankers. This report details those ill-considered but reversible decisions and shows how each one, if allowed to proceed, will contribute to painful BC Hydro rate hikes and other consequences for British Columbians.

Connecting the Dots: A Summary of Key Findings

- BC government subsidies to the LNG industry, offered in an attempt to lure companies to BC despite adverse market conditions, come at great expense to BC taxpayers and BC Hydro ratepayers.
- In the near future, British Columbians could be paying handouts to massive international corporations when they pay their hydro bills.
- The Site C earth-fill dam, intended to power fracking and LNG export facilities that may never get built, will likely generate long-term overcapacity and contribute to escalating hydro rates over the dam's 70-year payback period.
- Provincial approval of the Kinder Morgan pipeline and tankers is connected to the BC government's pursuit of LNG and will cost BC ratepayers at least \$27 million per year in subsidized electricity.
- Alternative renewable energy sources create more enduring employment while providing a more flexible and cost effective avenue for addressing BC's future energy needs.



LNG: A Rich Fantasy with a High Price

No market for BC LNG

In 2011, the BC government announced its plan to turn BC into a major exporter of LNG. The price of LNG was high in Asia and BC had lots of fracked gas that it hoped to export. The government committed to "bring at least one LNG pipeline and terminal online by 2015 and have three in operation by 2020."ⁱ It was

a bewitching tale of future riches for BC, but government officials made little mention of the many warning signs on the horizon that LNG was far from a sure thing. As a result, most BC residents were and remain blind to the serious problems with their government's plan.

The first problem was that other countries were far ahead of BC and their entry into the LNG market would make it far harder for BC to get a foothold. When BC made its announcement, Australia's massive Gorgon LNG project had already been under construction for two years. It began producing in 2016, the same year the BC government rashly and incorrectly predicted its first LNG plant would come online. 2016 was also the year that the first US LNG export facilities came online.

"THEY [LNG PLANTS] NOW HAVE TO COMPETE AGAINST RENEWABLES IN WAYS THAT WEREN'T NECESSARILY CONCEIVED OR UNDERSTOOD BEFORE."

Jihad Traya, analyst at Solomon Associates

The US shift from net importer to net exporter of fracked gas should have been acutely obvious to BC, because one of the key reasons that BC was looking for LNG export markets at all was because the massive fracked gas boom in the United States had dramatically reduced US dependence on imported gas from BC.

The BC government failed to mention that the consequences of entering the race late could be catastrophic for BC and they continue to be

mute on the subject as the costs of pursuing the industry mount. Four years after the BC government's promise, not a single LNG project in Canada has broken ground, while several projects are up and running and numerous projects are under construction in Australia and the US.

A second setback for BC's LNG plans has been the dramatic growth and lowering price point of truly sustainable energy sources like solar, geothermal and wind. It is a problem that could have been turned into an advantage if the BC government had read the shifting market correctly and harnessed BC's very promising potential as a producer of alternative energy from sources like wind, tidal, solar and geothermal. Instead, alternative energy developments elsewhere pose another threat to the viability of LNG for late entrants into the market like BC.ⁱⁱ BC's lack of vision with respect to renewables has been very costly for BC residents and will be even more costly if there is no change in direction.

The third major problem with BC's LNG plan is the collapsed price of LNG in the Asian markets BC hopes to target. When the BC government made its \$100 billion LNG Prosperity Fund promise in February 2013, the price for LNG delivered to Asian markets was roughly twice what it is today. Around 2014, the import price of liquefied natural gas collapsed due to decreasing global demand and new producers entering the market. At today's price, it would be next to impossible for BC LNG to be produced at a profit,ⁱⁱⁱ and prices are expected to decrease again in



LNG tanker

2017 as more new production in other parts of the world continues to enter the market.^{iv} Last year, the BC government scaled back its 2011 promise, now assuring us that BC will have “three LNG facilities under construction by 2020.”^v A year later, that promise is looking pretty empty as well. Moody’s Investor Service predicted early in 2017 that the “lid will remain on global LNG prices beyond 2020 as supply growth outpaces demand.”^{vi} Meanwhile, despite approvals in place for several BC LNG projects, only one project has announced a final investment decision (Woodfibre LNG) and even that plant has not commenced construction. The approval of the Woodfibre project is also under considerable scrutiny now since political donations by employees of Woodfibre are part of the Elections BC investigation that was recently turned over to the RCMP.

REPORT: IN BC, THE TAXPAYER IS SADDLED WITH THE RISK WHILE THE HUGE LNG COMPANIES MAKE THE MONEY

A 2011 study^{vii} commissioned by the US government showed that the BC government, and by extension the BC taxpayer, is assuming a much higher level of financial risk than other jurisdictions in the world to develop our LNG resources.

The study ranked how the financial risks associated with fossil fuel development were being shared between governments and investors on a scale from 0 to 5. 0 represents the greatest level of financial risk being assumed by government.

BC’s score was a lowly 0.59, indicating that BC’s gas development regime protects huge multinational gas companies by shifting the bulk of the financial risk to taxpayers. By comparison, Alberta’s rating for the tar sands was 2.87 and Australia’s onshore coal gas regime was ranked at 1.91.

Since 2011 the BC government has left taxpayers on the hook for even more investment risk through its new concessions to the LNG sector so its risk ranking would presumably be even lower.

The cost of LNG for British Columbia taxpayers and hydro ratepayers

Despite growing evidence that the timing is not right for BC to develop an LNG export industry, not to mention the disconnect between LNG expansion and meeting BC climate targets,^{viii} the BC government continues to pursue LNG investors without regard for the cost to British Columbians. It has tried to make up for the market downturn through concession after concession to the huge, international LNG companies it still hopes to lure to BC. Each new concession represents another loss for taxpayers and ratepayers. An example is the 7% LNG tax that the BC government announced in 2013. When the LNG import price in Asia collapsed, the tax rate was cut in half to 3.5%. The LNG corporate income tax rate was meant to be 11%, but then the government introduced a natural gas tax credit that effectively lowers the rate to 8%. These concessions are being locked in through long term deals with potential producers that tie the government’s hands so it can’t recoup its losses if the market recovers at some point in the future.

Royalty payments to the BC government for oil and gas production have been significantly decreased by the application of financial incentives (also known as subsidies) in the form of royalty reductions for oil and gas companies. In 2016, government royalty revenues from gas production were reportedly down to

\$139 million after netting out \$348 million in royalty credits applied as a subsidy that year. That figure is misleading, however, because BC also approved the carry-over of more than \$520 million in future royalty credits by oil and gas producers last year. When those liabilities are applied to the earnings from 2016, oil and gas revenues were in the negative by just under \$365 million.^{ix} In other words, if you factor in future lost royalty revenue because of subsidies allocated in 2016, the natural gas sector actually cost the BC government, and therefore BC taxpayers, a million dollars per day in fiscal year 2016.

In 2014 BC's Auditor General raised the issue that when producers don't claim all of the royalty credits they are eligible for in a given year, those subsidies carry forward, reducing the amount of money that

THE OIL AND GAS SECTOR COST THE BC GOVERNMENT, AND THEREFORE BC TAXPAYERS, A MILLION DOLLARS PER DAY IN FISCAL YEAR 2016.

government will generate from royalties in future years.^x In 2014 there were \$1.25 billion in royalty incentive credits being carried forward; by 2016 that number was \$1.93 billion.^{xi} That's almost \$2 billion in future royalties that BC won't be able to collect due to binding contracts with these huge companies.

The impact on BC Hydro ratepayers of concessions to huge international LNG export companies promises to be equally bad, or worse. LNG plants and the fracking operations that supply them use massive amounts of power. Back in November of 2013, the BC government announced that it would be charging the LNG sector \$83.02 per MWh for electricity if they were to connect to the BC grid. It set that price to ensure "that existing ratepayers do not pay for the costs of infrastructure and new energy supplies required to serve LNG customers."^{xii} By November of 2016 the government's concern for ratepayers had evaporated and they announced that the rate charged to LNG companies would be lowered by \$28.68 per MWh to \$54.34 per MWh. That reduced rate will not cover the cost of production, so ratepayers will have to absorb the loss.

For an idea of how much of a handout this could be, consider Petronas' Pacific Northwest (PNW) LNG plant proposed for Lelu Island near Prince Rupert and the Woodfibre LNG plant in Howe Sound near Squamish. Basing the calculations on a rate of 230 kWh per ton of LNG achieved by a high-efficiency electric drive plant operated by Statoil in Norway,^{xiii} PNW LNG's power needs just for liquefaction will be 2,760,000 MWh per year at their planned start-up output of 12 million

metric tons per annum (MTPA) of LNG. The project proposes to generate this energy by burning gas on site, with massive greenhouse gas emissions. If they switch to buying electricity from the grid instead, as they are under pressure to do, and assuming that the actual cost to BC Hydro of power production is the



BC government's original LNG rate of \$83 per megawatt hour, BC Hydro ratepayers will be on the hook for a handout to PNW LNG of over \$79 million per year.^{xiv} Once they ramp up to their planned final output of 19.2 MTPA, the BC government's subsidized electricity handout to them could be almost \$127 million per year. The smaller Woodfibre plant planned for near Squamish would produce 2.9 MTPA and would therefore get a handout at a rate of over \$19 million per year. Between the two plants alone, BC Hydro ratepayers would be on the hook for over \$150 million per year. Construction of any of the 18 other plants currently being proposed would dramatically increase that amount.

Site C Earthfill Dam

A very expensive dam to provide energy to huge multinational corporations at below cost

The huge energy requirements of LNG export and the associated fracking operations raise the question of where the energy to supply them would come from. BC Hydro currently has more power than it can sell,^{xv} but that wouldn't be the case if even one of these large LNG projects went ahead using grid power.

That's why the BC government and BC Hydro decided to build the Site C earthfill dam on the Peace River in Northeast BC. They project that it will cost roughly \$9 billion, an estimate that has already ballooned from the initial cost estimate of \$6.6 billion in 2010. That is a lot of money to spend on a dam that will only be needed if LNG plants are built, which seems increasingly unlikely due to current and projected market conditions. And if they are built, Site C power would be sold to LNG exporters and the fracking companies that supply them at below cost.

In other words, residential BC Hydro bills will have to cover personal use plus make up the difference between the huge cost of building Site C and the bargain basement price that LNG and fracking companies will pay for their power. There will be very long term financial suffering for BC Hydro residential ratepayers if Site C goes ahead. BC Hydro anticipates it will take 70 years to pay it off.

"IF [SITE C] GOES AHEAD THIS IS EXACTLY WHAT BC RATEPAYERS FACE. THEY WILL BE PAYING RATES AMONG THE HIGHEST IN THE COUNTRY."

Mark Eliesen, former CEO of BC Hydro

Additionally, there are strong indications that even the original price of \$83.02 per MWh set by the government for LNG projects would not be sufficient to cover the cost of power from Site C. Globally, hydroelectric projects go over budget by an average of 70.6^{xvi} per cent. Large dams have an even worse record, with fully 75% running over budget and the actual costs averaging 96% higher than estimated.^{xvii} If the Site C dam goes over budget by that amount, the price tag would actually be over \$17 billion. The Muskrat Falls hydroelectric project in Newfoundland and Labrador is now more than \$4 billion over its starting budget of \$7.6 billion and the dam isn't finished yet. The provincial power utility, Nalcor, which early in the project predicted that its construction would "result in lower and more stable electricity rates,"^{xviii} is now admitting that the project overruns are going to cost residential consumers an extra \$150 per month.^{xix}



There are already indications that the Site C dam is heading in a similar direction and will be even more costly for ratepayers. Mark Eliesen, a former CEO of BC Hydro, has predicted that the final cost of Site C will be in the range of \$11 to \$12 billion and said the dam “is scheduled to become a big white elephant.”^{xx}

Given the likelihood of cost overruns, a research report from 2015 calculated that a more realistic price for Site C power would be a whopping \$164.35 per MWh.^{xxi} If we are generous and assume that the real cost of power from Site C will be \$123.69 per MWh, or half way between \$83.02 and the research report number, then the actual subsidy from BC Hydro ratepayers to PNW LNG would be over \$191 million per year at 12 MTPA and over \$306 million per year at 19.2 million MTPA. The subsidy at the smaller Woodfibre LNG plant would be over \$46 million per year. The subsidy for just those two projects would amount to an average of \$180 annually per BC household, and there are 18 other LNG projects proposed for BC. The fracking companies that would supply the LNG plants are also being offered an energy handout at the same subsidized rate.

Isn't this what the BC Utilities Commission is for?

\$9 billion for an earthfill dam is a lot of money, not to mention the more likely final cost of \$15 or \$17 billion based on a cost overrun of either 70.6% or 90%. BC Hydro is a Crown Corporation, so when it spends that kind of money, ratepayers are going to be affected. Before requiring our public utility to spend that much, one would think that the BC government would really want to prove that the energy is needed and that the Site C dam is the best way to provide future power for BC. They are on shaky ground on both counts.



In terms of demand, BC Hydro has a history of overstating electricity demand in its justification for the Site C dam project. The project was first sent to the BC Utilities Corporation (BCUC) for review back in 1981 and the BCUC found that “Hydro’s forecasts assume considerable expansion in all sectors” and concluded that “these forecasts describe the maximum potential outcomes rather than the most likely.”^{xxii} It turns out that the Commission was right to raise those concerns and BC Hydro was dead wrong with its demand predictions.

The Commission also warned that “overbuilding imposes significant economic costs” and “should be avoided if possible.”^{xxiii} By heeding the BCUC’s warning and not building at that time, the government of the day saved ratepayers from a potentially disastrous overbuild that could have led to huge rate increases.

This time around, the BCUC didn’t say anything about whether the Site C dam is needed. The BC government’s 2010 Clean Energy Act specifically removed Site C and a number of other energy projects from a requirement for scrutiny by the BCUC. The independent body tasked with ensuring “that ratepayers receive safe, reliable, and non-discriminatory energy services at fair rates from the utilities it

regulates^{xxiv} was sidelined from examining this massive project. Even without BCUC oversight though, serious questions have arisen about BC Hydro's demand predictions. Dr. Harry Swain, the man appointed to head the joint Federal Provincial Review Panel on Site C, has become one of the project's most vocal critics specifically, though not exclusively, because of his concerns with their demand predictions. His assessment has been blunt: "Hydro's demand forecasts are persistently and systematically wrong. There is no reason to believe that much new power, if any, will be required in the next 20 to 30 years."^{xxv} His warning to BC residents about the impacts of the project has been equally candid: "People are going to wind up paying for a stranded asset through their taxes for years and years to come. Hydro will not have the financial capacity to pay it, so it will fall to the guarantors of their debt, that is, the taxpayers."^{xxvi}

Moody's Investor Service has enough concerns about the impact of debt from Site C that it is specifically mentioned in their otherwise positive assessment of BC's credit rating. They note that "the anticipated increase in debt [at BC Hydro] continues to pressure the province's [credit] rating since it raises the contingent liability of British Columbia."^{xxvii} If the BC government had to bail out BC Hydro, that would have impacts for BC taxpayers as well as ratepayers.

Alternative Energy: Cheaper, More Flexible, More Jobs, Less Impacts

The lack of proper oversight with respect to BC Hydro's demand predictions also plagues their assessment of alternatives to Site C. BC Hydro's 2013 Integrated Resource Plan was the in-house report used to justify the decision to build Site C. It analyzed many options, calculated a per-megawatt hour projected cost for each of them and found Site C to be the least expensive option.

Outside of the BC Hydro boardroom, however, those calculations are hotly contested by energy experts. One reviewer called BC Hydro's justification for Site C to be a "towering edifice of studies... built on a few significant assumptions made largely without justification."^{xxviii} That reviewer found a pattern by BC Hydro of using non-industry standard assumptions to make the case for Site C and against alternatives. He found that by replacing the BC Hydro assumptions with more standard industry figures, Site C moves from the front of the pack to faring poorly compared to almost every other option.

"INVESTMENT MARKETS ARE COMPETITIVE, AND THE ABSENCE OF A CLEAR SIGNAL FROM THE BC GOVERNMENT TO SEEK MORE WIND ENERGY IN ITS ELECTRICITY SYSTEM MEANS THAT WIND ENERGY INVESTORS WILL SOON SHIFT RESOURCES TO MORE PROMISING MARKETS – REPRESENTING A SIGNIFICANT LOST OPPORTUNITY FOR BRITISH COLUMBIA."

Robert Hornung, Canadian Wind Energy Association President

The BC Sustainable Energy Association (BCSEA) also questioned the BC Hydro findings and requested that the project be referred to the BCUC for a thorough analysis. They referenced a report by London Economics International that looked at alternatives. That report concluded that "a renewable energy portfolio of 65 per cent wind and 34 per cent run-of-river hydro would be less costly than Site C over its life."^{xxix} BCSEA also questioned BC Hydro's projections of the cost of wind, solar and other renewables and asked that they be revised prior to the final decision on Site C. They noted that the



cost of solar had declined rapidly and was now close to being or already was competitive with the price used by BC Hydro in its justification for Site C.^{xxx} Those price drops reflect technological advances and the growth and development of the solar industry.

The Canadian Geothermal Energy Association also contests the numbers used to justify the need for Site C and claims that geothermal power “could provide all of BC’s future power requirements at a lower cost to ratepayers than the proposed Site C project.”^{xxxix} It should also be noted that wind and solar projects are far less likely to go over budget than hydro projects and, when they do go over, they tend to go over by smaller amounts.^{xxxii} On average, solar installations actually come in under budget.^{xxxiii}

In its decision to proceed with Site C, the BC government ignored evidence from all of these experts of price drops for renewables and the competitiveness of renewable portfolio alternatives.

There are also other economic benefits to these renewable energy options that will be lost if Site C is built. Energy options like solar, wind and geothermal can be added incrementally to the BC Hydro portfolio. That dramatically reduces the risk of overbuilding and therefore leaves the ratepayer at lower risk. They also distribute project benefits over a broader area of the province while dispersing environmental and other impacts. The Site C dam would permanently destroy some of BC’s best farmland, displace local residents and trample the Treaty rights of First Nations. It is also already distorting the northern labour market and impacting communities with a large, short-term influx of temporary workers in the northeast corner of BC.



Renewables like solar, wind and geothermal create less temporary employment during the construction phase, but generate far more permanent jobs per MW of capacity. There would only be one hundred and sixty-five long term jobs once Site C is built. By comparison, a report by the Canadian Geothermal Association states that they could produce the same 1100 MW capacity as Site C at half the construction cost and at a lower cost per MWh while generating more than ten times as many permanent jobs.^{xxxiv}

Investing in Site C and LNG at a time when the world is moving rapidly to renewables like wind, solar and geothermal also handicaps British Columbia in the emerging renewable energy economy. The decision to proceed with Site C rather than wind, solar and geothermal was followed by a more than 50% drop in spending on clean energy in the province.^{xxxv} The Canadian Wind Energy Association issued a warning to BC that “investment markets are competitive, and the absence of a clear signal from the BC government to seek more wind energy in its electricity system means that wind energy investors will soon shift resources to more promising markets – representing a significant lost opportunity for British Columbia.”^{xxxvi} The BC government's pursuit of fracking, LNG and Site C will have long term impacts on BC's future economy and could result in lost job opportunities in the emerging global clean energy economy.

Kinder Morgan and the Tar Sands: Another Price We Have to Pay For LNG?

LNG and the Site C dam are also connected to the recent provincial approval of the Kinder Morgan tar sands pipeline and tankers project, and help to explain its abrupt approval after years of the BC government raising concerns about the project and the flawed environmental review process.

The pipeline may be profitable for Texas-based Kinder Morgan and the fossil fuel companies operating in the Alberta tar sands, but it puts BC's waterways and coast at risk and threatens thousands of BC jobs dependent on an oil-free coast. Given all of the downsides for BC and that the government's 5 conditions have not been met (so-called world class spill response leaves at least 85-90% of the bitumen in the water, numerous First Nations are in court opposing the project, and the review process lacked credibility^{xxxvii}), it seems at first glance difficult to explain the government's reversal.

The ongoing RCMP investigation into possible irregularities in donations to the governing BC Liberal Party could shed some light on BC's shift in position. As reported by the BC-based Dogwood Initiative, "prior to greenlighting the Trans Mountain expansion, the BC Liberals also accepted at least \$771,168 in corporate donations from Alberta-based backers of the project — including Kinder Morgan, the Canadian Association of Petroleum Producers, the Canadian Energy Pipeline Association and oil sands producers contracted to ship oil on the new pipeline."^{xxxviii} It is very difficult to imagine that much money being gifted to one political party over a period of six years without any resulting shift in policy position in favour of the donor.



An equally compelling case can be made that BC's approval of Kinder Morgan is part of a horse trade with the federal government. In a period of six months starting in July of last year, the BC government got federal approval of the Site C dam and Petronas' massive Pacific Northwest LNG plant on the north coast and in return, Canada got its pipeline to tide water when BC gave its support to the Kinder Morgan pipeline and tankers. The Site C dam is the linchpin that allows the premier and the prime minister to posture as climate leaders while in fact increasing BC's emissions and compromising Canada's international climate

commitments. It is greenwashing: LNG plants connected to grid power via the Site C dam can reduce some of their upstream emissions from fracking and liquefying gas while ignoring the massive downstream climate pollution. Burning fracked gas is as bad or worse for the climate as burning coal.

At the same time, provincial support for the federal government's carbon tax deal hinged on delivering a pipeline approval to Alberta and approval of the PNW LNG to BC — despite these being projects that undermine federal efforts to reduce carbon emissions and, along with Site C, fly in the face of Prime Minister Trudeau's promises to improve relations with First Nations. There was little incentive for either government to approve the other's projects in isolation, but as part of a broader deal they were more compelling.

The BC government's financial justification for approving Kinder Morgan is particularly anemic. Much has been made of the \$500 million to \$1 billion that BC might be paid by Kinder Morgan over the next twenty years. However the net benefit to BC would be nowhere near this much.

Kinder Morgan has agreed to pay BC amounts ranging from \$25 to \$50 million dollars per year for twenty years, but their pipeline is going to be powered with subsidized energy from BC Hydro at a cost to ratepayers of at least \$27 million per year.^{xxxix} In other words, over the 20 year duration of the project BC will be giving Texas-based Kinder Morgan a handout of at least \$540 million.

Taking that handout into account, the net "benefit" to BC ranges from a net loss to a top end rate of \$23 million per year. The multi-billion dollar economy of BC's south coast and the very survival of the Southern Resident Orcas are being placed in jeopardy for net payments that would range from less than nothing to 0.00046 % of the BC government's annual revenues. If the Site C dam is built and goes over budget, resulting in hydro power costs above what BC is predicting, the subsidy to Kinder Morgan pipeline would almost certainly completely nullify any payments from the company and leave BC paying the company to put our coastal economy and environment at risk.

Taking Action

It doesn't have to be this way. Our province has better, cheaper and cleaner energy options, like solar and wind. We don't have to get stuck with a dam we don't need, a pipeline and oil tankers that put salmon rivers and the BC coast at risk, and hydro bills we can't afford.

It's not too late to choose a different future for this province and our Hydro bills.

What you can do

- ✓ Share Sierra Club BC's [video](#) on the corporate handouts.
- ✓ In the upcoming BC provincial election, find out where your candidates stand on these issues. Attend all-candidates debates and ask questions about these issues.
- ✓ Vote on May 9th.
- ✓ Get involved! [Volunteer with Sierra Club BC](#) to help more people learn about the environmental and economic impacts of LNG, fracking, Kinder Morgan and the Site C dam.
- ✓ [Donate](#) to Sierra Club BC.
- ✓ Learn more at sierraclub.bc.ca.



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