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Your Member of Parliament in Saanich-Gulf Islands

Summer 2016 Newsletter

Introduction

May 2, 2016 marks the fifth anniversary of my election as your Member of Parliament. For those of you who have lived in Saanich-Gulf Islands for all that time, you are used to the style of newsletter my parliamentary office sends to every home. Many new people move in all the time, so I thought I should give you a bit of context for the paper you are holding in your hands.

When I was first elected, I realized what an amazing privilege it was to send an update to every home in the electoral district. I choose the issues I write about based on a few criteria: 1) has it come up as a topic of constituent concern in town hall meetings and correspondence? 2) is it an issue the mainstream media either ignores or gives shallow treatment? and/or 3) is it a topic where doing the research and writing the articles will help me learn more about a complicated topic?

This issue’s topic meets all three criteria. The move by the BC government to bet on a liquefied natural gas (LNG) economic future has generated a lot of concern. Now that a specific LNG proposal is in Saanich-Gulf Islands, it was a major concern in the most recent Town Halls. I want to thank two strong critics of LNG from Bowen Island who have helped me dig into this subject, scientist Dr. Eoin Finn and retired lawyer Thomas Rafael.

I will be holding a town hall on LNG on Friday, June 3rd, at 7pm, at the Mary Winspear Centre in Sidney. I hope you can attend.

Please feel free to let me know if you would like a particular topic to be the theme for a newsletter. And please do continue to give me your valuable feedback using the form included in this issue.

The BC Government’s LNG Vision

The BC government has entered into a 25-year deal with Petronas, a state-owned Malaysian enterprise. BC’s Minister of Finance, Mike de Jong, claims the deal will generate \$36 billion for British Columbians. The BC government has promised Petronas generous tax concessions and has contractually committed to ensure those tax benefits survive a change in government. Petronas has two years to confirm whether it will proceed.

At the moment, there are 19 LNG proposals across BC. One of the biggest and most controversial is on Lelu Island near Prince Rupert. Petronas is backing the Pacific Northwest LNG proposal. The first to clear federal-provincial environmental assessment is the Woodfibre LNG facility at the head of Howe Sound. I must express profound disappointment that the federal Minister of Environment and Climate Change approved the Woodfibre plant. The Hon. Catherine McKenna stated that the plant had gone through an expert, evidence-based review. However, the environmental assessment under the gutted post-C-38 version of Canadian environmental assessment law was delegated to the BC government.

An LNG facility has also been proposed by Steelhead LNG for Saanich Inlet. The site is in Bamberton, on First Nations land. The proposal is for a floating LNG plant. To date, Steelhead has not made a formal application to any level of government. The involvement of the Malahat Nation in the LNG plant is uncertain. The Saanich First Nations on the Saanich Peninsula have expressed their opposition.

In 2014 total global shipments of LNG were 243 million tonnes per annum (MTPA). Excluding Canada, the total new capacity expected from all nations by 2021 is an amount almost as large as all current shipments – 240.45 MTPA.

British Columbia hopes to be producing almost the same volume of LNG as total current global supply. There is a really large logical problem here. Global demand for LNG is only increasing 2% a year. By the time LNG plants are even under construction in BC, the global LNG supply will exceed demand. Huge investments in Australia, where

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natural gas will be produced from old coal seams, will outpace and eclipse BC’s entry into this global competition.

Meanwhile, we have structured our tax regime in BC to reduce royalties to the people of BC. Down from \$2 billion in royalties in 2006, BC took in \$169 million in 2013. At this rate it will take 450 years to pay off provincial debt relying on LNG revenues.

“The structure of BC’s LNG Tax, recently halved, means that British Columbians, the public owners of the resource, will not see peak revenue flows until these capital investments are paid off, making them back stoppers of these risks, as well as the recipients of the impacts on public infrastructure and the environment.”

David Hughes

David Hughes is a Canadian geoscientist and leading expert in LNG. He served 32 years with the Geological Survey of Canada, and is currently president of Global Sustainability Research Inc. “A Clear Look at BC LNG: energy security, environmental implications and economic potential,” May 2015, produced for the Canadian Centre for Policy Alternatives.

Town Hall on LNG

Friday, June 3

7pm

Mary Winspear Centre
2243 Beacon Avenue
Sidney



Saturday, April 9 — Lakehill Little League Opening Ceremonies

Glossary

Natural Gas: Flammable gas, consisting largely of methane and other hydrocarbons, occurring naturally underground and used as fuel. Natural gas is a fossil fuel that burns much more cleanly than other fossil fuels such as oil or coal.

Unconventional Natural Gas (also called “fracked” natural gas): As conventional natural gas becomes scarcer, industry has discovered huge new supplies of unconventional natural gas through a process called hydraulic fracturing – or “fracking.”

In hydraulic fracturing, cracks – or fractures - in the rocks below the earth’s surface are opened and widened through the injection of chemicals and water at high pressure. This allows natural gas to be recovered, typically from shale.

Liquefied Natural Gas: Liquefied Natural Gas (or LNG) can be conventional or fracked. Liquefying the gas is done to make shipping and storage more economical by vastly reducing its volume. This is done through a complicated process ultimately super-cooling it to make the gas liquid. Once liquefied, natural gas is 1/600th of the volume it occupied in its gaseous state. LNG is kept at about minus 160 degrees Celsius. It is kept under four atmospheres of pressure (58.8 psi).

Global Trends in Natural Gas

Over the last few decades, Liquefied Natural Gas has been growing – and fast. From a 1990 level of global production of 50 MTPA, by 2007 production had grown to 160 MTPA. By 2014, global LNG production surged to 246 MTPA. One reason for the surge was innovations in LNG plant design, bringing down the cost. The other was the increase in fracked gas.

But just as the LNG bubble kept growing, the over-supply began to limit profitability. The price of natural gas is also tumbling, cutting into profits. In 2011, natural gas measured in million units of BTU sold for \$4.50 (USD). Now it is selling for less than \$2.

Put simply, the cost of getting fracked gas out of the ground is going up while the price – and demand – are going down.

By the numbers: BC LNG plans versus reality

12: the number of LNG terminals in BC already approved by the National Energy Board. Further approvals needed from the federal government environmental assessment.

251: the number of trillion cubic feet (tcf) of LNG exports already approved by the National Energy Board from BC.

2900: the number of trillion cubic feet of LNG the BC government states are marketable resources.

442: the number of trillion cubic feet of LNG the BC Oil and Gas Commission estimates are actually marketable resources.

37,800 to 43,700: the number of new wells that would have to be drilled by 2040 to meet the BC government export target – more than doubling the total number of wells drilled in northeast BC since 1954.

25 million: the number of gallons of water per well required for fracking in the Horn River Basin where a large portion of BC fracked gas will be produced.

39 to 103: the amount in tcf of LNG that Canada would need to import by 2035 to meet domestic needs if BC meets its export targets. In other words, BC’s export goals would force Canada into being a net LNG importer.

(from David Hughes, CCPA report, “A Clear Look at BC LNG.”)

Isn’t LNG good for the environment?

If we export it to China, won’t it reduce coal burning?

This is a complicated issue and requires a full life-cycle analysis to understand.

There is no question that just looking at the emissions when gas is burned, natural gas will produce far fewer greenhouse gas (GHG) emissions than coal. High efficiency natural gas-burning electricity plants can reduce GHG emissions by 70% compared to coal burning.

But that is not the whole story. When looking at natural gas versus coal, it matters if the natural gas is fracked or conventional. The GHG emissions must be considered from the whole production process. This is called “life-cycle analysis” or looking at “upstream emissions.” Although conventional gas also has some upstream emissions, the fracking process allows a lot more methane gas to escape. Escaped methane gas is referred to as “fugitive emissions.”

Methane is a very powerful warming gas. Unit for unit it has a much larger warming impact than carbon dioxide. We focus on carbon dioxide when looking at GHG because there is so much more of it emitted and because carbon dioxide has a much longer lifespan in the atmosphere. Carbon dioxide emitted from driving our cars today will still be disrupting the global climate in one hundred years. Methane hangs around about ten years. Still, over the same 100 year lifespan of carbon dioxide, the same volume of methane, will produce 34 times as much warming as carbon dioxide.

Studies have shown that if one makes a reasonable assumption of the amount of methane leakage from BC fracking and one assumes best-available technology in current coal burning in China, burning BC LNG in China could be much worse than burning coal.

As well, the Horn River Basin of British Columbia has a lot of carbon dioxide venting in its fracking process. In 2012, the carbon dioxide emissions from natural gas production in BC amounted to 2.4 million tonnes – or two-thirds the amount from BC’s cars.

The BC government estimates of its GHG releases from fracking have been reviewed by many experts and found to be far below the actual emissions. The methane and carbon dioxide emissions from gas production are exempt from the BC carbon tax.

When Prime Minister Trudeau met with US President Barack Obama in March this year, they made a number of climate pledges. One of them was to reduce methane emissions from the oil and gas sector. This promise could reduce the global warming impact of fracked gas. The Canada-US goal is to reduce methane emissions from oil and gas by 40-45% below 2012 levels by 2025.

Fracking Concerns

There are many concerns about fracking: chemical contaminants in groundwater, waste of water, methane emissions, as well as earthquakes. Fracking in the Horn River Basin in BC has caused hundreds of earthquakes - a fact the government does not dispute. Although so far most fracking-induced earthquakes have been relatively small, a new record was set in January 2015 in the Duvernay Formation in northern Alberta. High-volume fracking in that area triggered an earthquake hitting 4.4 on the Richter scale. Currently, there are bans on fracking in Quebec, Nova Scotia, New Brunswick, New York, as well as in Ireland and France.

Safety issues

LNG is a very dangerous material to store and ship. That said, the industry has an excellent safety record. Over the last fifty years, there has never been a major accident involving shipping LNG. Early LNG developments did have disasters. The largest accident was at an LNG plant in Cleveland, Ohio in 1940. The leaking natural gas escaped into the community and caught fire causing 130 deaths. Substantial technological improvements in materials and design followed this disaster. It is clear that the industry's safety record has a lot to do with strict self-regulation of the industry. Organizations like the Society of International Gas Tanker and Terminal Operators Ltd (SIGGTO) have set voluntary standards for the industry.

US government research after the 9-11 tragedy focused on the dangers of LNG spills over water. As the size of LNG tankers continues to increase, so too do the dangers. In the early 2000s an LNG tanker could hold 125,000 m³; by 2008 an LNG tanker could hold over twice as much – 265,000 m³. The typical new LNG tanker is over 1,000 feet long. The extensive government research in the US led to new rules and regulations. The primary aim of these regulations was the protection of its citizens.

Whether one is for or against Premier Christy Clark's commitment to tie the economic future of BC to the LNG industry, at a minimum, British Columbians would assume that the industry will be stringently regulated for the safety of all our citizens. But the more I dig into it, the more Canadian regulation of LNG reminds me of the way Transport Canada regulated the railcars perched on the hillside above Lac Megantic, Quebec. Following that disaster, Transport Canada began tightening up the rules.

We cannot afford to establish a highly dangerous industry without first ensuring we have a robust regulatory system to ensure public safety.

Unlike crude oil or bitumen, LNG is highly volatile and flammable. Taking a gas and making it a liquid allows it to be greatly reduced in volume (reduced by 600x). To make it a liquid it must be super-cooled to minus 160 degrees. Once natural gas is liquefied as LNG it will behave differently than when it is a gas. Liquefied natural gas is not immediately flammable.

While an LNG accident will not coat our coastlines with a toxic mess, a pierced hull can result in the ship going off like a bomb if there is a source of ignition and the LNG moves to a gaseous state, mixes with air and is diluted to 15%. If the LNG leaks from a tanker and pools above ocean water, the volume of LNG grows. As the liquid natural gas escapes its volume expands 600 times to a gaseous state. When over water, the gas can mix with water vapor and form a highly dangerous vapor cloud, which is heavier than air. The vapor cloud floats over the ocean, subject to local winds. As it disperses, mixing with the surrounding air and water vapor, the concentration of natural gas diminishes. Only when the natural gas component drops to 15% does the vapor cloud become highly flammable. Such a cloud could become enormous, covering a very large area both over water and over land. If it finds an ignition source, it can go off like a bomb. Protecting populations adjacent to LNG tanker routes is the responsibility of the governments.

In the US, there are two kinds of regulations to address these threats. One is a setback—or “exclusion zone”—preventing any other vessels anywhere near the LNG tankers. The setback zones

can be as large as 1.5 kilometres in all directions from the vessel. The US government is very concerned about LNG vessels becoming a terrorist target.

Canada has no such “exclusion zones.” The previous government claimed Canada did not have the same terrorist risk. Odd, since C-51 was justified based on claiming Canada was being specifically targeted by jihadi extremists—but LNG tankers are just fine. The new government plans to have exclusion zones. LNG industry sources tell me they do not expect to have exclusion zones more than 250 meters.

Meanwhile there are also US rules about the proximity to populated areas along the LNG tanker travel routes to ensure toxic gas clouds cannot form and annihilate a community in an accident. This second type of regulation is known as a “hazard zone” in the US.

The LNG Canada project proposed for Kitimat BC has already been reviewed by Transport Canada. In a document prepared by Transport Canada, it is claimed that the best science used in the US, from the Sandia National Laboratories calls for avoiding critical infrastructure or populated areas within 250-750 meters. The report provides a footnote to a Sandia report. But when you go to that footnote, the zone considered at risk is not the 250-750 meters claimed in the Transport Canada report. In fact, Sandia estimates the danger zone at beyond 1600 meters. Transport Canada will have to explain how and why they cited an erroneous margin for safety.

A paper by the California Energy Commission (“Liquefied Natural Gas in California: History, Risks and Siting”) sets out the size of some of the exclusion zones in the United States. The exclusion zone around the Cove Point LNG plant in Maryland is over 1000 acres. An LNG plant in Elba Island, Georgia covers 840 acres. As of now, Canada has no regulations in place for required setback zones.

Environmental Impacts

Getting natural gas to liquid form involves cooling it to minus 160 degrees C. A great deal of heat is produced in the process. Therefore, a cooling system is a critical component of the plant. Sea water is pumped out of the ocean, chemically treated and spewed back into the ocean at 10-20 degrees warmer than when it was removed. This is known as Once Through Cooling. A far superior method involves a closed loop cooling system with cooling towers. Closed loop cooling systems do not discharge dead, heated water back into the living ocean.

In the US, there are regulations in many jurisdictions to deal with the amount of waste heat dumped into the waterways near the LNG plant itself.

In 2010, California took action to phase out and ban Once Through Cooling systems. After extensive research, New York decided that Once Through Cooling was dangerous to marine life. Research determined that in the water intake process, “millions of fish, larvae, eggs, seals, turtles and other creatures are killed each year because they are either trapped against the screens or are drawn into the cooling system where they are exposed to high pressure

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Your opinion matters!

What matters to you is important to me, and I want to know your priorities!

Please take a moment to answer the questions on the right, cut along the dotted line, and mail your opinion back to me postage free. You can also go to my MP website www.elizabethmaymp.ca and complete the survey online.

If you have more than one person in your home, feel free to contact my constituency office in Sidney at 250-657-2000 to get additional copies of the survey mailed to you.

Thank you!

Do you believe governments should put in place a moratorium on fracking in BC?

☐ Yes ☐ No ☐ Not Sure

Do you support the further development of the LNG industry in BC?

☐ Yes ☐ No ☐ Not Sure

Would you support LNG if the BC government received more in royalties and paid less in subsidies?

☐ Yes ☐ No ☐ Not Sure

Do you want the federal government to regulate exclusion zones and setbacks as is done in the US?

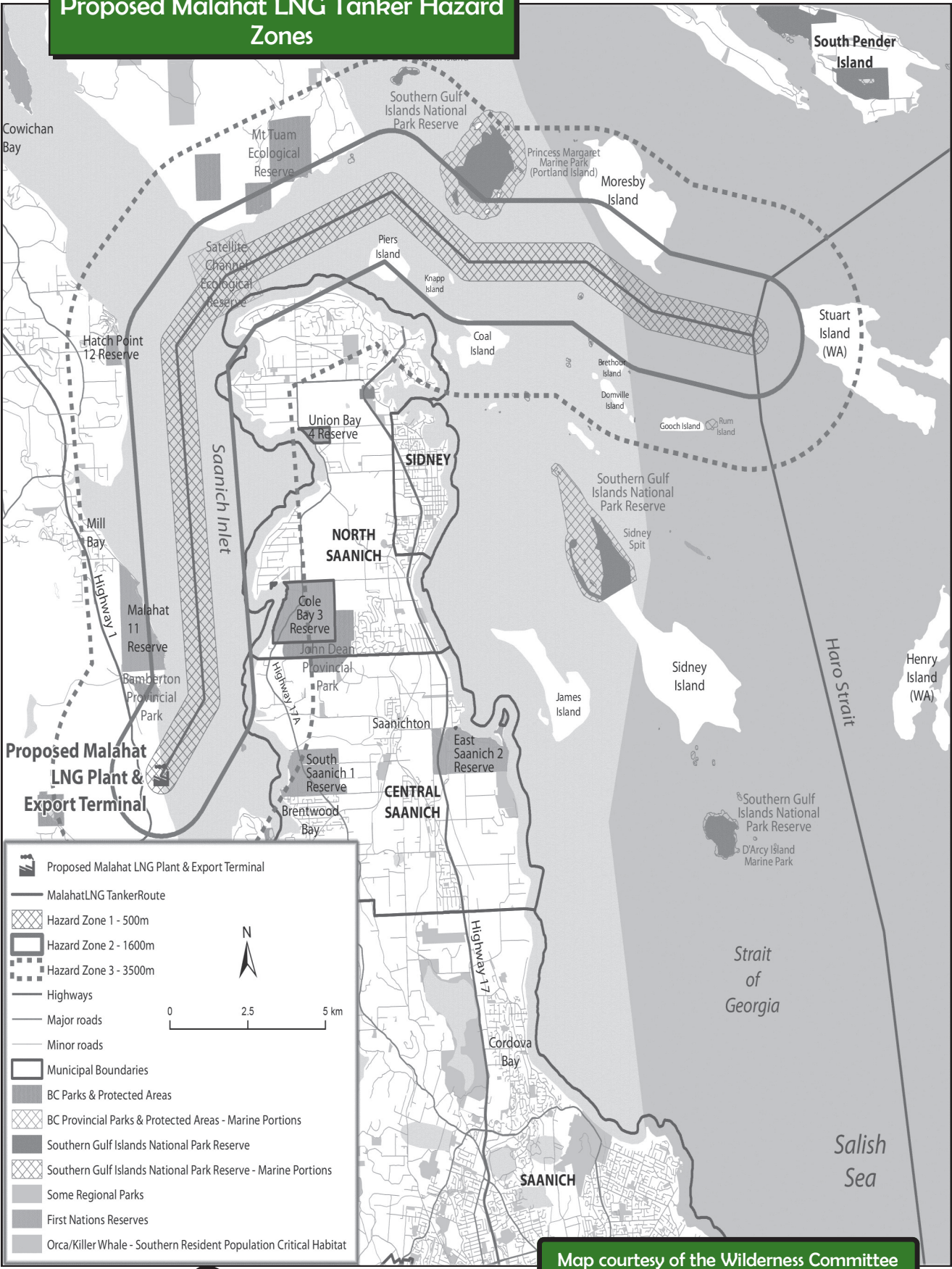
☐ Yes ☐ No ☐ Not Sure

Environmental Impacts continued

and heat. The marine life that is killed is mainly at the base of the food chain and that can adversely affect the future of certain species and adversely impact recreational and commercial fishing.” Because of its incredible volume the chemically treated heated water does damage, particularly in smaller enclosed waterways, like Howe Sound or the Saanich Inlet. Every new major LNG facility proposed in BC is proposing to use the superior Closed Loop Cooling system. That is, every major new LNG facility, except the Woodfibre plant planned for Howe Sound and Steelhead LNG attempting to be approved in the Saanich Inlet.

In the case of Steelhead LNG, the cooling will be done by taking in ocean water, and then dumping it back in the inlet, ten degrees hotter than the intake. The water will also be chlorinated. The volume at Steelhead’s facility will be 50,000 tonnes/hour (1,200,000 tonnes/day) of warmed water dumped back in our small enclosed inlet. Any LNG facility on our waterways must use closed loop cooling systems. As a federal MP, I will work to ensure regulations are put in place ahead of the approval of plants without proper regulation.

Proposed Malahat LNG Tanker Hazard Zones



The floating Steelhead LNG plant proposed for the Saanich Inlet

It is impossible to imagine how the project could proceed as proposed with reasonable exclusion and hazard zones for the movement of the LNG tankers or for protection of adjacent communities from the risk of accidents.

We should insist as well on the best available technology – closed loop water cooling systems. Given the lack of available space for such a system, it would seem likely this regulation would eliminate the risk of the project.

What does LNG mean for BC’s energy future?

The need for energy to power the fracking in northeastern BC is the primary driver for the massive \$9 billion Site C project. The Site C Dam threatens to flood over 100 km of the agriculturally productive Peace River Valley. It also violates Treaty 8 First Nations treaty-protected rights.

The federal-provincial environmental review also found that it would cause permanent environmental damage, while also threatening the health of BC’s finances. It would place an unnecessary strain on BC’s economy and will drive up costs for hydro.

Still, it would be great to expand BC’s economy with renewable energy that could be exported to help shut down coal elsewhere. We should be giving financial support for homeowners to install solar panel on their roofs, explore the enormous potential for geothermal, as well as wind energy and the newer technology to capture the energy of our tides.

BC should ensure a surplus of green and renewable energy for export. Building Site C is neither necessary nor the most economical way to move to meet export demands.

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