
INFORMATION BULLETIN

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Ministry of Energy and Mines

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B.C. puts LNG power commitment into regulation

VICTORIA — Minister of Energy and Mines Rich Coleman announced today that British Columbia's Clean Energy Act has been updated to enable the use of natural gas to power liquefied natural gas (LNG) plants. Effective immediately, LNG export facilities, and the electricity generation used to power them, are excluded from the Clean Energy Act's 93 per cent clean and renewable energy requirement.

Premier Christy Clark announced government's intention to clarify its clean energy policy to include natural gas last month during a meeting with the Business Council of British Columbia.

This change will ensure the LNG industry can access a reliable, timely and cost-competitive mix of gas-fired and renewable power generation to meet its large electrical demand. The 93 per cent clean energy target will continue to apply to non-LNG load and will ensure the majority of B.C.'s power requirements will be met with renewable resources.

The Province will have world-class air emissions standards for gas-fired power generation to support LNG plants. This will apply to both high-efficiency combined cycle gas generation and simple single cycle peaker plants, where they may be required, by developing policy to guide both BC Hydro procurement and environmental reviews. All infrastructure built will be subject to B.C.'s environmental assessment process.

As part of the BC Jobs Plan, British Columbia has a goal of three LNG facilities in operation by 2020. The construction of three large LNG and connecting pipelines could result in up to 1,400 ongoing jobs and \$600 billion in gross domestic product over a 30-year time frame.

To learn more about British Columbia's natural gas sector, including full details about government's LNG goals, visit: gov.bc.ca/ener/natural_gas_strategy.html

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Clean Energy Act regulation - LNG

QUESTIONS AND ANSWERS

DRAFT

What are you announcing today?

- We are excluding the electricity generation used to power liquefied natural gas (LNG) plants, from provincial 93 per cent clean or renewable energy target (in the Clean Energy Act).
- The change is specifically meant to help meet a large electrical demand for LNG projects moving forward. It will ensure the LNG industry can access a reliable, timely and cost-competitive mix of gas-fired and renewable generation to meet its large electrical demand. The 93 percent clean energy target will continue to apply to non-LNG load and will ensure the majority of B.C.'s power requirements will be met with clean or renewable resources.

The Premier announced that government would pass a regulation that makes natural gas-fired generation "clean" for the purposes of supplying LNG projects - why does the regulation not do this?

- The change made has the same effect.

What is the Clean Energy Act's 93 percent objective?

- [Clean Energy Act](#):

Definition: "clean or renewable resource" means biomass, biogas, geothermal heat, hydro, solar, ocean, wind or any other prescribed resource;

From Part 1.2:

"The following comprise British Columbia's energy objectives: (c) to generate at least 93% of the electricity in British Columbia from clean or renewable resources and to build the infrastructure necessary to transmit that electricity;"

Why is LNG important?

- With the emergence of shale gas supply in North America and flat demand for natural gas, the price of natural gas has dropped significantly. The price of natural gas is much higher in Asia and B.C. is well positioned to supply that market – we have a huge supply of natural gas to meet new demands.
- The growth and diversification of the natural gas sector – specifically liquefied natural gas (LNG) - is essential. Access to new markets will increase the value of B.C.'s natural gas, which will in turn strengthen B.C.'s natural gas sector and the benefits it creates. Without the overseas export market that LNG provides, there would be little, if any, new development of B.C.'s remote gas resources.
- This is a unique, historical opportunity for the Province: the opportunity to create a brand new industry that will create jobs, revenues and prosperity for British Columbians.

How exactly would natural gas be used to develop LNG?

- LNG facilities use compressors in the manufacturing process required to cool natural gas to the required minus 160 degrees Celsius.
- There are two technologies that can be used to produce LNG: gas-fired direct drive compressors and electric compressors.

- With revised policy in place, BC Hydro will be in a position to provide proponents cost-competitive electricity supply that would include gas-fired generation supply.
- Electric compressors are more efficient than gas direct drive, and an electric-drive solution would lead to lower emissions than direct drive.

What about BC Hydro? Can they not meet the electricity demand for LNG?

- British Columbia is facing significant growth in its energy demand with anticipated resource development, including both LNG and mining developments.
- In the draft Integrated Resource Plan it recently released, BC Hydro identified this power gap, something that has been evident to government for some time, and something we acknowledged in our LNG strategy. That has driven the policy change to self-sufficiency, informed our work on treatment of natural gas power generation for LNG liquefaction, and shored up our support for IPPs and Site C.
- Having electricity ready when and where it's needed is essential to supporting new economic development – whether it's new homes, new mines, the high-tech industry or natural gas companies looking to hook up to our clean electricity grid.
- By revising our policy, we are taking immediate and focused action to ensure we can power our LNG industry in the long term. BC Hydro will have the flexibility it needs to serve the LNG industry in the most effective way possible.

Can the electricity demand for LNG plants be addressed in the short term?

- Yes. With a few transmission system upgrades, B.C. Hydro has enough system capacity to deliver power to the two LNG facilities that have export permits (Douglas Channel and Kitimat LNG). In the near term there is a surplus of power in advance of these two plants coming into service.
- With this policy change, we are taking action to address future needs, including Shell's recently announced LNG Canada project.

How many gas-fired plants will be required to power the three LNG projects by 2020 goal set by the BC government?

- With a few transmission system upgrades, B.C. Hydro has enough system capacity to deliver power to the two LNG facilities that have export permits (Douglas Channel and Kitimat LNG). LNG Canada, the recently announced project proposal by Shell and their Asian joint venture partners, will drive additional power needs that may be served by natural gas fired power generation.
- There are a number of potential configurations of gas-fired plants that are currently being examined. The exact number of plants will depend on the technology chosen and ongoing discussions with LNG proponents. Under any scenario, we are focused on B.C. having the cleanest LNG industry in the world.

Didn't you commit to powering the LNG industry with clean electric power and renewable resources in February? What's changed?

- We are still supporting our original commitment, but time has passed and we are making a smart decision in order to ensure an internationally competitive LNG industry can be developed moving forward.

- Renewable resources will still be part of our electricity mix for LNG.
- LNG is a major economic prospect for B.C. – A potential to add GDP of \$20 billion a year over 30 years. Given the scale of the energy that is needed, and the fiscal capital planning industry needs to do, it is essential the Province put the policies in place to make it all happen.

What about the commitment made in the LNG strategy to have proponents contribute capital to building power-producing infrastructure (to protect ratepayers)? Why is industry not building new clean energy projects instead of relying on natural gas?

- This commitment still stands – industry will be investing in new infrastructure for LNG, but industry also needs to remain competitive and action is required now so development can happen quickly (so B.C.'s natural gas can be competitive in the marketplace).
- B.C. has a long history of meeting electricity demand using renewable power, but LNG requires a lot of power to move forward.
- This policy change means natural gas is an option for the LNG manufacturing process; it does not mean it is the only option. Electricity based on clean or renewable resources will remain an important part of our energy mix, and an important part of the energy solution for LNG.

Does this policy change not discredit or damage the opportunity for wind power projects and other clean energy producers to help with LNG's power needs?

- No. This policy change helps ensure that there can be a role for renewables in supplying LNG by making sure that electricity supply - a mix of gas and renewables - is competitive with LNG proponents' alternative of direct gas-fired mechanical drives.
- Our objective of generating at least 93% of the electricity in British Columbia from clean or renewable resources still stands for electric load requirements outside of LNG production, so most of B.C. electricity generation and load demand will remain subject to the 93 percent objective.
- We believe the direction we are taking creates opportunity for clean energy producers. Natural gas is a reliable power source. It is often partnered with renewable power sources around the world like wind and solar to ensure electricity generation is reliable. Natural gas provides 'firm service' – it provides power for intermittent renewable supplies, and LNG proponents are more likely to use renewable energy if they can have the guarantee that natural gas can be used to ensure power is always available.
- BC Hydro will still deliver a blend of renewable and gas-fired power to LNG facilities. The volume and timing of renewable power requirements will depend on completion of current discussions with LNG proponents.

What is the competitive price for LNG proponents for electricity supply?

- We are negotiating this with LNG proponents and our policy change supports those discussions.

What does all this mean for residential BC Hydro rate payers?

- We are committed to keeping rates affordable for the people of British Columbia.
- Two main initiatives will help us achieve this: 1) The Province will require LNG proponents to contribute to power infrastructure and new energy supply for their large projects; and 2) Government has amended its self-sufficiency policy to mitigate rate increases.

- The policy change we announced today will keep rates competitive for LNG proponents (industry) so B.C. remains an attractive place to host export terminals.

How can you say B.C.'s LNG will benefit the global environment? Aren't you just adding to the increasing power demands Asian countries have?

- B.C. is a clean energy leader and climate change is a global issue. By exporting LNG, B.C. will be supplying growing markets with the world's cleanest burning fossil fuel – it will be an energy alternative to higher emission energy sources (like coal and diesel).
- Government will undertake ongoing analysis of the energy mix in jurisdictions where BC's LNG is delivered. Initial analysis has pointed to a significant net GHG emission benefits from avoiding new coal-fired power generation and allowing for greater use of natural gas in the transportation sector compared to diesel.
- To provide an idea of the benefit we can enable, our assessment of exporting 2 trillion cubic feet LNG per year is equivalent to:
 - 60 million households worth of annual gas consumption;
 - or the power equivalent of more than 70 nuclear facilities, more than the energy equivalent of Japan's entire nuclear capacity,
 - or approximately 100 average sized coal plants

Why was this policy change not debated in the legislature?

- LNG is a competitive, rapidly expanding global industry and B.C. needs to act now to make it work. BC Hydro and the Province have been in discussions about power supply requirements with LNG proponents since the release of the BC Jobs Plan. In order to keep B.C.'s natural gas sector competitive, immediate action is required.
- We are not the only jurisdiction looking to build LNG infrastructure. This is a policy decision that makes sense because it ensures LNG project planning and capital investment can move forward without delay.

Why not wait for BC Hydro's Integrated Resource Plan (IRP)? Wouldn't it have been better to wait until that assessment was completed?

- BC Hydro and the Province have been in discussions about power supply requirements with LNG proponents since the release of the BC Jobs Plan. We already know we are facing a power gap in the future. We also need to act quickly so industry can develop and prepare for the marketplace – we are not alone in our race to capture Asian markets.
- BC Hydro currently has two permitted LNG projects in its base load forecast – Kitimat LNG and the smaller Douglas Channel LNG projects. With the policy change we are taking, BC Hydro will need to modify the IRP. We believe BC Hydro will make these changes and complete consultations and still submit its final IRP to government by the current due date in early December 2012.
- LNG development is material to the IRP, and it's important that BC Hydro be able to make an informed assessment of the options before completing the IRP.

Aren't you giving preferential treatment to LNG proponents, at the expense of other industry and of residential ratepayers?

- No. LNG proponents will not have access to embedded cost rates that other customers benefit from.
- We have already made a decision on rate increases that protects the interests of residential ratepayers and supports affordability, which is a key goal of our government.
- As for industry, we are working to keep energy rates low so B.C. remains an attractive place to invest and build LNG infrastructure. By implementing this policy change, BC Hydro can increase their consideration of gas-fired generation to provide service for future LNG customers. B.C. will be cost-competitive.
- Our targeted approach will enable us to continue to balance our goals of competitiveness, leadership on climate change, and affordability.

If you are allowing the LNG industry to access cheap power by burning natural gas, why don't you do the same for other industries, and improve their bottom lines as well?

- The Province of British Columbia is committed to maintaining leadership on climate change. We said in February and we continue to plan on the basis that clean and renewable sources will form a significant portion of the power required for this new industry.
- We have an energy gap that must be addressed, and the tools are well within our reach. Clean and renewable sources will continue to provide the vast majority of British Columbia's power needs, and will keep B.C. at the forefront of climate change leadership. Our natural gas exports will displace higher carbon energy sources in Asia and will help achieve global greenhouse gas reductions.
- The LNG industry is not getting a break on prices. Existing industrial customers currently pay lower electricity rates than the cost of new natural gas generation because of their access to heritage power.

Didn't you close Burrard Thermal except for emergency use in 2009 claiming that it was "dirty" power? Why the shift and are you going to use Burrard more?

- LNG facilities will be served by newer, more efficient generation than Burrard.
- The purpose of this regulatory change is not intended to lead to increased use of Burrard.

Does this mean government will lose out on royalties from that gas that is used to manufacture LNG?

- No. The gas would essentially be sold to anyone who uses it for electricity, so government would still receive royalty revenue.

How exactly does the Province require LNG proponents to contribute capital to operations (so rates are kept low)? This was documented in your LNG Strategy...

- The Province is undertaking negotiations with individual proponents, based on their requirements and cost of infrastructure needs. Simply put - Industry will be required to contribute to the cost of new infrastructure that will power the liquefaction process to manufacture LNG.
- The cost that will be incurred by proponents will be paid for through long term power contracts.

In light of the fact that urgency is key - does the BC government plan to financially support/subsidise the construction a gas-fired plant?

- No, the BC government does not intend to financially support or subsidise the construction of a gas-fired plant. To help maintain a balance between affordable electricity rates and economic growth, the Province's LNG Strategy requires LNG proponents to contribute to the cost of infrastructure development and electricity supply required to serve each operation.
- Following the change under the Clean Energy Act, natural gas-fired generation will be an option for the LNG manufacturing process. It does not mean it is the only option. Clean energy projects and renewable sources will remain an important part of our energy mix, and part of the energy solution for LNG.

Is it true, according to the recent report from the Canadian Centre for Policy Alternatives, that ratepayers are paying more and more for electricity as the demand from mining, oil and gas companies continues to grow?

- Canadian Centre for Policy Alternatives' new report is not true - B.C. families are not subsidizing industry's growing power needs. We share the benefits of our low-cost heritage hydroelectric assets between existing and new customers.
- To help maintain a balance between affordable electricity rates and economic growth, new, large industrial development like LNG contributes to the cost of electricity supply and infrastructure.
- Having electricity ready when and where it's needed is essential to supporting new economic development – whether it's new homes, new mines, the high-tech industry or natural gas companies looking to hook up to our clean electricity grid.
- We remain committed to keep rates low for British Columbians.

There are already a lot of LNG projects being built, or built, around the world – is there room for B.C. in the marketplace?

- Global LNG demand is increasing and the 'demand vs. supply' conditions world-wide support accelerated LNG growth.
- There is a projected gap in supply to meet projected demand, especially when growth in Asia is considered. This means B.C.'s LNG can be part of the marketplace that supports diversification of the energy portfolio mix in Asia.
- We are not the only jurisdiction looking at this, so maintaining our competitiveness in a timely fashion is essential for our plans to come to fruition. There is time, but we need to act quickly and we are.

With B.C. and others joining the LNG race, what will happen to the price advantage of selling natural gas to Asian markets? Will this hurt the long-term future of the industry?

- Asian natural gas prices have remained in the US\$16 per million British Thermal Units (MMBtu) range, while North American prices are still moving in the US\$2.5/MMBtu range.
- Even after subtracting the costs for transportation, manufacturing and shipping, Canadian natural gas is still competitive in the global LNG market.
- Although some analysts argue that prices in Asia and North America will converge, that is not the nature of the LNG market - LNG is priced based on crude oil and long term contracts (usually 20 years).

How much natural gas will be needed to power B.C.'s LNG industry?

- The detailed technical studies to determine the amount of natural gas fired generation that might be required are underway.
- We know that we are facing a power gap and that we need to act quickly, so industry can develop and prepare for the growing LNG market. BC Hydro's draft Integrated Resource Plan is currently out for public consultation. It maps out how BC Hydro will meet the province's growing need for up to 50 per cent more electricity over the next 20 years, including LNG development.

If gas-fired generation is used by LNG proponents, where will this gas come from?

- Natural gas used to manufacture B.C.'s LNG will most likely be from B.C. and would be supplied via pipeline from northeast B.C.

How long can we support an industry which will be both using and exporting a non-renewable energy resource?

- British Columbia is a premier natural gas producing province. We are home to new resource development and the best, most modern technology. We have a vast supply of natural gas to meet global demands and create new opportunities.
- If the three LNG facilities that are currently proposed - Kitimat LNG, Douglas Channel LNG and LNG Canada - are operating by 2022, exports could grow up to about 2 trillion cubic feet (tcf) per year.
- B.C. currently has reserves estimated at 109 tcf per year, but this number is growing as new resources are being discovered and the technology improves for 'unconventional' exploration. When we factor in the gas that might be used to manufacture LNG, as well as other exploration activities that will be happening across the province, we can support industry for 50-80 years.

Can you break-down where B.C.'s natural gas is located and how much is available?

- There are four primary natural gas resource plays in northeast B.C.:
 1. The Horn River Basin
 2. The Cordova Embayment
 3. The Montney Play with
 4. The Liard Basin with
- In total there may be more than 1,000 Tcf of natural gas in place in the ground, but only a portion can be extracted and marketed economically. An assessment completed in May 2011 estimated there was between 61 and 96 Tcf of marketable gas in the Horn River Basin alone. A similar assessment of the Montney play will be completed in Fall 2012.

How can B.C. support more natural gas use when it means more shale gas extraction/hydraulic fracturing activities?

- B.C.'s natural gas sector, including hydraulic fracturing is conducted with the highest safety procedures possible.
- Hydraulic fracturing has been taking place in B.C. since the 1960s - for the better part of a decade it has been used to unlock our province's massive potential for shale gas development.

- In order to access a large portion of B.C.'s natural gas, hydraulic fracturing is required. Without access to our natural gas, B.C. would lose investment capital; jobs; prospects for the service sector; economic activity in our rural northeast communities, and the opportunities we are creating with LNG.

There is a lot of discussion about the safety of the oil and gas industry - Is LNG transport safe?

- Yes. LNG has been safely transported, and used, around the world for roughly 50 years. The industry has an excellent safety record. Safety procedures are detailed.
- LNG is non-toxic, odourless, non-corrosive and less dense than water. It is a stable, low risk fuel. If it spills, LNG will warm, rise and dissipate.

What about B.C.'s exploration and production activities on land? Is it safe?

- Yes .
- British Columbia's regulatory framework was updated in 2010 with the introduction of the Oil and Gas Activities Act. Eight years of planning and consultation on the Oil and Gas Activities Act took place concurrently with the increase in unconventional gas interests in the province.
- This Act situated British Columbia as a leading in safe and responsible natural gas practices, modernizing the province's legislation and regulations associated with oil and gas activities. Specific regulations that deal with environmental impacts include:
 - Casing Requirements (water protection): Drilling and Production Regulation (Section 18)
 - Fracturing operations and hydraulic isolation: Drilling and Production Regulation (S. 21-22)
 - Storage and Disposal of Wastes: Drilling and Production Regulation (S. 51)
 - Water Objectives: Environmental Protection and Management Regulation (S. 4, 9-10, 35).

What is government doing to ensure the natural gas sector remains safe?

- British Columbia will continue to shift its resources and regulatory structure to address the operating environment of our province.
- The BC Oil and Gas Commission is constantly working to keep our new, strengthened regulatory framework up-to-date. Regulations are continually reviewed by experts, and adjusted if required.
- We continue to make improvements. Just this year, B.C. became the first jurisdiction in Canada to make it mandatory for industry to disclose the contents of their hydraulic fracturing fluids.
- A joint study between the Province, Geoscience BC and the BC Oil and Gas Commission is currently under way to more accurately map water sources in northeast British Columbia.

How does this affect the carbon offset commitments made in the BC Energy Plan?

- These requirements have yet to be put into force. The Province of B.C. currently assessing how they will best be implemented. We already have strong clean energy policies in place and will continue to reduce GHG emissions moving forward.
- Our government wants to ensure that LNG developers have some certainty on their financial exposure to carbon costs, and will examine the offset policy in the context of the carbon tax review that is currently under way.

What about carbon capture and storage? Why is it not a part of the solution here?

- Progress on carbon capture and storage is happening and is an action item in our Natural Gas Strategy, but it is not yet ready for implementation. We are developing a regulatory framework now. Regulations are required to address emissions reductions, verification and monitoring, as well as long-term stewardship and liability.

What about the delay Kitimat LNG recently announced for their operation? Is that a concern?

- The creation of a LNG export industry – a totally new industry to B.C. – will not happen overnight, but since the release of the BC Jobs Plan last year, we have made significant progress in facilitating growth in diversification in our natural gas sector.
- LNG is a competitive, rapidly expanding global industry. We are aggressively promoting our LNG potential. We have reached out to investors and continue to build strong relationships in Asia. The BC Jobs Plan is attracting vital private sector investment.
- The recently announced LNG Canada project is the latest highlight of our progress. This is a major project proposal by Shell and their Asian joint venture partners who obviously see the potential in building a LNG industry in B.C.
- With another LNG operation already planned – the BC Douglas Channel project - and more proponents investigating possible development, we are well on our way of reaching our goal of three export facilities by 2020, as stated in our LNG Strategy.

What does LNG mean for investment? Growth?

- Construction of just three larger LNG facilities and more than 1,500 kilometres of pipeline could result in up to 60,000 person years of employment and up to 1,400 ongoing jobs being created.

What about skills training?

- In order to address skills shortages forecasted in the oil and gas industry, our government is training B.C. workers for these new opportunities. Some jobs that need filling include instrument technicians, LNG train board operators, and reliability engineers, just to name a few. We will ensure the over \$500 million provided annually for labour market training programs is targeted to meet regional and industry demands, including those of the LNG market.

What does LNG mean for government revenue?

- Government will receive incremental revenue from LNG development. Based on higher production volumes alone, at least \$1 billion in incremental royalties could be achieved by 2020 from the first three LNG projects.

How significant can B.C.'s LNG contribution be to the global energy supply moving forward?

- If the LNG industry develops as expected, B.C. could be on the top five LNG exporters in the world – with production of approximately 25 million metric tonnes annually.

What about First Nations?

- Aboriginal people have a crucial role in the BC Jobs Plan and our LNG strategy. First Nations have worked with the B.C. government and industry on LNG plans in Kitimat – they will benefit with jobs and business opportunities.

- By working in partnership with Aboriginal people and local communities, we can reach our goals of new investment and job creation while protecting the environment. The creation of the Aboriginal Business and Investment Council is an example of our commitment to ensuring Aboriginal people across the province are a part of B.C.'s LNG economic future.