



# Potential LNG Revenue to the BC Government

Ministry of Energy, Mines and Natural Gas

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# Introduction and Summary of Findings

## Background

The Ministry of Energy, Mines and Natural Gas (the “Ministry” or the “Province”) is currently evaluating proposals for the development of liquefied natural gas infrastructure (“LNG”) in British Columbia. As part of the evaluation, the Province is analyzing the potential Provincial revenues under various LNG development scenarios. Grant Thornton LLP (“we”, “our” or Grant Thornton”) understands that at the time of the analysis, the Province had not taken any formal position with respect to the potential revenue framework which may or may not be implemented to facilitate this infrastructure development.

We were engaged by the Province to perform a review of a financial model previously developed for the Province that estimates revenues of the assumed LNG. The purpose of this engagement was to review the model for methodology, approach, selected input parameters, and to assess the appropriateness of the same. Upon the completion of our review, we revised the model as required to compile a range of potential future Provincial revenue from LNG.

A list of defined terms, which are used throughout this report, is included below.

## Definitions

The following definitions support our discussion on the revenue impacts of the proposed LNG projects.

**Capex**– Funds used by a company to acquire or upgrade physical or capital assets.

**Downstream components of an LNG project**– LNG liquefaction and purification plants inclusive of LNG trains, condensate handling facilities, loading facilities for exportation, and a pipeline to transport the gas onshore.

**EIA Price Forecast** – the US Energy Information Administration that provides summarized market data pertaining to the US natural gas market, including but not limited to prices, supply and consumption. The EIA Price Forecast utilized in this analysis is the 2012 version.

**Potential Provincial revenue** – includes:

- Corporate income tax – only the BC portion
- Personal income taxes (for direct, indirect, and induced employment)
- Royalties
- Provincial Sales Tax (PST)
- New LNG revenue framework

Excluded revenue sources are:

- Carbon tax
- Any indirect and induced tax revenues beyond personal income tax

**Leverage** – the amount of debt used to finance a company’s assets.

**Liquefied Natural Gas** – the liquefied state of natural gas which is created by cooling the gas to approximately -160 degrees Celsius. Energy companies change the state of natural gas into liquid form mainly for ease of transport overseas.

**MTA** - million tonnes per annum

**Opex** – operating costs

**Royalties** – usage-based payments made by one party to another. The Province charges royalties on natural gas.

**Upstream** – includes processing and delivery to export terminals or domestic gas transmission pipeline in-take

## Summary

The total estimated cumulative Provincial revenues are as follows:

Expressed in billions (2011 to 2038 <sup>1</sup> )	Low	High
Total provincial revenues – Base Case	\$130	\$180

The revenue estimate above is reflective of a base case scenario of 82 MTA for the assumed 5 plants. The high and low range is reflective of a range of assumptions utilized in the financial model, as described in the report section titled “Base case assumptions”, below.

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<sup>1</sup> Pre-project construction and LNG project construction period commences 2011; operating period revenue estimate period is 20 years ending 2038.

Further, Provincial revenue was estimated for a high capacity scenario whereby we assume 120 MTA of capacity for the assumed 5 plants. Under this scenario, Provincial revenues are estimated at \$160 to \$270 Billion over the period.

The Provincial revenue estimates presented above have been compiled based on sets of assumptions and other information available at the date of this report. Financial estimates are subject to change and such change can have material impacts on the Provincial revenues (for example, world LNG prices, plant configuration, employment costs, etc.).

#### Base case assumptions

The key assumptions provided to us by the Province included the EIA price forecast, CBOE price forecast, Opex and Capex. We applied a 20% reduction to the EIA price forecast in order to establish the low end of the range of Provincial revenue. The unadjusted EIA price forecast reflects the high of the range.

We have adjusted the Opex results by 15% on the low end of the range (assuming costs will be 15% higher) and by 10% on the high end (assuming costs will be 10% higher). We have adjusted Capex by 25% on the low end of the range (assuming costs will be 25% higher) and by 10% on the high end (assuming costs will be 10% higher than that forecast by the Province).

Other key assumptions impacting the estimates include the financial structuring of the proponents (on an aggregated basis), the cost of borrowing, the net Provincial tax rate, the Provincial royalty rate and the quantum of MTA capacity. The timing of the operating revenue estimation framework spans 20 years in the model, commencing 2018.

The estimated direct, indirect and induced full time equivalent jobs resulting from construction and operation were provided by the Province based on another study provided by Grant Thornton LLP.

The model does not project revenue on a stand-alone project by project basis. The financial model is an aggregated model summarizing potential revenue for 5 plants. We have assumed that this aggregated approach (as opposed to a plant by plant approach) does not materially impact the results.

Given that the financial model was not prepared on a project by project basis a direct analysis of the development and operating cost modeled to actual projects was not possible. However, we utilized our knowledge and understanding of various infrastructure projects to assess the implied average project cost based on the assumptions provided by the Province. Our experience has been gained from involvement with North American energy infrastructure projects including LNG operations (Canada and United States) and LNG infrastructure projects in Australia.

# Scope and Information relied upon

## Scope of work

The scope of work for this assignment included the following steps and is described more fully in the section Processes and Methodology, below:

- Analyze the Australian tax regime as it pertains to LNG revenue and natural gas in general;
- Obtain a detailed understanding of the financial model prepared by the Province and its advisors;
- Gain a sufficient understanding of the possible BC LNG framework as provided by the Province;
- Analyze the base case scenario information (number of plants, opex, capex, revenue estimate, capacity, timing, etc.) as provided by the Province;
- Liaise with the Province and incorporate their assumptions and parameters into the model. Make adjustments as necessary to arrive at high and low revenue estimates based on a range of assumed potential outcomes. Please refer above to the definition of Potential Provincial revenue for a description of potential revenue sources.

The scope of work for this assignment has been limited to a review of the projected revenue estimates based on assumptions provided by the Province and its advisors and not a review of a feasibility study and / or business plan of any particular LNG plant(s) and may not reflect assumptions for any particular plant(s). Accordingly, there may be pertinent information in the feasibility studies and/or business plans for the LNG projects which could have a material impact on our analysis.

The revenue estimates do not include any Federal Government or other Provincial revenues which include indirect and induced tax revenues beyond personal income tax. Further, while carbon tax is not included in the revenue estimates, it was calculated because it is an eligible expense for income tax purposes.

Please note we have not audited any of the underlying information or data contained in this report.

## Information relied upon

In completing this review, we relied upon the following documents and information.

- The aggregated financial model prepared by advisors to the Province, inclusive (but not limited to):

- Capacity estimates measured in MTA, provided by the Province and its advisors;
- Total estimated Capex required to build the LNG projects, provided by the Province and its advisors;
- Estimated annual Opex for the LNG projects, provided by the Province and its advisors;
- Construction schedule for the LNG projects, provided by the Province and its advisors;
- Direct, indirect and induced estimates for annual employment related to operation of the LNG projects, provided by the Province based on another study prepared by Grant Thornton LLP;
- Assumed percentages of Provincial revenue, inclusive of estimates of revenue leakage;
- EIA Price Forecasts and CBOE Price Forecast;
- Various correspondence with Grant Thornton LLP tax advisors in Australia, inclusive of information gathered on LG operations, construction and tax regimes and our experience from actual energy infrastructure projects in North America including LNG terminals; and,
- Various correspondence with Provincial officials and their advisors.

# Processes and Methodology

## Process and methodologies

To prepare this revenue summary report, we used base case scenario information, analysis and data provided by the Province and its advisors (including the model of Australia prepared by the Provinces advisors) with regard to plant size, capacity, development cost and operating costs, utilizing the timeframe as noted above under Base Case Assumptions. Our process and methodologies are summarized as follows.

We reviewed the model prepared by the Province's advisors for completeness in terms of interaction between the Australian royalty regime, Australian Petroleum Resource Rent Tax legislation, and Australian income tax legislation, as Australia is an important competitor jurisdiction in the Asia Pacific market.

We were provided a possible BC LNG revenue framework by the Province as outlined in the Base Case Assumptions which was used to adjusted Australian-based model where appropriate.

We compiled a range of financial estimates that applied the BC revenue framework, with an objective to present a range of results according to the range of assumptions and scenarios applied. To develop the estimate of total potential Provincial revenues, an aggregated financial model was prepared based upon the assumptions listed above. This required the development of a financial model which includes the infrastructure development period for the upstream, pipeline and downstream operations. Upon the completion of the infrastructure development period, the model was evolved to include the operations period.

The aggregated financial model was utilized to produce the various levels of annual expected taxable income from the LNG infrastructure over the revenue estimation period. Utilizing this information we applied various proposed BC revenue framework assumptions to calculate the estimated provincial revenues.

As summarized above, the total estimated Provincial revenue for the Base Case over the construction and 20 year operation period assuming 82 MTA capacity ranges from \$130 to \$180 Billion.

The Province requested an estimate of revenue based on 120 MTA capacity (High Capacity) for 5 plants and the result was \$160 to \$277 Billion. When moving from 82 MTA to 120 MTA each facility has additional throughput capacity which enhances their potential to capture additional revenue. As a

result of this increase in throughput capacity the individual plant infrastructure cost also increases. We have considered these factors in assessing the potential Provincial revenues under a high capacity assumption. The higher capacity has resulted in additional market supply and as a result we have taken a more conservative view of the potential revenues when producing the low range.

#### Forward-looking statement disclaimer

The financial estimates contained in this report are intended to measure the potential impact created under a given set of assumptions for a particular sector. These estimates relate to future events or future performance and reflect expectations regarding the growth, results of operations, performance, business prospects and opportunities, and industry performance and trends. A number of factors could cause actual events or results to differ materially from the results discussed in the forward-looking estimates.

The estimates are not forecasts and this report is not intended to attribute any probability that those impacts will occur or not occur in future. The estimates are merely to illustrate the potential Provincial revenue impacts under a given set of assumptions, following a systematic approach to analyzing and modelling collected information. Further, the estimates do not reflect the actual or expected total impact on the overall outlook for the BC economy and provincial government revenues, as changes in other sectors will also affect that outlook.

# Restrictions and qualifications

## Restrictions

This report is not intended for general circulation or publication nor is it to be reproduced or used for any purpose other than that outlined above without our prior written permission in each specific instance. We will not assume any responsibility or liability for losses occasioned to the Province or any third party, as a result of the circulation, publication, reproduction or use of this report contrary to the provisions of this paragraph.

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We reserve the right, but are under no obligation, to review all calculations included in or referred to in this report and, if we consider it necessary, to revise our estimates in the light of any information existing at the date of this report which becomes known to us after the date of this report.

The liability of Grant Thornton LLP and any of our employees or other personnel for any claim in tort or contract related to professional services provided pursuant to our agreement is limited to the amount of professional fees actually paid for those services.

## Qualifications

In preparing this report, we have relied upon the documents and information listed herein.

We are not guarantors of the information upon which we have relied in preparing our report, and except as stated, we have not audited or otherwise attempted to verify any of the underlying information or data contained in this report.

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