Options for Reforming British Columbia's Natural Gas Royalty Framework: A Discussion Paper

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1 Context

1.1 Natural Gas and Climate Change

Every day many British Columbians use natural gas to heat their homes and water and to prepare family meals. They may travel to workplaces heated by this same fuel, possibly in buses running on compressed natural gas. When travelling between Victoria and Vancouver they will likely travel on a BC Ferry running on Liquefied Natural Gas (LNG).

At the same time, most British Columbians are deeply concerned about the increasingly obvious impacts of climate change and many British Columbians are specifically concerned about the production and use of natural gas because it is a hydrocarbon which generates greenhouse gas (GHG) emissions. Natural gas production generates a significant proportion (approximately 21%) of BC's GHG emissions. Natural gas as a fuel has lower emissions than some alternatives and higher emissions than others. The high level of GHG emissions associated with natural gas leads some people in this province to question the ongoing role for this industry in BC, but while steps are being taken to address climate change and transition to low or zero carbon renewable energy sources, natural gas will continue to play a role in meeting energy needs.

The Province has committed to tackle climate change through actions outlined in the CleanBC plan and the recently released Roadmap to 2030. The Government has set legislated targets for GHG emissions reductions for the whole province. In support of this goal, government has set and committed to reduction targets for the oil and gas sector and proposed a new methane reduction target for the sector by 2030. The oil and gas industry in BC is working to reduce GHG emissions and must continue that work through programs and requirements outlined in the Roadmap to 2030.

Built into these plans is an understanding that emissions in the sector must go down even as natural gas continues to play a role in meeting BC's energy needs in the near and medium term: until such time as cleaner fuels are widely available in sufficient quantities to meet projected demand.

Other jurisdictions are in the same situation, with natural gas meeting substantial energy needs while economies quickly transition to a low-carbon future. BC's large natural gas reserves allow domestic and export markets to meet these needs in the short and medium term with a fuel that is produced under a strict regulatory regime intended to limit adverse environmental impacts.

1.2 The Need for a Royalty Review

The Province of British Columbia is reviewing its 30-year-old oil and natural gas royalty framework to ensure that it meets the Province's goals for economic development, a fair return on the public resource, and environmental protection. Royalties represent the public share of revenues generated through the production of oil and natural gas. The existing royalty framework was developed when technology and market conditions were far different than they are today, before climate change was recognized for the challenge that it is, and before the Province had embarked on the journey of full reconciliation with First Nations.

This Discussion Paper outlines options for reforming British Columbia's royalty framework and concludes with a series of feedback questions, these questions can be answered through an on-line questionnaire. Feedback can also be shared by preparing a written submission for those wishing to provide more detailed comments - guidelines for submissions have been posted to EngageBC.

Royalties are payments to the Province for the use of the public oil and natural gas resource. In this paper "royalty structure" is that quantity on which royalties are calculated, whether production or a measure of economic value, plus the type of rates applied – flat or progressive. "Royalty system" is the structure plus the actual rates applied – this brings in the level of rates. "Royalty framework" is the royalty system plus any exemptions or incentives which impact the way in which payments are determined.

2 Background

In British Columbia (BC), most of the oil and natural gas reserves are publicly owned and administered by the Province. A small portion of oil and natural gas rights are privately held. Oil and natural gas companies can bid on publicly owned oil and natural gas rights and successful bidders (tenure holders) are issued oil and natural gas tenure in the form of a Drilling Licence or Lease. Tenure holders invest time, expertise, and money to explore, develop and produce the resource. Companies pay a royalty on produced oil and natural gas which represents the public share of the revenues generated.

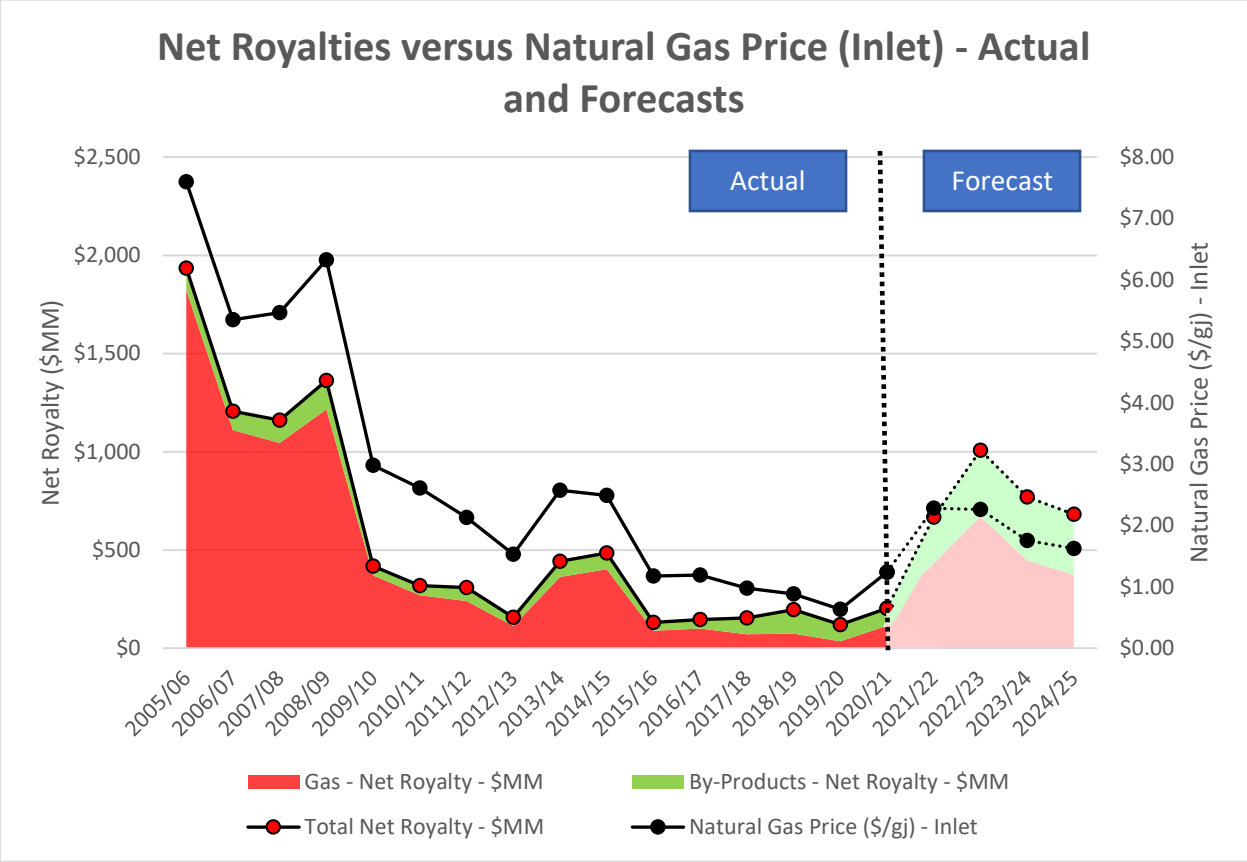
The current BC natural gas royalty framework was put in place nearly thirty years ago. Since that time there has been a dramatic shift from producing conventional natural gas (found in highly porous rock) through vertical drilling, to producing unconventional gas (locked into tight rock formations) through horizontal drilling and hydraulic fracturing. These new technologies have opened up vast reserves of natural gas in northeast BC, and elsewhere, which were previously inaccessible.

The introduction of these new technologies have greatly expanded supply, leading to much lower prices for most of the last fifteen years. These technologies also changed the cost and risk profile of the industry. Exploration costs are relatively lower now, but development costs are relatively higher. The overall level of risk in the sector has fallen. While conventional natural gas development saw more than half of wells fail to produce economic quantities of gas, the shift to unconventional gas has enabled the development of large contiguous reservoirs which makes it rare for a company to drill an unsuccessful well.

Most recently, somewhat higher prices have arisen due to a lack of short-run investment in developing natural gas. This reduced the oversupply, or glut, of natural gas available for market, leading to increased prices. The current price increase is not expected to persist.

Figure 1 shows the drop in annual revenue from oil and natural gas royalties over the last fifteen years, along with the current price increase.

Figure 1: Total Net Royalties and Natural Gas Price (Inlet) – Actuals and Forecasts – 2005/06 to 2024/25



(Forecasted revenue and prices are based on a number of assumptions, including the continuation of the existing royalty policy)

Source: Ministry of Energy, Mines and Low Carbon Innovation data.

Over the past thirty years effects of climate change have significantly increased. The Province has demonstrated a commitment to tackling climate change through actions outlined in the CleanBC plan and the recently released Roadmap to 2030.

Industries and activities that generate GHG emissions contribute to climate change. Natural gas production generates a significant proportion (approximately 20%) of BC's GHG emissions. A top priority for the oil and natural gas industry in BC is to reduce GHG emissions through the programs and initiatives outlined in the Roadmap. Natural gas is cleaner when burned as a fuel than other hydrocarbons such as oil and coal, and displacement of those fuels with natural gas reduces greenhouse gas emissions but does not eliminate them. As a result, some jurisdictions and industries are switching to natural gas to reduce GHG's during the medium term. Natural gas will continue to play a critical role in meeting energy demand in BC and elsewhere as renewable energy ramps up.

The social backdrop to energy sector activities has also changed. Natural gas exploration and production, like other land-based industrial activities, now take place within a setting where the Province is fully committed to a process of reconciliation with Indigenous Peoples in accordance with the principles of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), the Calls

to Action of the Truth and Reconciliation Committee and the *Declaration of the Rights of Indigenous Peoples Act* (Declaration Act).

The implementation of the Declaration Act by the Province represents a commitment to reconciliation through Government-to-Government engagement with Indigenous Peoples on new policies and legislation. Co-development of any new or amended policies, regulations or legislation is a critical part of this reconciliation process along with a sharing of economic benefits. A process of Government-to-Government consultation with Indigenous Peoples is underway to improve understanding of the complex royalty system, parallel to development of this Discussion Paper. The Discussion Paper will further inform ongoing consultation and provide options to spark discussion around the priorities of First Nations and how to balance the goals of environmental protection, a fair return on the public resource, and economic development. The Province will continue to work closely with Indigenous Peoples through to the implementation of a new royalty framework.

The age of the current royalty framework, changes within the industry, and its environmental backdrop, have led the Province to undertake a comprehensive review of the royalty framework. As a first step in this review, an Independent Assessment of the current framework was commissioned. Two respected academics with substantial experience in natural resource economics wrote an in-depth analysis, examining whether the current royalty framework is meeting the Province's goals of economic development, a fair return on the public resource, and environmental protection.

2.1 Independent Assessment - Findings

The unequivocal conclusion of this assessment is that the current natural gas royalty framework is not meeting government's goals and needs to be completely reformed. The authors see the underlying framework and the "piecemeal" modifications since its inception, each designed to address issues within the industry and maintain fair, competitive markets, as out-of-step with current values, market conditions and technologies.

The assessment describes the current royalty framework as excessively complex, with large compliance costs for industry and administrative costs for government. The complexity is largely due to the piecemeal modifications. The authors note a large decline in natural gas royalty revenue both in absolute terms and as a share of the value of natural gas produced in BC over the past 15 years. The effective royalty rate has fallen over the past eight years more than 3-fold from a high of 8.4 percent in 2013 to 2.4 percent in 2020.

The authors identify issues with numerous features of the royalty framework, issues so numerous and serious that the system does not contribute to optimizing the value of the public's resource. This is seen as a major failing of the current framework, because if the royalty framework is not encouraging the highest value from the natural gas resource, then there is less value to be shared between the public (to fund important government programming) and industry (investment in new production and in cleaner technologies, and employment). Other findings include:

- Out-of-date royalty deduction programs that do not reflect current economic conditions and technologies
- Compensation for a level of risk that no longer exists
- Piecemeal changes that have led to compounding effects that have lowered royalty payments

- Many wells, rather than a few, enjoy incentives that lower royalties
- Most wells paying royalties at minimum rates
- Administratively burdensome treatment of costs
- Lack of incentives to control costs
- Excessive complexity

The assessment argues that only a comprehensive reform of the royalty framework will address the current problems because improvements to any one element of the current system may impact other system components in complex and unintended ways. Small changes could easily make system performance worse rather than better. The authors note that a new royalty framework should be simple, low cost, accountable, transparent, efficient, and help meet broader government and societal goals.

3 Natural Resources and Economic Development

Historically, economic development in BC was driven by natural resource industries. Today BC has a diversified economy, including a thriving technology sector, a large tourism sector, and economic activity which is more oriented to the provision of services, including those which are knowledge-based, than in the past.

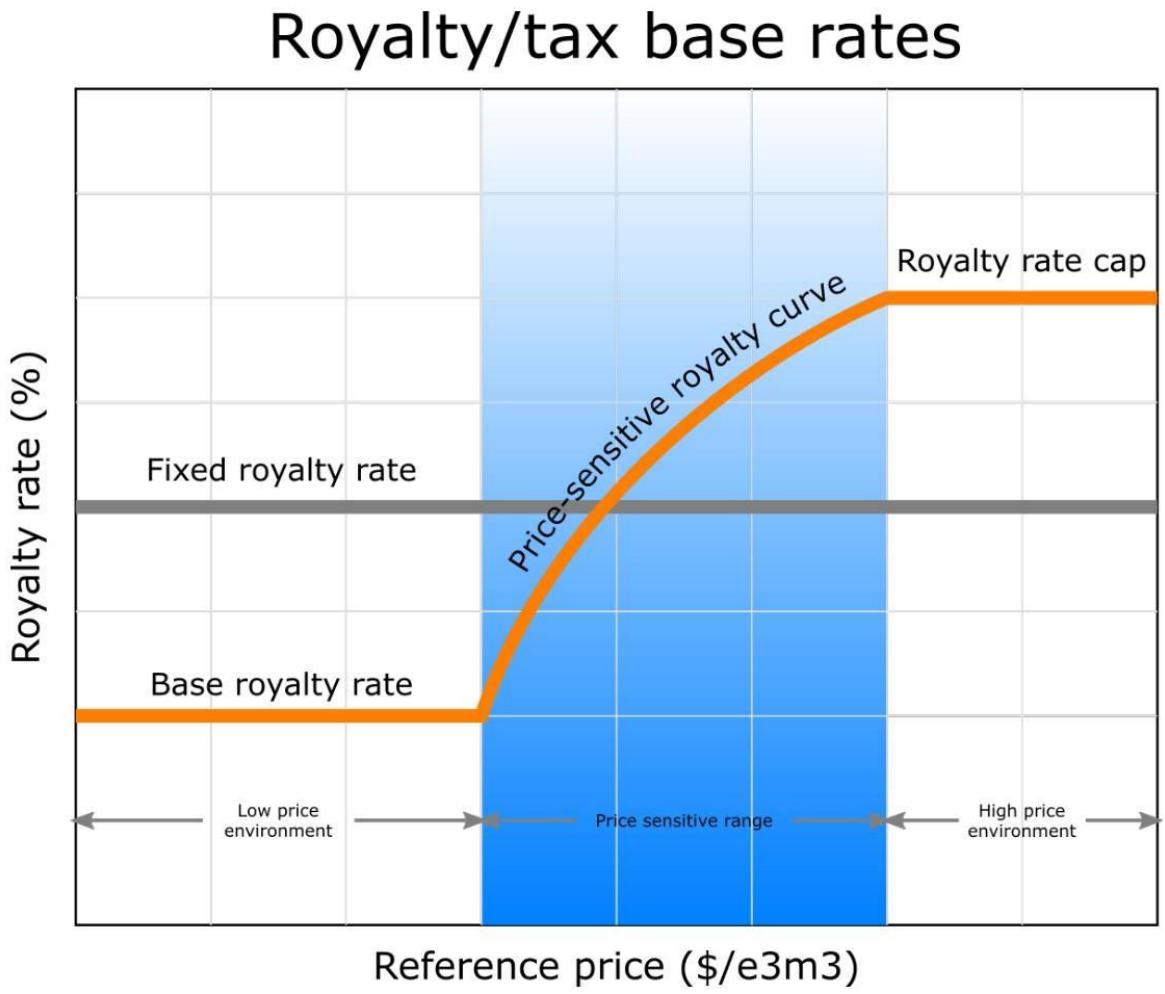
Despite this diversification, the natural resource sector remains a critical part of the provincial economy, particularly in the interior and north. Forestry, minerals and oil and gas industries continue to support many workers. These sectors provide revenues directly to the Crown, and indirectly through the taxes paid by employees and suppliers, often located across BC.

3.1 Natural Gas in Context - Existing Natural Gas Royalty Framework

In BC most oil and natural gas is Crown owned. Government objectives for the natural gas framework flow from this public ownership and include ensuring a fair return to the resource – royalty revenue that contributes to public programming and ensures all British Columbians share in the value of this resource.

The current natural gas royalty framework, at its core, has producers pay a levy based on the volume of natural gas produced at each well – this levy represents government's share in return for the opportunity to develop the resource. Today these levies are determined by a progressive set of royalty rates that are tied to price – royalties rise as prices rise so that the Crown receives a higher share of revenue when the market value of natural gas is higher (see Figure 2 below).

Figure 2. Royalty rates – flat (fixed) rate versus price sensitive rate



These progressive royalty rates are embodied in several royalty curves that reflect differing ages of wells and other factors. Every curve has a minimum price below which royalty rates do not fall; this ensures the Crown receives some revenue from every producing well. Every curve also has a maximum price beyond which royalty rates do not rise.

A prominent feature of the current royalty framework are royalty incentives, which can be used to reduce royalties payable to below the base royalty rate.

Economic conditions have changed since the time these incentives were established. While these mechanisms may contribute to BC's competitive position the rationale for the specific measures largely no longer exists. Balancing BC's competitive position is better accomplished by explicit consideration of royalty structure, royalty rates, and incentives that reflect current and expected economic and social conditions.

3.2 The BC Oil and Gas Sector

Oil and gas development occurs in the northeast corner of BC in the foothills of the Rocky Mountains on the BC side of the Western Canada sedimentary basin, which extends across Alberta and into Saskatchewan. Natural gas is the primary resource produced from the BC portion of the Western Canada sedimentary basin. Natural gas flows from production wells to processing plants through gathering pipelines. At processing plants natural gas liquids are removed and the gas is readied for consumption. It then flows through distribution pipelines to markets in BC, the rest of Canada, the United States, and to international markets.

The energy sector is very capital intensive. Existing pipelines and processing facilities in BC cost billions of dollars, and investment in facilities such as these is only possible if natural gas flows steadily through them. This, in turn, requires ongoing investment in new natural gas wells since production from each well falls over time as gas is produced and the pressure in the natural gas reservoir falls

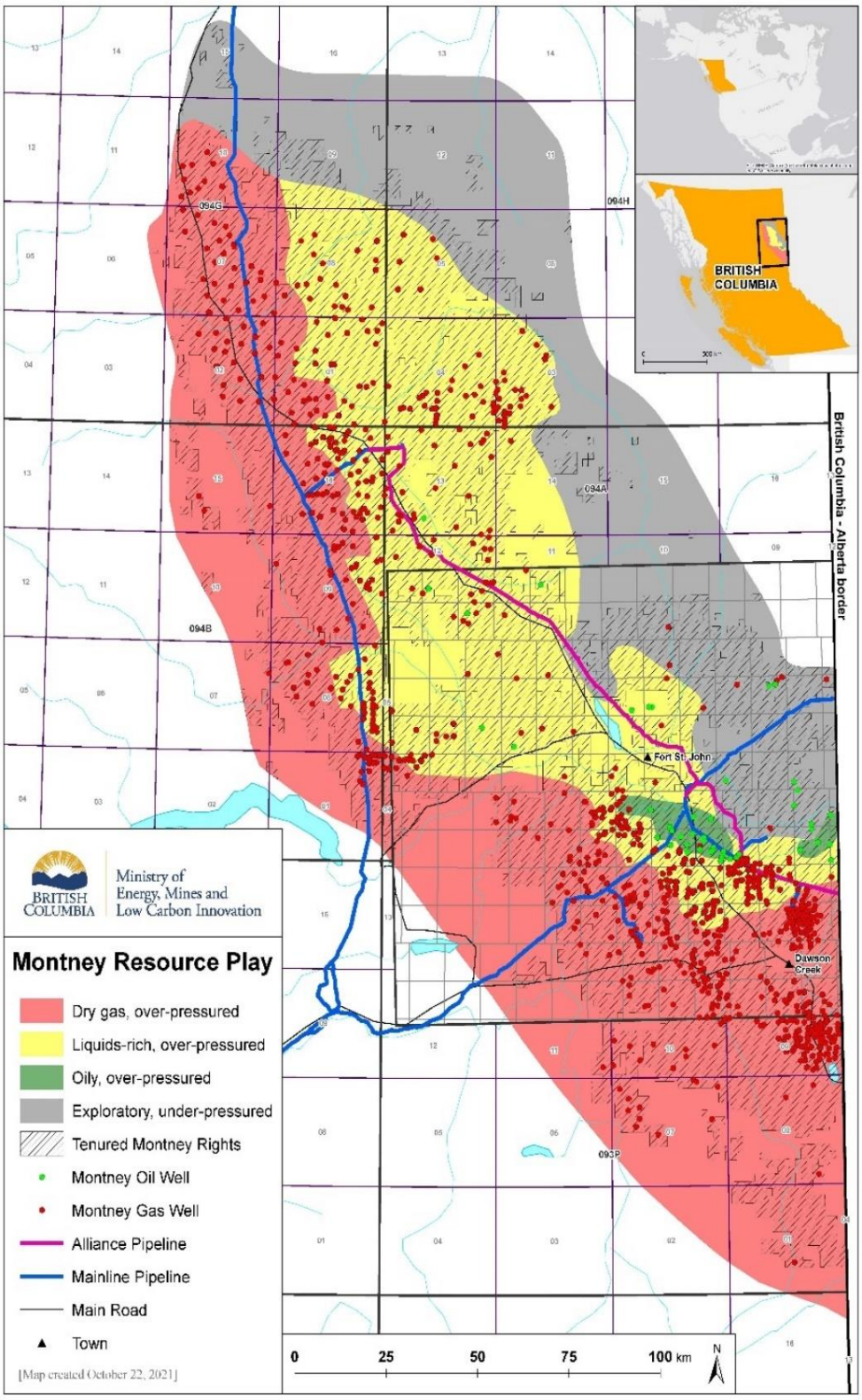
BC only uses 12 percent of the natural gas produced in the province domestically, the rest is exported. In the markets that BC natural gas supplies, it is used residentially for home heating and cooking, as well as in commercial and industrial applications, including power generation and as an important feedstock for manufacturing plants that produce fertilizers, medications, plastics, paints, and fabrics. Natural gas will be needed for the foreseeable future for these industrial uses as well as to provide a primary energy source while renewable energy sources are developed.

In BC natural gas makes up 29 percent of total energy used by individuals, businesses, industry, institutions, and governments in the province. The sector is an important economic driver, particularly in the northeast. Overall, the oil and natural gas sector represents four percent of Gross Provincial Product, a measure of total economic activity in BC. Existing natural gas and by-product reserves in the province that are identified to be commercially viable under currently anticipated conditions are worth between $900 billion and $1.4 trillion[1].

The sector, like forestry, mining, and other natural resource industries, is seeking to operate within the spirit of the Declaration Act with First Nations. Reconciliation is the shared responsibility of everyone in British Columbia, including business and industry. Some oil and natural gas companies work closely with First Nations that are impacted by their operations, creating corporate partnerships with Indigenous owned businesses and employment opportunities for nearby Indigenous and non-Indigenous communities.

[1] Value estimates are undiscounted approximations based on stated resource numbers and historical 5-year average prices for natural gas and current strip pricing.

Figure 3: Map of Montney Play



The Montney Play is an area of unconventional natural gas resource straddling the BC-Alberta border. The Montney is considered to be a world class natural gas resource. It is the focus of current development activity in BC's oil and natural gas industry.

The BC oil and natural gas sector faces operational challenges, mostly due to its location in a relatively remote part of the province, and far from major gas markets. At the same time the geologic potential of BC's natural gas resource, principally the enormous Montney play, create the potential for the industry to be a driver of economic activity and jobs for British Columbians, deliver a fair return to the public, and be a source of affordable, relatively clean energy during transition to a low-carbon future.

4 Government Goals for the Natural Gas Royalty Framework

The Province has set out three goals for the natural gas royalty framework:

1. Economic development
2. Fair return on the public resource
3. Environmental protection

How well the royalty system meets any of these goals will depend on the *structure* of the royalty framework (what is subject to royalty), the *rates* applied to that structure, and on any *special features* of the royalty framework, such as incentives or other exceptions to the base operation of the system. The core of any royalty framework is its structure, because a wide range of rates and/or incentives can be applied to any structure.

4.1 Economic Development

At a high level, the economic development goal recognizes that the oil and natural gas sector is a significant employer and source of investment in BC, particularly in the northeastern part of the province where natural gas exploration and production takes place.

Natural gas revenue to the Crown, while much lower on average in the past five years than it was in recent decades, is a significant source of provincial revenue. When the government considers potential changes to the natural gas royalty system, it needs to consider the effects such changes could have on investment, production, and employment as well as on ensuring a fair return on the public resource.

Characteristics of a royalty framework that align with the goal of economic development are stability, predictability, and acknowledgement of the need for industry to continually invest in order to maintain natural gas production and the associated employment and government revenue.

4.2 Fair return on the public resource

Determining a fair return on BC's public oil and natural gas resource requires looking at opportunities for investors in other jurisdictions. BC competes with these other jurisdictions for investment funds and must be mindful of the investment landscape. Natural gas royalties are part of this difficult quantitative analysis, but other taxes and charges are also part of the comparison, as are regulatory requirements.

Achieving a fair return is more an issue of rate than structure, but as seen in the section on Economic Development (above), structures that are stable and predictable, will best support a fair return. Fair return will be difficult to achieve in an industry which is not stable, because there will be less value created to be shared between industry and the Crown.

4.3 Environmental Protection

Natural gas production and use generate greenhouse gas (GHG) emissions and impact the land base. The current natural gas royalty framework, dating to a time of energy scarcity, motivated oil and gas producers to maximize energy production, and did not consider these effects. Today, in a shift to a low-carbon future, it is not the quantity of energy that needs to be maximized, it is the environmental impact that needs to be minimized while natural gas continues to play a role in meeting energy needs.

A goal for the royalty review is to minimize these environmental impacts while achieving a fair return on the public resource and encouraging economic development. This is consistent with BC's other climate change initiatives.

CleanBC and the Roadmap to 2030 are government's plan to meet its GHG emissions goals for 2030 and beyond. Recently the Province set new near-term emissions targets for 2025 which will require greenhouse gas emissions to be 16% below 2007 levels by 2025. This target provides a benchmark on the road to BC's current legislated emission targets for 2030, 2040 and 2050 of 40%, 60% and 80% below 2007 levels, respectively. The Province has set sectoral targets, becoming the first Canadian jurisdiction to do so and intends to introduce net zero by 2050 emissions targets in the near future.

As a result of CleanBC efforts estimated fugitive and vented methane emissions in the upstream oil and gas sector in 2019 were down 11% since 2014 and in the same period emission intensity from the sector has dropped 45%. Despite this progress, growing natural gas production has made achievement of the sectoral target for the oil and gas industry a challenge. The Province is exploring the use of new technologies and approaches to better characterize and manage these emissions. An ongoing review of carbon pricing for the industrial sector is expected to identify approaches to ensure this target is achieved.

The Independent Assessment's authors hold the view that environmental mitigation of this type should not be the goal of a royalty framework, rather there are other tools which will be more effective in reaching this particular goal, such as carbon pricing and direct regulation.

Accordingly, when selecting a royalty framework environmental protection will be considered in the development of incentives or other broad aspects of the framework rather than royalty structure itself.

5 Framework Design Objectives

In addition to the overarching goals discussed above, the royalty review is seeking to achieve a number of system objectives which focus on the attributes of a well-functioning royalty framework. Such a framework is:

1. Transparent
2. Administratively Feasible
3. Efficient
4. Equitable
5. Minimizes Distortions

5.1 Transparent

There is a clear need for a future royalty framework to be transparent. A framework that is clear and well-understood by the members of the public is important. The complexity and opaqueness of the current royalty framework has contributed to criticism of it. The Independent Assessment notes that the current framework is hard to understand. Royalty structures that are simple and built on clear principles are best.

5.2 Administratively Feasible

All frameworks have an associated cost of administration. A framework based on a simple royalty structure will be less expensive to build and administer than a more complex one. A related concept is feasibility – a royalty structure must draw on processes and information which exist or can be generated and collected at reasonable cost. The structure must align with established accounting structures and business processes. Changing a royalty structure will also have associated costs due to changes to information systems, auditing, and other business practices.

5.3 Efficient

An efficient royalty framework will encourage energy producers to get the most economic value from the natural gas resource. The Independent Assessment notes that the current royalty framework does not maximize the size of this economic pie. Rather than encouraging the production of the most valuable products at the lowest cost, the current framework may encourage the products most favoured by the royalty framework, as well as providing little or no incentive to limit costs in some circumstances.

5.4 Equitable

At the operational level equity speaks to treating royalty payors who are alike in a similar fashion, and those who are not alike differently. The measuring stick is the economic value generated – more profitable wells should pay more in royalties than less profitable ones. A royalty framework needs to properly assess royalty payers in order to treat them equitably.

5.5 Minimizes Distortions

As identified by the Independent Assessment, there are many components within the existing system that create artificial incentives that aren't aligned with market forces. The new structure should minimize distortions by creating a fiscal structure that is consistent for all investment opportunities, encouraging investments to react to changes in market forces to maximize the value of the resource.

6 Royalty Structure Options

Royalty structures vary from relatively simple ones based purely on production (effectively a sales tax paid by the seller, rather than the buyer) to complex ones based on the economic value of the resource value, or profit. The difference is in the amount of information each structure requires.

Royalties based on economic value require a lot of cost information and royalty payors must gather this additional information and governments must be able to verify it.

Any consideration of practical royalty structures for natural gas must consider the nature of business in the industry and factors specific to BC, which is different in important ways from other oil and gas producing areas.

Important factors to be considered in examining royalty structures for BC include:

- the large number of individual points where royalties are billed (each well)
- multiple products sourced at individual wells and sold in different markets (natural gas, oil, natural gas liquids of varying compositions)
- infrastructure which is shared between many producers
- a complex ownership structure where some producers are integrated with processors and/or transporters
- the small size of the sector relative to other oil and gas producing areas, and other jurisdictions
- the great distance to most markets

Regardless of the structure chosen a robust pricing system that accounts for the various marketing structures of all the commodities will be needed to ensure royalty prices are accurate, transparent, auditable, and administratively feasible.

Royalties lie on a spectrum from simple flat-rate systems based solely on production value to complex ones strongly linked to economic value – revenue less all costs. In the middle lie systems that try to be more sensitive to economic value than production by taking some accounting of capital costs. This Discussion Paper presents three alternative royalty structures as options for BC:

1. Flat rate royalty on production – no capital recovery mechanism
2. Flat rate royalty on production – with capital recovery mechanism
3. Royalty on economic value – revenue minus cost model (RMC)

Moving down the list the options get progressively more complex because more information is needed to calculate royalties. At the same time the ability to achieve other government goals, including ensuring a fair return on the public resource, and economic development, increases, and so do measures of efficiency, minimizing distortions, and equity.

6.1 Flat Rate Royalty on Production – no capital recovery mechanism

This simplest of royalty structures levies a fixed royalty rate on natural gas production from a well in a given time period – usually monthly. Such tax structures are found in some American jurisdictions, including Texas and Pennsylvania.

1. Transparency and understandability
   Highly transparent and understandable – limited information needed
2. Administrative feasibility and cost
   Other than pricing system issues (common to all options), straightforward and inexpensive to design, implement and operate.
3. Efficiency and minimizing distortions
   Inefficient. Since costs are not acknowledged such a royalty system can create incentives to limit production and investment, depressing employment and government revenue in the long run.

4. Equity
   Inequitable. Since costs are not acknowledged wells with different economics will be treated the same – two wells with the same production but different costs (one high, one low) will pay the same royalty, which is not equitable.

6.2 Flat Rate Royalty on Production with capital recovery mechanism

This is the first option, with a mechanism added to reduce royalty rates while the producer recovers their initial capital investment. Reduced rates during capital recovery is very common in royalty and tax structures around the world. These cost recovery mechanisms can be found in Newfoundland's net profit royalty system for offshore oil, in BC's Mineral Tax, and in many corporate tax systems. Capital recovery, in a royalty setting, takes place by reducing royalty rates until drilling and completion capital is recovered and then increasing the royalty rate.

1. Transparency and understandability
   More complex than a royalty with no capital recovery, but still relatively straightforward. Transparency depends on the exact way in which capital costs are determined, reported and tracked.
2. Administrative feasibility and cost
   This system would require capturing one additional data element, but once initial programming is completed, the additional administrative burden would be limited to regular reporting of that data and periodic audits.
3. Efficiency and minimizing distortions
   Relatively efficient. By acknowledging capital costs such a system would be less likely to limit investment. Not accounting for operating costs could impact production decisions once capital recovery was completed.
4. Equity
   Relatively equitable. By accounting for capital costs wells with different capital costs (but similar production) will be treated differently. The lack of accounting for operating costs can still lead to wells with different economics (high operating costs versus low operating costs) being treated the same resulting in some inequity.

6.3 Revenue Minus Cost (RMC)

Similar to BC's Mineral Tax, or Alberta's recent Modernized Royalty Framework for oil and natural gas, this is a system based on economic value. All costs are acknowledged in calculating royalty, with a lower royalty rate being charged while capital is being recovered.

1. Transparency and understandability
   This system is understandable at a conceptual level, but the actual workings of the system are likely to be complex and may not be entirely transparent.
2. Administrative feasibility and cost
   More complex and expensive to implement and operate than the other systems because of the extra information required. Due to shared infrastructure and other factors tracking costs to individual wells in the oil and gas sector is not a simple matter.

3. Efficiency and minimizing distortions
   Efficient. Of the three options, this system is by far the most efficient. All costs are accounted for in the calculation of royalties eliminating differential impacts from the royalty system on investment and production decisions.
4. Equity
   Equitable. By accounting for all the direct costs associated with oil and gas development royalties will be tied to the economic value generated at individual wells.

7 Royalty Rates

Royalty rates are the single largest factor in determining the overall amount of royalty paid by the natural gas sector. As such rates are key to the trade-off between maximizing economic activity and ensuring a fair return to the public resource. Since royalty rates can impact the amount of investment and economic activity, they can also affect GHG emissions. All other things being equal, less economic activity in the sector translates into a lower level of emissions.

The capital that is invested in the sector is highly mobile, quickly moving to where expected returns, adjusted for expected risk, are best. Ongoing investment in the sector is required to maintain production, as we continue to move to new energy sources, because natural gas wells decline over time as pressure within reservoirs fall and we will continue to be reliant on natural gas for some time.

All other things being equal, lower royalties can mean higher returns for producers, which can mean more investment, but there is a limit to this argument. Once returns are healthy – comparable to those achievable in other jurisdictions – higher returns may not increase investment significantly. Increasing royalties will therefore not always lead to a significant fall in investment if healthy, industry-comparable, returns are still being achieved.

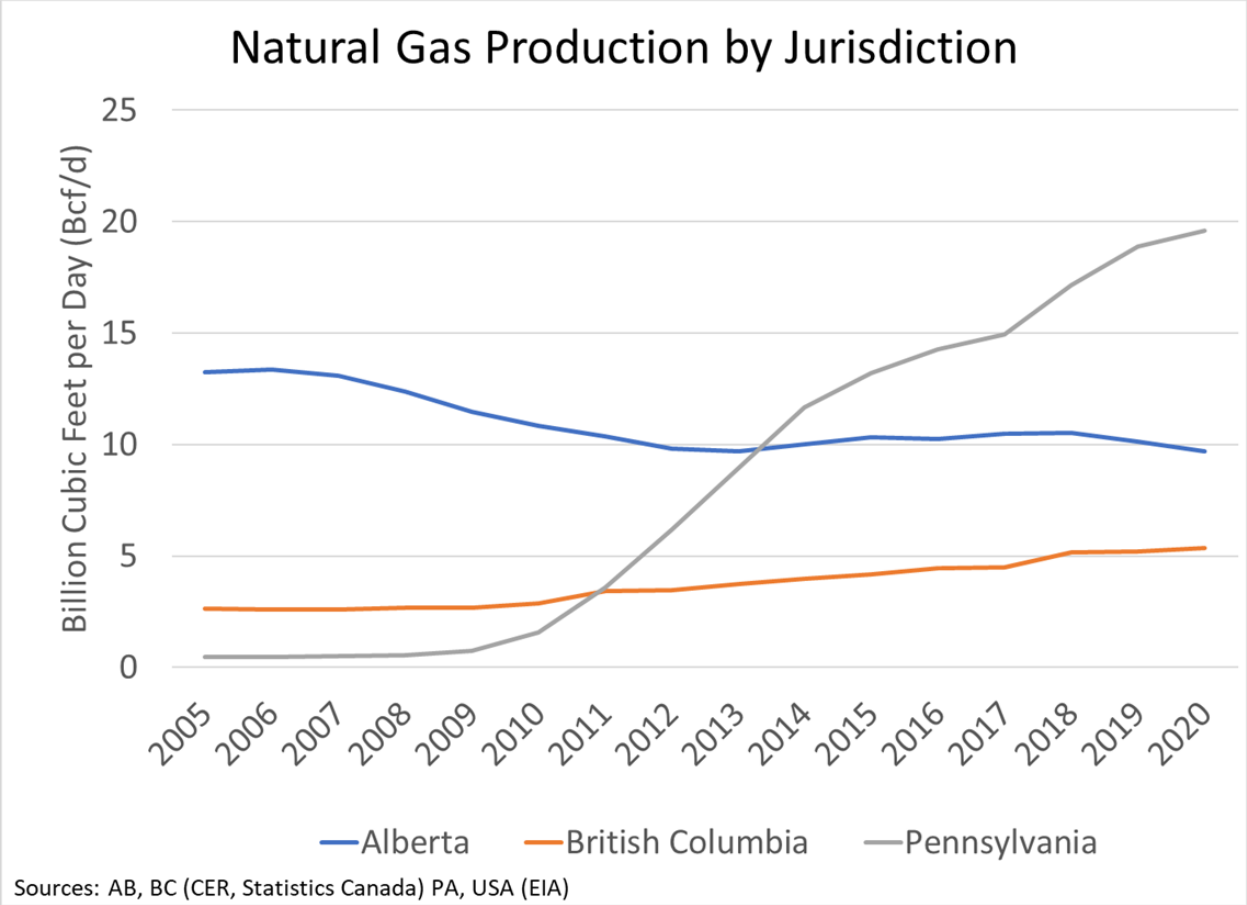
Increasing royalties past the point where comparable returns on investment can be achieved can make attracting more capital difficult. With less investment occurring, natural gas production and employment and taxation revenue (sales tax, personal income tax, corporate income tax, carbon tax) will all decrease. In such a case, royalty revenue may fall, with the foregone revenue from a lower level of new investment possibly offsetting the impact of higher royalties on existing units of production.

BC shares many sector participants with Alberta, so comparisons with investment returns in that province are the single most important factor to be considered in identifying practical royalty rates that return a fair share to the Crown while respecting the need for BC to be competitive in maintaining capital investment.

Competitiveness analysis is currently underway by consultants (Wood Mackenzie, McDaniel and Associates and Value Navigator) to examine the competitiveness of BC investment opportunities and the resulting practical range of royalty rates. This analysis will consider the full range of royalties, fees, taxes, and regulatory requirements applied in BC, Alberta, Saskatchewan, Texas Pennsylvania, North Dakota, and New Mexico, because it is the total cost of all these measures that is important in determining competitiveness.

A comparison of production in the graph below illustrates the difference in production levels over time between BC, Alberta, and Pennsylvania which is a key competing jurisdiction with better market access. The difference in expected economic return has seen greater investment in this US jurisdiction.

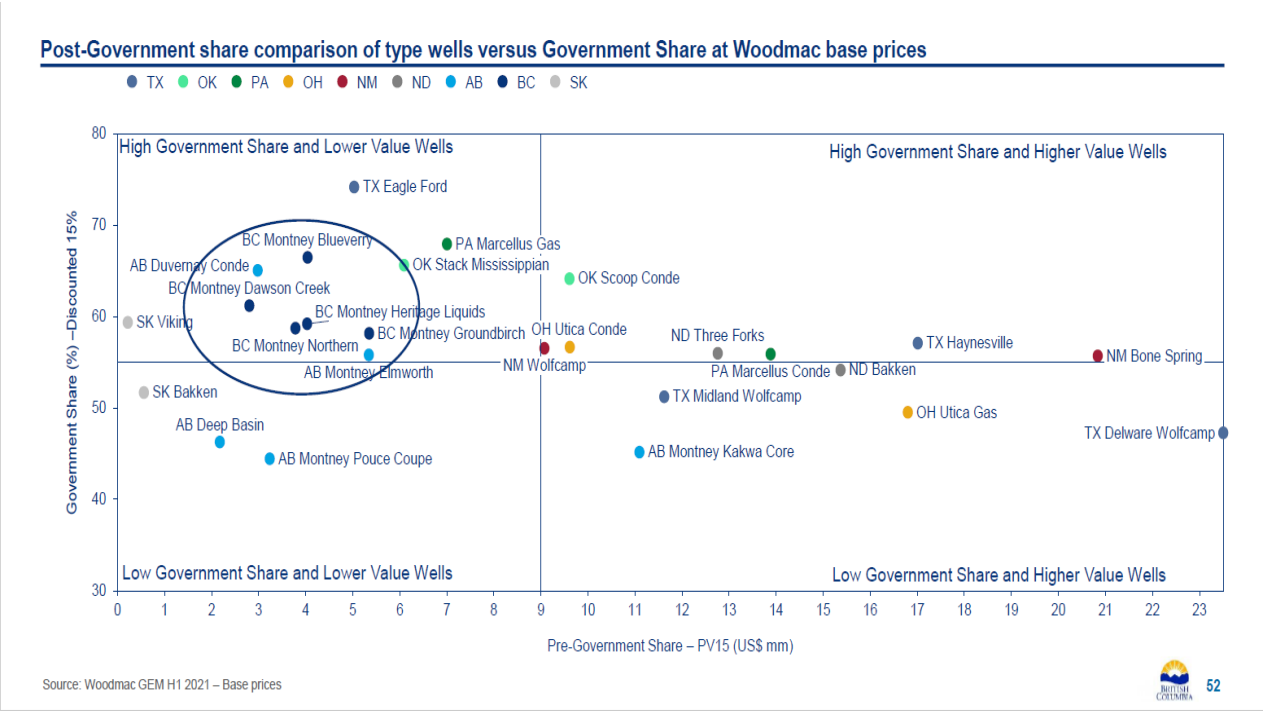
Figure 4: Comparison of natural gas production in BC to lower cost jurisdictions



Initial findings from this competitiveness analysis are that investments in BC natural gas production (well drilling) incur higher unit production costs and higher transport costs relative to competing opportunities in North America before taxes and royalties are considered. When these levies are considered opportunities in BC rank low in expected return to investors relative to competitors, though broadly competitive with Canadian opportunities (Alberta). This analysis is set out in Figure 4 below. Government royalty and tax yield is seen to be broadly similar across North America, so BC's lower rating is due primarily to its higher costs, tied to relative remoteness and distance to markets.

Investments in BC wells, like Alberta wells, are seen to have an expected payback period of around two years which appears to be healthy (even adjusting for risk) though longer than in US jurisdictions. Changes to the BC royalty framework may affect investment outcomes relative to Alberta and American natural gas-producing states.

Figure 5: Comparison of expected return on investment across North America



An issue in future years from a competitiveness/rate perspective is growing carbon taxes in Canada which appear unlikely to be matched in the US and could alter the relative attractiveness of investment in the two countries.

A last observation on royalty rates is that higher rates that impact investment, and therefore production in the long run, will reduce GHG emissions within the Province, but will not alter the demand base for this energy source.

8 Transition

Transition to a new natural gas royalty framework will require a detailed policy design, and consideration toward integration, phasing, fairness, and administrative feasibility.

The stability of a jurisdiction is a primary consideration. Grandparenting of existing wells (leaving them subject to the current system) is one way of ensuring fair treatment of sector participants but it is also not administratively feasible to maintain two parallel systems for the lifespan of all existing investments (>50 years for some wells).

Once direction has been decided for a new royalty system, government will work with industry to develop a transition plan. The Province could adopt a gradual transition of 5 years or more (Alberta provided ten years with their 2017 royalty review – existing wells are subject to the old system until 2027), leaving substantial time for industry to adapt to new fiscal terms in the Province.

Exact timing would depend on administrative feasibility, including the time needed to revise data and establish new auditing regimes. While existing wells would remain subject to the existing system, new wells would be administered under the new royalty framework.

Alternatively, the Province could carry out a faster transition (one to two years), where all existing wells would shift to the new system at a set commencement date. Well-specific adjustments could be made to account for the estimated difference between royalty frameworks, and such a set of ad-hoc adjustments might be preferable to running parallel administrative systems.

Transition discussions will need to include resolution of all issues surrounding current royalty credits. Resolving these issues could be tied to the type and length of transition process, to the potential use of royalty revenues, or to all of these.

At the operational level both industry participants and government will need to establish and adapt information systems and processes. Where data requirements for a new framework can rely on existing data and processes transition will be smoother and less costly, though a more complex system will mean more data, and more data collection inevitably leads to more data glitches.

In the longer run the shift to a new system may lead to opportunities to improve efficiency of workflows and shift personnel to value-add activities such as compliance/audit and enhanced data sharing. These transition costs should be acknowledged in the design of a new framework, which must have benefits that substantially outweigh the costs of moving to a new royalty framework.

The time required by participants and government to implement information systems and processes is largely a function of the complexity of the royalty structure chosen as well as whether transition to it is gradual or immediate. A simple flat rate structure could be implemented in 1.5 years, whereas a more complex economic value structure (RMC) could take up to 2.5 years.

In the new year, Government will announce which royalty system is best positioned to achieve the Province's objectives. It will then begin detailed work to integrate First Nations views on the regulatory design and ensure the revised system aligns with business processes through direct engagement with industry.

The announcement could also include:

- Fair return expectations
- Environmental initiatives
- Transition (Grandparenting) plan

9 Discussion Paper Feedback

This paper has explained the rationale for reforming BC's current natural royalty system now. It builds on the Independent Assessment published to EngageBC at the beginning of October: this assessment pointed to an immediate need to completely overhaul this system.

Feedback, through the questionnaire that accompanies this paper, is sought on the assessment as well as the Discussion Paper.

The government-commissioned Independent Assessment (IA) concluded that the natural gas royalty framework is outdated and needs comprehensive reform. What is your level of agreement with the conclusion of the Independent Assessment?

Feedback is sought on a number of topics raised in this Discussion Paper, the first one being the three government goals for the Royalty Review: economic development, a fair return on the public resource, and environmental protection. How would you rank these three goals that government is considering in the Discussion Paper?

This Discussion Paper describes three alternative royalty structures: flat rate on production without capital recovery, flat rate on production with capital recovery, and one that reflects economic value (revenue minus cost - RMC). Feedback is sought on whether these are the three structures government should be looking at and, if not, what else should be considered. How would you rank these three structures in terms of preference?

Feedback is also sought on what government's preferred option should be: one of the three proposed, or another one identified by the reader.

The Discussion Paper describes two options for transitioning from the existing system to a new royalty system – a gradual one and one which is faster. Which option would you prefer, and why? Do you have an alternative approach to suggest?

Lastly the Province is interested in your views on dealing with the existing royalty incentives, which are reported in the public accounts annually as a value of potential future reductions to royalties.

The Province appreciates the time and effort you have put into reviewing this paper and looks forward to receiving your feedback!