

**PRELIMINARY REPORT ON FISCAL DESIGNS
FOR THE DEVELOPMENT OF ALASKA NATURAL GAS**

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For

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Section 5

Conclusions

Part 5: Conclusions

Four Key Points for Alaska

- (1) Successful fiscal design entails a trade-off between risks and rewards (irrespective of how rewards are defined – financial or otherwise -- for the state), and needs to be tailored to local circumstances and strategic priorities.
- (2) Progressive fiscal designs, if they are carefully and flexibly constructed, can yield high financial rewards to the taxing authority when resource values are high without inhibiting investment or leading to premature abandonment of projects when resource prices are low.
- (3) Alaska should adopt a fiscal design with a progressive and flexible fiscal design for natural gas and try to establish a fiscal design that enables gas fields with less than 1 tcf of reserves to be commercially viable for producers in high-cost environments where high gas pipeline tariffs may negatively impact commerciality of some gas field developments.
- (4) A progressive and flexible fiscal design for Alaska's upstream natural gas could be achieved through a well designed gas progressivity tax (GPT) levied on natural gas revenue streams working in parallel with an oil progressivity tax (OPT) levied on crude oil (C5+) revenue streams. Progressivity could be improved by including fiscal allowances focused on natural gas revenue streams that compensate for other regressive elements in the fiscal design (e.g. property taxes, royalty and floors to production tax) and reward operators for efficiency. Such allowances would build upon the investment credits already in place.

Global Conclusions

This study evaluates Alaska's fiscal design for natural gas in the context of worldwide natural gas markets and long-distance supply chains, the fiscal designs of many major gas exporting countries, and its performance in apportioning potential revenues derived from a range of non-associated and associated model gas fields under a range of circumstances.

In current international conditions it is concluded that Alaska does not need to commit to keeping all elements of its fiscal design fixed for decades in order to attract investors to build a gas pipeline and develop large gas fields. However, it does need to establish fiscal credibility and find ways to reassure producers that the significant fiscal changes introduced in 2006 and 2007 are not the prelude to repeated future increases in tax rates that will continuously reduce the commercial viability of future gas field developments. In introducing a new fiscal design for natural gas Alaska should focus on addressing not only increased take through a better-focused gas progressivity element, but also mitigate some of the regressive elements in the prevailing fiscal design. It also needs to provide a clear statement on its forward-looking fiscal strategy for gas that should aim to align with producers to make a wide range of gas field developments

commercial. A revised gas fiscal design should aim to provide a stable fiscal environment and flexible fiscal instruments that do not require frequent tinkering but works toward developing Alaska natural gas resources in ways that are both profitable and sustainable for Alaska and the producers. Clearly offering producers some guarantees on fiscal take might accelerate investment, particularly from the large companies holding proved gas reserves, in a gas pipeline. However, guarantees involve risks for the state which this author does not believe are essential to secure investment, especially if a clear fiscal strategy is adopted and communicated and the overall fiscal adjustments introduced for gas make the design more progressive and encourage developments to achieve commerciality.

Fiscal designs need to strike a balance between optimizing sovereign take, attracting investment and developing local industry and economy. The best balance for a particular taxing authority at a state or local level would depend on local needs. Is the country or region emerging or developed? Does its industry or infrastructure need stimulation or regeneration through inward investment? The taxing authority has to rank the high-level goals to determine which are the most important, i.e., local employment, energy industry investment or maximum public revenues? Alaska must make that decision as part of its broader fiscal strategy and then formulate its fiscal design to focus on achieving the highest goal selected.

A review of fiscal designs from around the world suggests that countries achieve different balances and employ a wide range of fiscal instruments to do it. More and more countries have tailored fiscal designs to suit their gas supply chains and implement them in parallel to crude oil systems. Some gas producing countries have natural gas fiscal mechanisms that function effectively for integrated downstream and upstream projects.

The three major natural gas markets in the world (OECD Asia, North America, and Europe) have growing demand for natural gas and are increasing their dependency on imports, particularly LNG. On the supply side, LNG is in short supply, and North America will have to compete with the other markets to attract LNG. Gas prices have reached unprecedented highs in all markets in the past year but remain volatile. This situation is to the advantage of regions holding large, undeveloped reserves of natural gas, such as Alaska, even if they are remote and subject to high development costs and technical challenges. Alaska should be well placed to compete for such investments because of its quality resources and low overall political risk. Alaska is also critical for secure, long-term U.S. energy supply.

Many IOCs are currently keen to invest in large gas field developments and associated upstream, midstream and downstream infrastructure across the world but are facing tough competition from NOCs in gaining access to such projects. Moreover, many of the available development projects around the world are burdened by tough fiscal terms and high political risk. Again, this is to Alaska's advantage and can be exploited from more than one perspective: 1) many non-U.S. companies (NOCs, IOCs and independents) could be attracted to invest in Alaska's upstream and downstream industry once the commitments for a gas pipeline are made. There is no reason why just a few major companies should dominate Alaska's natural gas industry in the longer term; 2) major IOCs are struggling to replace reserves. Mineral

interest fiscal systems, such as Alaska, enable them to book more reserves than production-sharing systems that are common in many large gas producing countries. Upstream fiscal designs for gas in Alaska need to be tailored in the longer term to both large and small companies and projects to maximise competition. In the short term the emphasis might need to be on how to bring the proved gas reserves of the North Slope into production and supplying a future gas pipeline efficiently.

Large-scale remote gas developments are capital intensive and fiscal terms should reflect the high costs and longer lead times to production for such projects. Fiscal terms need to be both flexible (i.e. provide sustainable commercial returns to investors for many field sizes and in a range of market conditions) and truly progressive (i.e. provide increased percentage takes to the governments when they are highly profitable either due to high prices, low costs or following payback of initial and incremental investments, but provide lower percentage takes to governments when they experience limited profitability).

There is a challenge in establishing truly progressive fiscal designs in that the most progressive fiscal instruments also involve the most risk for governments. Those fiscal instruments driven by project profitability measures provide later revenues to governments and involve the risk that if market conditions change for the worse the government revenues ultimately received could be adversely impacted. On the other hand, regressive fiscal instruments such as flat-rate royalties come with less risk for governments. They are taken at the point of production, which is prior to the accounting for any upstream investment, regardless of whether a project has achieved payback and provides governments with a guaranteed revenue stream, albeit subject to volatile prices.

The 2006/2007 changes to Alaska's fiscal system that combine a basic production tax (BPT) with a combined oil and gas (as boe) progressivity tax (CPT) linked to production tax unit values (\$/boe) achieves the progressivity objectives for oil fields up to a point. As destination market oil prices increase, PTV increases and CPT provides a greater fiscal take to Alaska. There are, however, some shortcomings with CPT: 1) It does not work as well for natural gas production unless gas prices are extremely high (at current market conditions, it would fail to take a significant share of revenue from the most profitable projects); 2) at high oil prices low gas prices gas can dilute the CPT values; and 3) other regressive fiscal elements in the Alaska fiscal design (i.e. royalty, property tax and production tax floor) continue to make the overall fiscal design regressive and render gas fields up to 1 tcf uneconomic or marginal for producers while yielding high fiscal revenues to the state.

Detailed modelling and sensitivity analysis suggests that Alaska's fiscal system could be improved, made more truly progressive, by adjusting the mechanisms driving the progressivity fiscal element. Firstly, it should be calculated on separate oil (C5+) and natural gas revenue streams and separate progressivity taxes to replace the CPT: one for oil and C5+ (OPT), and one for natural gas (GPT). OPT can use the same mechanism as the prevailing CPT, but GPT requires a new mechanism with more appropriate mmbtu thresholds. GPT could be driven by PTV unit values or other return on investment progressive benchmarks (e.g. IRR or R-Factor). If

also linked to incentives that reduce the impact of other regressive elements in the early pre-payback stages of field development and for less profitable projects, a more attractive and reliable mechanism can be established.

It is possible to make a future Alaska GPT more progressive. Adopting a new GPT while also combining it with fiscal incentives targeted at reducing the state take during the early years of a project could make gas projects – and the higher, more progressive tax -- more palatable to investors. Indeed it should be possible to structure a progressive mechanism that provides Alaska with a significantly higher share of profits in the most profitable natural gas (and oil) projects (e.g. some 70% of profits on a 5% discounted basis). This would be competitive in international terms, if offset by some additional investment incentives (e.g. reducing royalty, property taxes and production tax floor to lower levels in the pre-payback project phases) that accelerate payback for the investors. Such measures could substantially increase Alaska's overall revenue share; but it would receive it slightly later, and there would be slightly higher market risks for Alaska associated with such mechanisms.

One of the challenges of linking fiscal terms to measures of profitability such as IRR and R-factors (cumulative revenues/cumulative investments) is that producers can be encouraged to inflate costs or “gold plate” operations by spending more to prevent high IRRs driving them into higher tax-rate positions. Consequently, fiscal instruments that reward producers that save costs or conduct operations in a cost-effective manner should be considered to accompany progressive elements linked to profitability.

Many governments manage to achieve greater fiscal takes by taking equity interests in upstream and midstream projects. This can be on a heads-up basis or on a carried basis (e.g. producers pay for exploration and appraisal costs in the upstream context) with the government granted an option to back-in to a successful project and take an equity interest (e.g. 10% to 20% is typical, but in some countries it can be much higher, e.g. Algeria and Libya) in the field development. This can be a highly effective way of increasing the government's share of a project and sharing in the equity profits as well as the fiscal revenues. The equity interest can also be sold, ultimately enabling governments to prevent individual companies from dominating control of resources and infrastructure. Revenues from such interests could be re-invested in strategic infrastructure that could further accelerate industry development. The downsides to such participation include: conflicts of interests and objectives between public and private sectors; liabilities in cases of project failures, accidents and environmental spills; increased overheads and bureaucracy; temptation by the state to meddle in technical decisions it may be ill-equipped to make; some argue that state-controlled projects often result in lower efficiency and higher costs (although that is not always the case); and, issues of diversification (should the state invest tax revenues in the industry from which they are derived or use them to diversify and develop other industries or social infrastructure).

Good fiscal design is not just about focusing on progressive fiscal schemes to optimize sovereign take. There are many other fiscal issues to consider and instruments applied by various countries around the world attempting to deal with issues (e.g., incentives for deep

drilling, controlling financing charges). A wide range of such issues are addressed in this study in terms of how they might impact a future Alaska natural gas industry. Taking such impacts into account could benefit Alaska in helping it to develop a more focused and robust natural gas fiscal design.