



TRANSCANADA'S PARTICIPATION IN AK LNG: KEY ISSUES

OCTOBER 2015

Contents

- 1 Executive summary
- 3 The current role of TransCanada in AK LNG
- 4 Background: 2014 legislative debate on TransCanada participation
- 7 Financial aspects of TransCanada's participation
- 15 Strategic aspects of TransCanada's participation

About the authors

Janak Mayer is Chairman and Chief Technologist and Nikos Tsafos is President and Chief Analyst at enalytica.

EXECUTIVE SUMMARY

TransCanada (TC) notionally holds the state's equity stake in the pipeline and gas treatment plant (GTP) components of Alaska LNG (AK LNG), but from a risk perspective, its participation in the project more closely resembles a loan: TC will pay for expenses that would otherwise be borne by the state, and in return, the state will repay TC a tariff over time (codified through a Firm Transportation Services Agreement, or FTSA). The financial case for keeping or getting rid of TC is too close by itself to be persuasive, especially given all the uncertainties involved with a project at such an early development phase. In particular:

- It seems unlikely that banks and credit rating agencies will treat the state's FTSA with TC in a fundamentally different way than if the state were to borrow equivalent sums directly. Thus, it is not clear that TC will make it easier for the state to finance this project (see p. 11 in this report for more).
- While the state may be able to borrow the funds to support its AK LNG commitments at rate equal to or lower than that charged by TC, it is not clear that it can do so at substantially lower cost, given the current outlook for the state's finances, and the size of the capital requirement (pp. 8-9 for more).
- Neither is it clear that the tariff offered by TC is substantially more expensive than the rate at which the project could secure non-recourse funds from private borrowers; the TC tariff is likely to be more expensive, however, than funds offered by public lenders such as export credit agencies (pp. 9-11 for more).
- If one discounts future cash flows at a rate that correctly accounts for project risk, the difference between keeping TC in and going alone is minimal, especially if the state were to exercise its Equity Option (pp. 11-13 for more).
- The risk of receiving negative netback at the wellhead in a world of low gas prices is slightly higher under TC, but could be effectively mitigated if the state wished to continue the partnership (pp. 13-15 for more).

Given that the purely financial case for keeping or getting rid of TC is not, by itself, persuasive, other, non-financial questions carry particular weight:

- To what extent has TC delivered on the expectations of the state? The assumption, during the SB 138 discussions, was that the state and TC would be highly aligned in all midstream questions since they shared an interest in having as much gas as possible flow through the pipeline. To what extent have such expectations been borne by the facts? What is TC's position on questions such as whether to build a 42 or a 48 inch pipeline? Does TC have the same views as the state on the withdrawal agreements being negotiated? (pp. 15-17 for more).
- How would TC's departure impact the project? TC was selected because it brought considerable experience and expertise in the midstream component. To fully understand the implications of TC leaving, one needs to understand how the workflow will be impacted. How many TC employees are participating in project work and how will that work be affected by a termination event? (p. 17 for more).
- What kind of project structure does the State of Alaska wish to see for AK LNG? On one hand, the project is structured to align ownership of gas with ownership of infrastructure, and in that world, TC's role is less clear. On the other, the state is negotiating agreements that could see one or more producers leave the project, in which case, it would make sense to re-introduce partners such as TC that have an interest in constructing and owning infrastructure (p. 17 for more).

Finally, there is a broader question about the nature of the relationship between the state and TC. The agreement that governs the relationship has certain elements that keep most of the risks of equity ownership with the state, but hand TC broad decision-making powers and enable it to earn an equity rate of return on its participation. In part, this agreement reflected the negotiating strengths of the two sides at the time it was made, under the circumstances of the AGIA license. In the absence of such a constraint, however, now may be the right time to reconsider the balance of risk, reward and control in the partnership with TC.

THE CURRENT ROLE OF TRANSCANADA IN AK LNG

TransCanada's participation in AK LNG was codified in a **Memorandum of Understanding (MOU)** between the State of Alaska (SOA) and TransCanada (TC) in December 2013. The MOU was negotiated alongside a **Heads of Agreement (HOA)** between the State of Alaska (SOA), the three major North Slope producers, and TransCanada, setting out an overall strategic vision for AK LNG.

Heads of Agreement. Under the HOA, the state indicated its intention (subject to negotiations) to take its tax and royalty entitlements for gas production in kind, as gas rather than as cash, which would give the state a 20-25% share of the gas for the AK LNG project. Further, it would hold a corresponding 20-25% of the equity in the project. As an equity partner, it would be responsible for 20-25% of the costs of developing the \$45-\$65 billion project. Under the basic framework of the HOA, gas and infrastructure ownership would thus be aligned.

Memorandum of Understanding. The MOU then proposed assigning the state's 20-25% infrastructure ownership in the gas treatment plant (GTP) and pipeline to TransCanada (TC), while retaining the state's full share in the liquefaction component of the project. Under this arrangement, TC would fully fund the state's development costs for the GTP and pipeline, and be reimbursed with interest for doing so. Should the project proceed, that reimbursement would occur through a tariff on the transportation of the state's share of the gas, which covers the costs of building the infrastructure and transporting the gas plus a return. If the project did not proceed, or if TC at some point left the project, TC would be reimbursed in full, with interest, by the state. While it would notionally hold infrastructure equity, TC's involvement is thus more like a loan; the core project risks would remain with the state, while TC would be a financier and provider of technical expertise and capability.

The MOU essentially provided a term sheet, outlining the basis on which subsequent agreements establishing this relationship with TC would be drawn up. Under the MOU, the state would also have an **Equity Option (EO)**, exercisable at the end of 2015, to **reclaim up to 40% of its original share** in the pipeline and GTP (10% of the total for each) from TC by repaying the corresponding share of TC's development expenses to date with interest.

		PRODUCERS			SOA OPTIONS UNDER HOA AND MOU		
		XOM	BP	COP	HOA	MOU	MOU+EO
	GAS SUPPLY	32%	21%	22%	25%	25%	25%
INFRASTRUCTURE	GTP	32%	21%	22%	25%	TC:25%	TC:15%, SOA: 10%
	PIPELINE	32%	21%	22%	25%	TC:25%	TC:15%, SOA: 10%
	LIQUEFACTION	32%	21%	22%	25%	25%	25%

In approving SB138, the legislature authorized the state to negotiate and enter into agreements with TransCanada and the producers of no more than two years duration. These agreements included a **Precedent Agreement (PA)** and **Equity Option Agreement (EOA)** that accompanied the AGIA Dissolution Agreement with TC, based on the terms negotiated in the MOU, and superseding that agreement. The PA and EOA currently govern the terms of the SOA's relationship with TC, but have not yet been made available to the legislature due to confidentiality restrictions.

BACKGROUND: 2014 LEGISLATIVE DEBATE ON TRANSCANADA PARTICIPATION

Original rationale for TransCanada (TC) participation. In the legislative review of the HOA, the MOU and SB 138 that occurred in the 2014 legislative session, the Parnell administration, which had negotiated that MOU, argued strongly that TC brought several advantages to AK LNG, including in particular that:

- TC had a **long history of working on an Alaskan gas pipeline**, most recently as the holder of the Alaska Gasline Inducement Act (AGIA) license. TC brought a wealth of experience, data, institutional knowledge and prior work that AK LNG could leverage. Moreover, TC was **one of the world's premier pipeline companies**, one of only a few having experience with northern pipelines, and its involvement would strengthen the project team in designing, constructing and operating the 800-mile pipeline from the North Slope to tidewater.
- TC was a company that made money by shipping gas. Thus, on the question of future pipeline expandability, **TC's core interests were aligned with the interests of the state**: the more gas that eventually flowed through the pipeline, the better it would be for TC. The state could rely on TC's interests and expertise to ensure that the pipeline would be structured and designed to be as expandable as possible, both technically and commercially. Indeed, the administration argued that they had benefited from TC's expertise at the negotiating table in securing expansion principles in the HOA, and in the various technical discussions on in-state gas options and off-take points.
- TC could make it **easier for the state to finance its share in AK LNG**. As a part owner in AK LNG, the state would be responsible for covering its share of the development costs, which would run into several billion dollars. By bringing TC into the project, the state would have to put upfront a smaller amount of capital; instead, the state would reimburse TC over time for its expenses in AK LNG, in the form of a tariff on SOA gas flowing through the pipeline and GTP.
- Excluding TC from AK LNG could have exposed the state to **liabilities related to the AGIA license**, which entitled TC to damages if the license was suspended, and also hindered the full transfer of AGIA work product to AK LNG until the AGIA license was satisfactorily wound up. In that context, continuing the relationship with TC avoided any potential disruptions and project slippage that could result from any adversarial ending of the AGIA license.

- The MOU provided **'off-ramps'** that meant the question of **TC's ultimate project participation could be revisited** when more project details had been established, and more analysis had been performed.

In presenting this argument, the Parnell administration acknowledged that TC's involvement came with certain costs. In particular, it was understood that the **weighted average cost of capital (WACC) required by TC** to effectively finance the state's share of the GTP and pipeline **might be higher than that required by other potential sources of finance**. Fundamentally, however, it was suggested that any such costs were limited in the context of the overall project, and would be outweighed by the benefits of TC's participation, in terms of capabilities and expertise, expansion-orientation, and continuity from AGIA to AK LNG.

Key concerns expressed during 2014 legislative session. At the same time, several parts of the relationship with TC came under significant scrutiny during the SB 138 conversation in the 2014 legislative session:

- There was concern at the observation that **TC took on limited risk** and that, as a result, in some regards the partnership appeared skewed in TC's favor, with TC earning an equity rate of return on the project without taking on the true risks of equity ownership. If the project failed, TC would be reimbursed for all its expenses to date; if the project's costs escalated, it would earn a higher tariff to compensate for higher costs; if there was a change in long-term interest rates before a Final Investment Decision (FID) was made, its rate of return on debt and equity would adjust accordingly (a provision which is natural for debt but harder to justify for equity). And if TC could not secure financing at terms acceptable to it, it could simply pull out and be reimbursed for its expenses.
- The MOU terms provided the state with **limited levers through which to influence TC's involvement in the project**. Under the MOU, TC would be the general partner of the Limited Partnership that would hold the state's interest in the GTP and the pipeline; in that capacity, TC would

"make all decisions on behalf of the Limited Partnership, provided that the Equity Option Agreement will provide that certain fundamental decisions (e.g. change to distribution policy, winding up of Limited Partnership, sale of significant interest of Limited Partnership in AK LNG) could not be made without the approval of the Optionee (before the option is exercised) or the Limited Partner (after the option is exercised)." (MOU, page 1)

In other words, the state retained certain veto rights but otherwise depended on TC to make decisions that served the state's interests, despite the fact that it was the state, rather than TC that bore the ultimate costs and risks.

- TC participated not just in the pipeline, where it had clear expertise, but also in the GTP, where the relevance of its expertise was less apparent.
- Finally, on the question of 'off-ramps' there was significant discomfort at an MOU clause stating that if the relationship were terminated, the state would have to

offer TC an opportunity to join any new project that was “substantially similar” to AK LNG for 5 years after the termination of the agreement. Legislative scrutiny and resulting negotiations and clarifications during the course of the session served to ensure that that clause would be included in an eventual FTSA, but not the PA that would govern the TC relationship until an FTSA could be signed in late 2015; as a result, **late 2015 would provide the one opportunity** for a clean break should the state wish to **terminate the relationship at that point**.

Centrality of late-2015 ‘off-ramp’. It was this final question of a solid, late-2015 off-ramp that ultimately, for many legislators, provided the necessary reassurance regarding the TC relationship to enable the passage of SB 138. This provision meant that through the course of 2014 and 2015, the state could acquire a more **thorough and detailed understanding of its own ability to finance the project**, and how the costs and benefits of these options compared to those of TC’s participation.

Armed with that knowledge, in late 2015 the state could then decide whether to (a) continue the relationship with TC unchanged; (b) exercise its option to acquire 40% of TC’s share of the project (10% of each of the GTP and the pipeline); or (c) take the ‘off-ramp’ and terminate the relationship with TC, reimbursing it for its expenses to date. The state would be able to **make this decision after having fully dissolved the AGIA license**, and no longer having the concern over AGIA damages, or the transfer of TC work product to AK LNG being part of the picture.

Options available: extend deadline or terminate. Late 2015 is now here. Ideally, in making further determinations on TC’s involvement, under the timeline originally envisioned, the legislature would have had full details of all of the contracts to be signed with other partners, and details of the proposed financial structuring that went with these, including risks of different options, and their impacts on the state’s bonding capacity and bond rating. Because of the delays created by difficult negotiations in other areas, however, many of these details will be difficult to present at the same time as the TC decision, since the December 2015 deadline for a decision on TC’s ultimate participation still applies despite slippage in other areas.

Clearly, without other agreements in place, the state cannot agree to an FTSA with TC; until it finalizes gas supply agreements and makes a Royalty-In-Kind (RIK) determination, for instance, the state has no gas to ship through a pipeline. The choice that faces the state now is thus **whether to seek to extend the December 2015 deadline for finalizing an FTSA and exercising the Equity Option, or whether the state should terminate its relationship with TC** by reimbursing it its costs incurred to date, with interest.

Financial and strategic costs and benefits. The question of TC’s involvement has always been one of evaluating the **potential financial costs** of TC’s involvement in the project (in terms of its weighted average cost of capital, compared to the potential borrowing costs of the state) in **comparison to the financial and non-financial benefits TC’s involvement might bring**. For that

reason, the remainder of this report will be devoted to an analysis first of the financial, then of the strategic costs and benefits to TC's participation in AK LNG.

FINANCIAL ASPECTS OF TRANSCANADA'S PARTICIPATION

The cost of the implicit 'financing' provided by TransCanada is set by the MOU on a basis common to most regulated infrastructure like pipelines - that of a capital base consisting of the capital cost of the infrastructure, depreciated over time, with a tariff composed of an agreed return on that capital, plus depreciation recovery, operating costs and taxes. Under the MOU, TC's return on their capital deployed in funding the design and construction of their share of the pipeline and GTP is calculated through an agreed capital structure, and a set cost of debt and equity.

Under the MOU, the capitalization structure agreed to is one of 70% debt and 30% equity during development and construction, revised to 75% debt and 25% equity one year after the in-service-date of AK LNG, and remaining in that proportion for the duration of the 25 year contract term. **The base rate set for the return on equity is 12%, while the cost of debt is set at 5%.** Both numbers are subject to a 'rate tracker differential', which tracks the difference between the yield on 30-year US Treasuries between the time of the original signing of the MOU in December 2013, and the time at which a final investment decision (FID) for AK LNG is made. The ultimate capital costs would then be fixed, on the basis of this tracker, at FID.

Ignoring for the moment the effect of the rate tracker, given this capital structure and these returns on debt and equity, the **weighted average cost of capital (WACC) during design and construction would be 7.1% during design and construction, falling to 6.75%** after the first year of operations.

Since the 30 year Treasury yield has fallen by 95 basis points (i.e. 0.95%) since the MOU was signed in December 2013, if one were to imagine it were possible to take FID in mid-October 2015, the resulting costs of capital would be reduced accordingly, to around **6.15% during construction, and 5.8% during operation.** Of course the 30 year Treasury yield will continue to move between now and FID, and in general the likelihood of substantial upward movement must be seen as substantially greater than that of further declines over that time period.

Finally, if TC ceases to be a participant before the final debt and equity rates are set at FID, TC's reimbursement will be with interest (Allowance for Funds Used During Construction, or AFUDC under the terms of the MOU) fixed at the rate of 7.1%.

TransCanada cost of capital vs other US pipelines. A key question during the the 2014 legislative session was the reasonableness of the tariff negotiated with TC in comparison with rates charged by other pipelines in the United States. Analysis prepared by enalytica at that time demonstrated that compared to FERC-regulated pipelines, the TC MOU entailed a capital structure much more heavily weighted toward debt (the lower-cost form of capital), and with a weighted average cost of capital (WACC) near the very bottom for all FERC-reporting pipelines.

Ultimately, however, this comparison may not be the most relevant, or the most important comparison to draw, because of the allocation of risk under the MOU. In many aspects, although under the MOU and subsequent agreements, TC notionally holds the state's equity share in the AK LNG GTP and pipeline components, in reality the state continues to bear most of the true risks of equity ownership, with TC made whole with interest in almost all scenarios. In the amount of project risk that it takes on, ignoring for the moment any other benefits it may provide, **TC is more like a bank or a bond-holder than a true equity participant**, and in many ways it is more logical to compare the financing option that TC provides to that which the state might obtain either through debt financing on the state's balance sheet, or the non-recourse financing that might be available to a state project company.

TransCanada cost of capital vs state balance sheet debt. The state's likely cost of debt in a world in which AK LNG is sanctioned is very difficult to forecast with any degree of accuracy, even if one ignores broader changes that will occur between now and FID to the long-term risk-free interest rate (effectively synonymous with the US Treasury yield), which affect all of the state's financing options more or less equally (including TC, through the rate tracker differential). While the state currently maintains a triple-A credit rating and is able to access fixed-income capital markets at exceptionally low rates, this is a function of the relatively low debt burden the state currently maintains, and its exceptionally high level of savings.

Key factors that will impact the state's ability to raise a significant portion of the roughly \$15 billion needed to fund its share of AK LNG will include:

- the outlooks for the crude oil price and North Slope oil production in the 2020s;
- the trajectory of the state population and state spending in the intervening years;
- the duration of the current period of low oil prices;
- the state's success or otherwise in cutting spending and developing non-oil sources of revenue during the oil price downturn, and its corresponding rate of consumption of savings;
- the performance in the intervening time of the Permanent Fund, and the degree to which, explicitly or implicitly, it is seen to backstop relevant liabilities;
- the extent of the state's future dependence on AK LNG project revenues.

The state has dedicated, specialist advisors regarding its access to debt capital markets, and their advice should be relied on in gauging the state's likely cost of capital across a range of possible scenarios. At the time of writing, only some preliminary numbers from FirstSouthwest (prepared June 3, 2015 and marked 'for discussion purposes only') have been made available to the legislature in considering this question. Even these, however, are useful in considering the extent to which state financing may present advantages over the TC financing option.

The FirstSouthwest analysis provided assumes, reasonably, that if the state can limit debt service costs as a proportion of general fund revenue to 5%, it can maintain its current AAA credit rating, but that as this percentage rises, its rating falls, reaching a level of A2/A when debt service reaches 20% of general fund revenue. It posits a **4.49% rate on taxable bond issuance in 2017 at a AAA rating**, rising to **5.34% at the lowest A2/A rating** contemplated.

The analysis provided suggests that a **~\$15bn bond issuance** in 2017 (roughly the full amount needed to cover the state's anticipated construction costs for AK LNG, though it would not all need to be raised in 2017) **would take the state to the limit of fundraising that could be achieved at a A2/A rating**, implying a cost of debt around the 5.34% level, by FirstSouthwest's numbers. It should be noted that this analysis also relies on the DOR spring 2015 Revenue Sources Book projections for unrestricted general fund revenue, which assume that ANS crude returns to \$110/bbl by 2020, and rises from that point onward. While a world in which this does not occur would make debt raising more difficult and expensive still, such a world would also be one in which AK LNG would be less likely to reach FID.

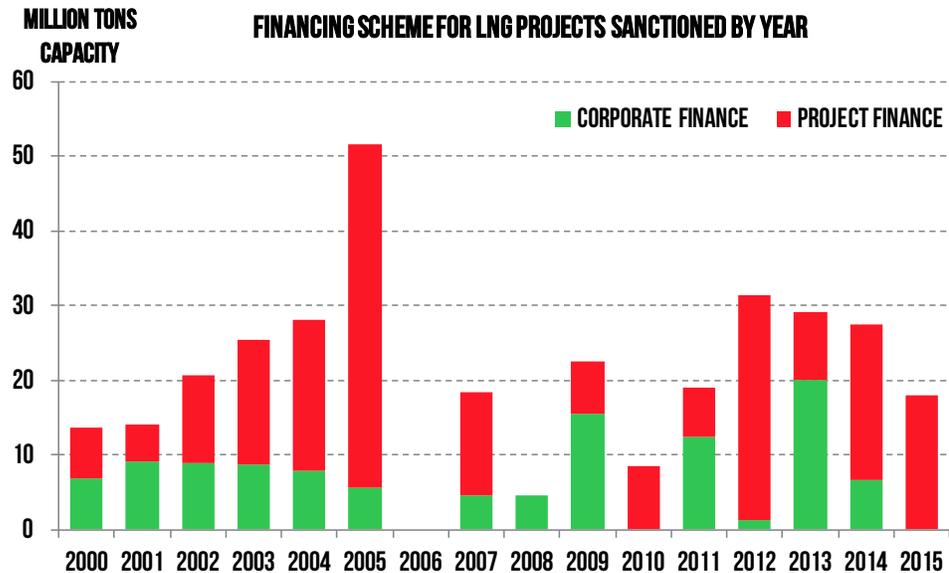
It seems likely that, in most plausible scenarios, if the state chose to raise the funds for its share of AK LNG entirely through debt, and did so through on-balance-sheet, recourse debt (whether general obligation or appropriation bonds), it could do so, although doing so would clearly involve a significant credit-rating downgrade. As the subsequent section will show, this is likely the case regardless of whether TC participates or not. Further, it appears likely that the cost of such debt would, in most reasonable scenarios, be no higher than the cost of financing offered by TC. Indeed, since TC's offer depends largely on leveraging the state's 'full faith and credit', it is hard to see how TC's cost of financing could ever be cheaper than the state's; were the state's credit rating to deteriorate to a point that implied a higher cost of capital, TC could always opt to withdraw, leaving the state with a need to finance directly.

How much lower this cost could be than that of TC participation depends on too many variables to predict with any degree of certainty, but in most likely cases, it seems unlikely to be sufficiently large that the case for proceeding without TC can be convincingly argued on cost-of-capital grounds alone, if there are other major non-financial advantages to TC's participation.

One exception to this would be if the state were successful in obtaining a private letter ruling from the IRS authorizing the state to issue tax-exempt bonds to raise funds for AK LNG. Yields on tax-exempt bonds are far lower than those on taxable ones, so if tax-exempt issuance in support of AK LNG is possible, this would present a major financing advantage. Tax-exempt issuance primarily exists to support public facilities and infrastructure, however, and strict rules govern eligibility for projects with private participants or off-takers. As a result, absent a PRL, the permissibility of tax-exempt issuances remains unclear.

TransCanada cost of capital vs project company non-recourse finance. For many LNG projects, significant amounts of debt financing are raised not on the

balance sheets of their sponsor companies, but by project companies themselves, with limited or no recourse to the sponsors. Such debt is rated primarily not on the financial strength of the sponsor companies, but on the financial strength of LNG buyers, and the firmness of their long-term financial obligations to purchase LNG.



Sources: *enalytica* based on company announcements, industry press and reports, and Project Finance International annual league tables

The above time series chart, which shows total LNG project capacity sanctioned each year, split between non or limited-recourse financing (also known as project financing), versus sponsor-recourse corporate financing, makes it clear just how strongly established project financing is in the world of LNG projects.

Substantial amounts of project debt have been raised in recent years, with individual projects rating in excess of \$10bn in project debt. The **Ichthys LNG project in Australia raised fully \$20bn of its total \$34bn cost through limited-recourse debt**. Such borrowing, however, brings with it strict lender scrutiny, including rigorous conditions precedent and loan covenants, financial transparency of all project participants to lenders, and additional requirements beyond sovereign regulatory ones in the management of environmental and social risks.

Since project finance transactions are often private between projects and a syndicate of participating banks and official export or credit agencies (ECAs), interest rates on project finance loans are often not publicly available. For a few recent LNG projects in the US Gulf of Mexico, however, data is available on interest rates for non-recourse bond issuance. Sabine Pass Liquefaction, LLC, the project company for **Cheniere Energy's Sabine Pass LNG project, raised close to \$9bn in recent years in limited-recourse bond placements**, using notes falling due between 2021 and 2025, at **interest rates between 5.625% and 6.25%**.

No two projects are alike, but the Sabine Pass figures may provide a useful lower bound on the potential cost for non-recourse project debt for AK LNG. While again, this lower bound is cheaper than the 5.8% to 6.75% range implied by movements in the rate tracker for the TC contract (based on the capital structure used in operation), the gap is not large enough, given the many variables involved, to suggest that this avenue is likely to present a major cost-of-capital savings, if any, for the project in comparison to the option presented by TC.

The same is not true of funds obtained from public sector lending bodies like export credit agencies (ECAs), which are major lenders in the market for LNG project finance, and frequently lend at advantageous rates. ECA project financing could be a compelling piece of a overall financing strategy for AK LNG.

Impact of TransCanada participation on state debt capacity. One of the arguments put forward by the Parnell administration in 2014 in advocating TC's participation in AK LNG was the limited debt capacity of the state. Given the significant impact of the large-scale borrowing required by AK LNG on the state's credit rating, and given the likelihood of other bonding needs by the state, TC participation was presented as a means to reduce the amount of debt the state would need to take on, and better preserve the state's credit rating and debt capacity available to meet other needs.

This has always been the least persuasive of the arguments made in favor of TC participation. While there are doubtless many subtleties that can be debated regarding government accounting rules, and specific treatments that might apply, the general intention of standards bodies like the Government Accounting Standards Board (GASB) seems clear; where a contract pledges the full faith and credit of the state, and entails a major and highly material, firm, long-term financial obligation of the sort entailed by an FTSA, such a contract should be capitalized as a liability on the state's balance sheet at the present value of the future contract payments; in other words for all intents and purposes, such a contract should be treated as equivalent to debt, including in its impact on debt service and debt capacity.

There are many reasons to believe that ratings agencies would take a similar view of an FTSA with TC, and relatively few reasons to believe that the state can incur a firm financial obligation in the form of an FTSA, and not see a major impact on its credit rating and debt capacity.

Net Present Value analysis of TransCanada participation. As with any form of financing, TC's involvement in AK LNG has different impacts across different time periods. As Black & Veatch's modeling shows, it reduces the state's up-front cash-calls for development and construction by around half, from \$14bn to \$7bn, but, assuming the state structures capital for the project with 70% debt and 30% equity, it reduces the corresponding cashflows the state receives over the life of the project by around \$400mm each year in nominal terms. Any analysis that focuses only on one side or another of this intertemporal balance is unhelpful.

Fortunately, financial economists have for a long time used a simple measure to equilibrate the differential impacts of investment decisions over time, that accounts for the fact that a dollar in the future is worth less than a dollar today. This measure is Net Present Value (NPV) - the value of a future stream of cashflows, discounted to take into account the time value of money, so that we can reliably compare widely differing cashflows from different investment opportunities on a completely equal footing.

In order to calculate the NPV of differing investment alternatives, however, we must first establish a discount rate that we can agree correctly represents the time value of money. How do we determine what the correct discount rate is for the State of Alaska?

Some might suggest that the correct rate to use is the state's own bond rate - its cost of debt. Others might suggest that we should instead use the rate given by the state's current return on its biggest pool of assets - the Permanent Fund return of 8%. Both of these, however, can be shown to be clearly and unambiguously the incorrect approaches to take to this problem.

Almost all modern finance textbooks agree on one point above all: **the correct discount rate to apply in evaluating the present value of any investment opportunity**, by any investor, whether the state, a company or an individual, is the weighted average cost of capital that represents the **return that market investors would require to hold a security representing a piece of that investment as part of a well-diversified investment portfolio**.

This is a universally accepted concept in financial economics, because it represents the best means available of empirically measuring and taking into account the different risks posed by different investment opportunities in determining whether or not they are attractive investments. Though the state's long-term bond rate for large scale capital raising may be 5%, we wouldn't want the state to invest in a highly leveraged, high-risk hedge fund that could lose all of the state's money tomorrow, for a 5% return. Indeed, we wouldn't even want the state to make such an investment for the 8% return it receives from the relatively conservatively managed Permanent Fund; were the state to take such a significant risk, like any investor it would need to ensure it was suitably compensated for the risks it took.

How, then, do we assess the risks of an LNG project in determining the appropriate weighted average cost of capital to use in discounting the cashflows that the state expects to receive from AK LNG? The best way to do this is to look at companies whose investments are LNG projects, upstream oil and gas projects, pipeline projects, or some combination of these, and assess the returns required to be willing to hold their equity as part of a well-diversified stock portfolio. In other words, **rather than looking at the returns of the Permanent Fund** to determine the discount rate the state should use in assessing its investment in an LNG project, we need to look at **the returns that the Permanent Fund would require in order to be willing to hold stock in an LNG company, an oil and gas company, or a pipeline company, as part of its portfolio**.

Fortunately, a preliminary version of this analysis has already been undertaken by the state's financial advisor Lazard, and is provided for information in the appendices of the report they submitted in early 2015. These appendices provide the data required to estimate the required returns on such equity. By performing a few additional straightforward calculations, **we can calculate an appropriate overall weighted average cost of capital (WACC) at which we should discount the cashflows of an LNG project.** While it is possible to arrive at different interpretations when considering which companies should be included, or how the tax-free status of the state in regard to the impact of debt should be considered, in any possible range of analyses, one arrives at a number of **at least 9%, and in most cases 10% or above.**

One additional complication, however, must be considered in evaluating the appropriate discount rate to use. Not all of the cashflows to the state from AK LNG are returns on the state's investment in the form of revenues from LNG sold. Some of the revenues will come from property taxes paid by the other project participants. Since these are not exposed to commodity risks (though if property taxes are charged on a \$/mcf basis, they will be exposed to other project risks), and are tax revenues rather than investment proceeds, some argument exists for discounting these cashflows at a lower rate. However, even if these represented fully a quarter of the revenues, and we discounted these at an aggressively low rate of 5%, while discounting the remainder of the revenues at a rate of 10%, we would end up with a weighted average of 8.75%. Discounting the state's expected revenues from AK LNG at a rate lower than that for any decision making purpose is very difficult to justify.

The *TransCanada Participation Decision* analysis provided by Black & Veatch examines the NPV difference to the State of Alaska of a project structure with TC and without, assuming that any project participation not funded by TC is supported by the state through 70% debt and 30% equity, at the same 5% cost of debt that applies to debt (but not equity) under the deal with TC. Slide 25 presents this analysis assuming the state does not exercise its Equity Option, while slide 56 presents it in the case of exercise of the EO.

In both cases, at a discount rate of 10%, there is no material NPV difference in the results between TC participation or pure state financing. Even using a discount rate as low as 7%, there is an NPV cost of only \$600mm to TC participation in the case that the state does not exercise its equity option, falling to only \$200mm in the EO case. These numbers compare to an NPV for the project overall (assuming no TC participation) of \$9bn. Clearly, while there may be a financial cost to the state from TC's participation, that cost is limited in the overall project context, especially if one discounts at an appropriate rate. Furthermore, the bulk of any such cost can be mitigated simply through exercise of the Equity Option.

'Negative Netback' risk from TransCanada participation. By taking gas in kind rather than as value at the wellhead, the state exposes itself to certain risks that it would not, were it possible to structure a project that involved neither a state equity

investment nor royalty in kind / tax as gas. Principal among these is the possibility that the fixed costs the state must incur to transport its gas might, in periods of low LNG prices, exceed the sales price it receives for its LNG - in other words, that after subtracting all of the costs of transportation, in periods of adverse pricing, the state could effectively be paying money to sell its LNG.

If the state were to fully fund its infrastructure through equity, it would not run this risk, except in cases so extreme where the cost of LNG were so low as to not cover the operating costs of the AK LNG facilities. In an all-equity case, the risks to the state would be those of not making an acceptable rate of return on its investment, rather than of actual losses on LNG sold.

Financial leverage, however, complicates this picture. That leverage may come through debts to banks or bond-holders, or in the form of an FTSA commitment to TC. Both involve a senior, fixed claim on the cashflows from the state's share of AK LNG, which must be met before the state receives its cash. In stressed price environments where the costs of these fixed claims are higher than the proceeds of selling LNG, the state runs the risk of 'negative netback'. Thoroughly understanding and effectively managing or mitigating this risk is clearly an essential precondition to the state making the RIK election on which the current AK LNG structure is based.

Black & Veatch examine this risk on slides 27 and 28 of their analysis, showing that the state's "midstream cost obligations are expected to be \$8.20/MMBtu with TC compared to \$7.30/MMBtu without TC". This is an important analysis to understand in evaluating the financial costs and benefits of TC participation, however some key facts should be born in mind in considering it.

Most important to understand is the fact that the analysis looks at LNG shipping and marketing revenues to the state, not all of the state's revenues from AK LNG. In particular, property and state income taxes from other project participants to the state are not considered in the analysis; this represents strictly the expected revenues and costs of the state 'project company'. This is a sound distinction; it will be the state project company that needs to pay these costs, and times where company revenues are insufficient to cover them will pose significant problems.

However the payment and receipt of property tax is a key distinction between TC participation and non-participation. As a private sector company, TC is required to pay property taxes on its ownership of the pipeline and GTP, where the state would not. These taxes ultimately come back to the state, broadly defined, but in general are shared with municipalities rather than all revenue being unrestricted general fund revenue for the state.

The Black & Veatch negative netback analysis assumes a scenario where the state funds all project capital calls not met by TC 100% through debt. The analysis assumes that the cost of debt for the state is the same 5% that is the return on debt to TC under the MOU.

The cost difference calculated by Black & Veatch between TC participation and TC exit is thus driven by two key things; 12% the return on equity that must also be

paid to TC (on the 25% of TC's capital base that would be funded through equity for rate-making purposes), and the taxes that TC must pay that the state would not, the vast majority of which are property taxes. Because the analysis only looks at the project company, the fact that these taxes are paid to the state (broadly defined) is excluded from the picture. Of the \$0.90/MMBtu cost difference calculated by Black & Veatch, \$0.50 is due to TC's return on equity and federal income tax liability, while the remaining \$0.40 consists of payments made to the state (including municipalities) in the form of property tax and, to a lesser extent, state corporate income tax.

Thus, a large part of this negative netback risk remains within state control, depending on the state's chosen structuring of property tax sharing with municipalities. Since any increase in property taxes as a result of TC participation is purely a function of a chosen financial structure, it should be possible to offset this in distribution arrangements, and even to hold some of the proceeds in reserve for use during times of extreme negative price exposure. This would eliminate the portion of the difference between the two scenarios that is driven by property taxes.

The remaining \$0.50/MMBtu cost difference due to TC's return on equity could then be substantially further reduced through the state's exercise of its Equity Option to 'buy back' up to 40% of the state's 25% stake in the GTP and the pipeline.

STRATEGIC ASPECTS OF TRANSCANADA'S PARTICIPATION

Financially, the transaction with TransCanada is thus a close call that depends on many parameters that are unknowable at this time. While in purely financial terms, the state's position in AK LNG is unlikely to be impaired as a result of terminating its relationship with TC, the financial benefits that might come from termination are at this point uncertain and highly contingent.

The merits of the case for terminating or retaining TC must thus rest on a fundamentally different set of questions; questions that reassess the initial assumptions around the strategic benefits of the TC partnership. Almost two years into this partnership, have these benefits materialized?

Expansion orientation. When the Parnell administration proposed the TC partnership, it was argued that TC would be a strong, firmly expansion-oriented partner that would use its experience and expertise to ensure the future expandability of the pipeline, and that would be capable of providing the capital and capabilities for future expansions with minimal additional requirements on the state. After two years of seeing this partnership operating in practice, we should be in a much better position to understand whether or not this is truly the case, especially in light of recent moves by the Walker administration to have the AK LNG project perform detailed engineering for a 48 inch rather than a 42 inch pipe. Key questions that must be answered here are:

- In the debate over the best sizing of the pipeline, how has TC's expertise contributed to the debate?

- Has TC's participation in fact helped to counterbalance the narrower interest of the producers in securing a project that is more expansion oriented, to the degree originally hoped?

Control, interest alignment and transparency. The question of expansion-orientation is crucial both because it was a centerpiece of the Parnell administration's argument for TC's participation, and also because it speaks to a broader issue; the question of alignment of interests between TC and the state. This alignment is crucial, because under the terms of the MOU, the state has assigned effective control over its share in the Pipeline and GTP to TC; even were it to exercise its Equity Option under the MOU, it would remain a Limited Partner, while TC is the General Partner, entitled under the contract to make decisions autonomously, requiring state approval only on "certain fundamental decisions (e.g. change to distribution policy, winding up of Limited Partnership, sale of significant interest of Limited Partnership in AK LNG)". If, in its autonomous decision-making, TC's interests and decisions have not aligned well with the interests of the state, or if state visibility into those components of the project have been fundamentally compromised by the degree of control assigned to TC under the contract, that by itself could be a compelling reason to reconsider the relationship. Key questions to be answered here are:

- Has the MOU structure with TC as General Partner worked for the state in ensuring adequate control and access to information?

Impact on project staffing and expertise. TC's pipeline expertise and its long history of working on an Alaskan gas pipeline have been widely viewed as key assets TC brings to this partnership. TC staff occupy numerous key pipeline positions within the AK LNG pipeline organization chart. What would be the impact in project staffing, operations and relevant expertise of the state terminating this relationship? Key questions to be answered here are:

- What key positions in the AK LNG project organization are currently filled by TC staff?
- What plans are in place to ensure continued access to equivalent expertise in the event of termination?

AK LNG strategic vision. Even more than these questions, perhaps the most important question to ask is also the biggest and broadest - **what kind of project does the state wish AK LNG to become?** Thus far, AK LNG has been conceived and designed as an integrated project where ownership of gas matches ownership of infrastructure. All the agreements governing the relationship between the parties are structured based on this principle, in order to create a structure in which the different parties view the investment in terms as similar as possible to each other - the core of true partner alignment. Viewed from this basis, TC's participation has always seemed somewhat out of place: it is the only participant that has neither gas nor any stake in the liquefaction facility, and it alters the way the state, as a partner, views its participation and its decision making in the project as a whole. If partner

alignment through equal ownership of gas and infrastructure remains a key consideration, TC's participation is an obstacle to that aim.

More recently, however, the Walker administration has been vocal in advancing principles that could reshape the project's structure: for instance, in seeking to negotiate withdrawal agreements that might compel parties to sell their gas to the project at the wellhead or to toll gas through the infrastructure. Similarly, the move to consider a 48 rather than a 42 inch pipeline places the question of expansions involving gas holders not currently part of AK LNG front and center. In all of these cases, there could be major benefits to the presence in the project of a company like TC - one that can provide the expertise and funding for expansions, and move the gas of participants that do not own infrastructure to market without requiring major investments by the state. Key questions to ask here are:

- Are partner alignment through common shares of gas and infrastructure ownership still the key principles behind the structuring of AK LNG?
- How do these principles relate to efforts to sign withdrawal agreements with project partners?
- Who would own the infrastructure to monetize the gas of a partner that withdrew? Would the financial burden and risk fall on the state?
- If TC were not involved in the project, who would be responsible for the engineering and commercial work behind future pipeline expansions to accommodate gas not owned by the producers?
- If the burden of future expansions were placed on the state, what plans does the state have in place to ensure it has these capabilities?