ALIGNMENT, IN KIND VS. IN VALUE & MIDSTREAM OPTIONS

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Before co-founding *en*alytica, Janak led the Upstream Analytics team at PFC Energy, focusing on fiscal terms analysis and project economic and financial evaluation, data management and data visualization.

Janak has modeled upstream fiscal terms in all of the world's major hydrocarbon regions, and has built economic and financial models to value prospective acquisition targets and develop strategic portfolio options for a wide range of international and national oil company clients. He has advised Alaska State Legislature for multiple years on reform of oil and gas taxation, providing many hours of expert testimony to Alaska's Senate and House Finance and Resources Committees.

Prior to his work as an energy consultant, Janak advised major minerals industry clients on a range of controversial environmental and social risk issues, from uranium mining through to human rights and climate change. He has advised bankers at Citigroup and policy-makers at the US Treasury Department on the management and mitigation of environmental and social impacts in major projects around the world, and has undertaken macroeconomic research with senior development economists at the World Bank and the Peterson Institute for International Economics.

Janak holds an MA with distinction in international relations and economics from from the Johns Hopkins School of Advanced International Studies (SAIS), and a BA with first-class honors from the University of Adelaide, Australia.

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Nikos Tsafos has a diverse background in the private, public and non-profit sectors. He is currently a founding partner at *en*alytica. In his 7 ½ years with PFC Energy, Nikos advised the world's largest oil and gas companies on some of their most complex and challenging projects; he also played a pivotal role in turning the firm into one of the top natural gas consultancies in the world, with responsibilities that included product design, business development, consulting oversight and research direction.

Prior to PFC Energy, Nikos was at the Center for Strategic and International Studies (CSIS) in Washington, DC where he covered political, economic, and military issues in the Gulf, focused on oil wealth, regime stability and foreign affairs. Before CSIS, he was in the Greek Air Force, and prior to his military service, Nikos worked on channeling investment from Greek ship-owners to Chinese shipyards.

Nikos has also written extensively on the domestic and international dimensions of the Greek debt crisis. His blog (Greek Default Watch) was listed as one of "Europe's Top Economic Blogs" by the Social Europe Journal, and his book "Beyond Debt: The Greek Crisis in Context" was published in March 2013.

Nikos holds a BA with distinction in international relations and economics from Boston University and an MA with distinction in international relations from the Johns Hopkins School of Advanced International Studies (SAIS).

FY 2015 PRODUCTION TAX ESTIMATE USING INCOME STATEMENT FORMAT

	Price	Barrels (Thousands)	Value ($ million)
Avg ANS Oil Price ($/bbl) & Daily Production	$105.06	498	$52.4
Annual Production			
Total		181,912	$19,111.7
Royalty, Federal & other barrels		(23,301)	($2,448.0)
Taxable bbls from companies w/ tax liability		158,611	$16,663.7
Downstream (Transportation) Costs ($/bbl)			
ANS Marine Transporation	($3.46)		
TAPS Tariff	($6.18)		
Other	($0.40)		
Total Transportation Costs	($10.03)	158,611	($1,591.0)
Deductable Lease Expenditures			
Deductible Operating Expenditures	($17.91)		($2,840.3)
Deductible Capital Expenditures	($28.08)		($4,453.4)
Total Lease Expenditures	($45.99)	158,611	($7,293.7)
Production Tax			
Gross Value Reduction			($63.8)
Production Tax Value (PTV)	$48.64		$7,715.2
Base Tax (35%*PTV)			$2,700.3
Total Tax before credits			$2,700.3

SOURCE: DEPARTMENT OF REVENUE, REVENUE SOURCES BOOK, FALL 2013, P. 106

OIL VALUE CHAIN

Oil ~$105/bbl

Midstream costs ~$10/bbl

Lease expenditures $46/bbl

Production tax on ~$49/bbl netback

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PRICE FOR ALASKAN GAS WILL BE:

Less transparent

no readily available published price like ANS WC

Less consistent by destination

contract-by-contract differences can be large

Likely link to Japan Crude Oil Cocktail, JCC

in 2004-2013, JCC traded at $0.22/bbl discount to ANS

Lower value vs. oil (thermal equivalency)

e.g. $100/bbl ≠ $100/boe of LNG

$100/bbl = $78–$90/boe (13%–15% "slope")

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SOURCE: DEPARTMENT OF REVENUE, REVENUE SOURCES BOOK, FALL 2013, P. 106

MIDSTREAM COSTS WILL BE:

Order of magnitude higher

Gas is significantly more expensive to transport

Tariff not regulated by FERC

FERC will regulate permitting, not rate-setting

Tariff highly sensitive to capital structure

return on equity and /or assumed debt/equity ratio

INDICATIVE TAX BEFORE CREDITS FOR ALASKA LNG PROJECT @ ANS

	Price	Barrels (Thousands)	Value ($ million)
Avg LNG Price ($/boe) & Daily Production	$81.00	384	$31.1
Annual Production			
Total		140,306	$11,364.8
Royalty, Federal & other barrels		(19,643)	($1,591.1)
Taxable bbls from companies w/ tax liability		120,664	$9,773.8
Downstream (Transportation) Costs ($/boe)			
Marine Transporation	($6.00)		($724.0)
Pipeline & GTP Tariff	($24.18)		($2,917.6)
Liquefaction Tariff	($36.00)		($4,343.9)
Total Transportation Costs	($66.18)	120,664	($7,985.5)
Deductable Lease Expenditures			
Deductible Operating Expenditures	($3.00)		($362.0)
Deductible Capital Expenditures	($3.00)		($362.0)
Total Lease Expenditures	($6.00)	120,664	($724.0)
Production Tax			
Gross Value Reduction			$0.0
Production Tax Value (PTV)	$8.82		$1,064.3
Base Tax (35%*PTV)			$372.5
Total Tax before credits			$372.5

SOURCE: ENALYTICA ANAL OF REVENUE, REVENUE SOURCES BOOK, FALL 2013, P. 106

INDICATIVE LNG CHAIN: $100/BBL

At $100/bbl, LNG price ~$81/boe (13.5%)

Midstream ~$66/boe

Upstream ~$6/boe

Limited netback to tax (less than $9/boe)

INDICATIVE TAX BEFORE CREDITS FOR ALASKA LNG PROJECT @ ANS

	Price	Barrels (Thousands)	Value ($ million)
Avg LNG Price ($/boe) & Daily Production	$72.18	384	$27.7
Annual Production			
Total		140,306	$10,127.3
Royalty, Federal & other barrels		(19,643)	($1,417.8)
Taxable bbls from companies w/ tax liability		120,664	$8,709.5
Downstream (Transportation) Costs ($/boe)			
Marine Transporation	($6.00)		($724.0)
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INDICATIVE LNG CHAIN: $89/BBL ANS

A drop to $89/bbl ANS ...

... wipes out any production tax value

INDICATIVE TAX BEFORE CREDITS FOR ALASKA LNG PROJECT @ ANS

	Price	Barrels (Thousands)	Value ($ million)
Avg LNG Price ($/boe) & Daily Production	$81.00	384	$31.1
Annual Production			
Total		140,306	$11,364.8
Royalty, Federal & other barrels		(19,643)	($1,591.1)
Taxable bbls from companies w/ tax liability		120,664	$9,773.8
Downstream (Transportation) Costs ($/boe)			
Marine Transporation	($6.73)		($812.4)
Pipeline & GTP Tariff	($27.13)		($3,274.2)
Liquefaction Tariff	($40.40)		($4,874.7)
Total Transportation Costs	($74.27)	120,664	($8,961.3)
Deductable Lease Expenditures			
Deductible Operating Expenditures	($3.37)		($406.2)
Deductible Capital Expenditures	($3.37)		($406.2)
Total Lease Expenditures	($6.73)	120,664	($812.4)
Production Tax			
Gross Value Reduction			$0.0
Production Tax Value (PTV)	$0.00		$0.0
Base Tax (35%*PTV)			$0.0
Total Tax before credits			$0.0

INDICATIVE LNG CHAIN: HIGHER COSTS

A 12.2% hike in costs / tariffs

... wipes out any production tax value

INDICATIVE TAX BEFORE CREDITS FOR ALASKA LNG PROJECT @ ANS

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Avg LNG Price ($/boe) & Daily Production	$81.00	384	$31.1
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IMPLICATIONS FOR STATE OF ALASKA

Fair market price critical for top line

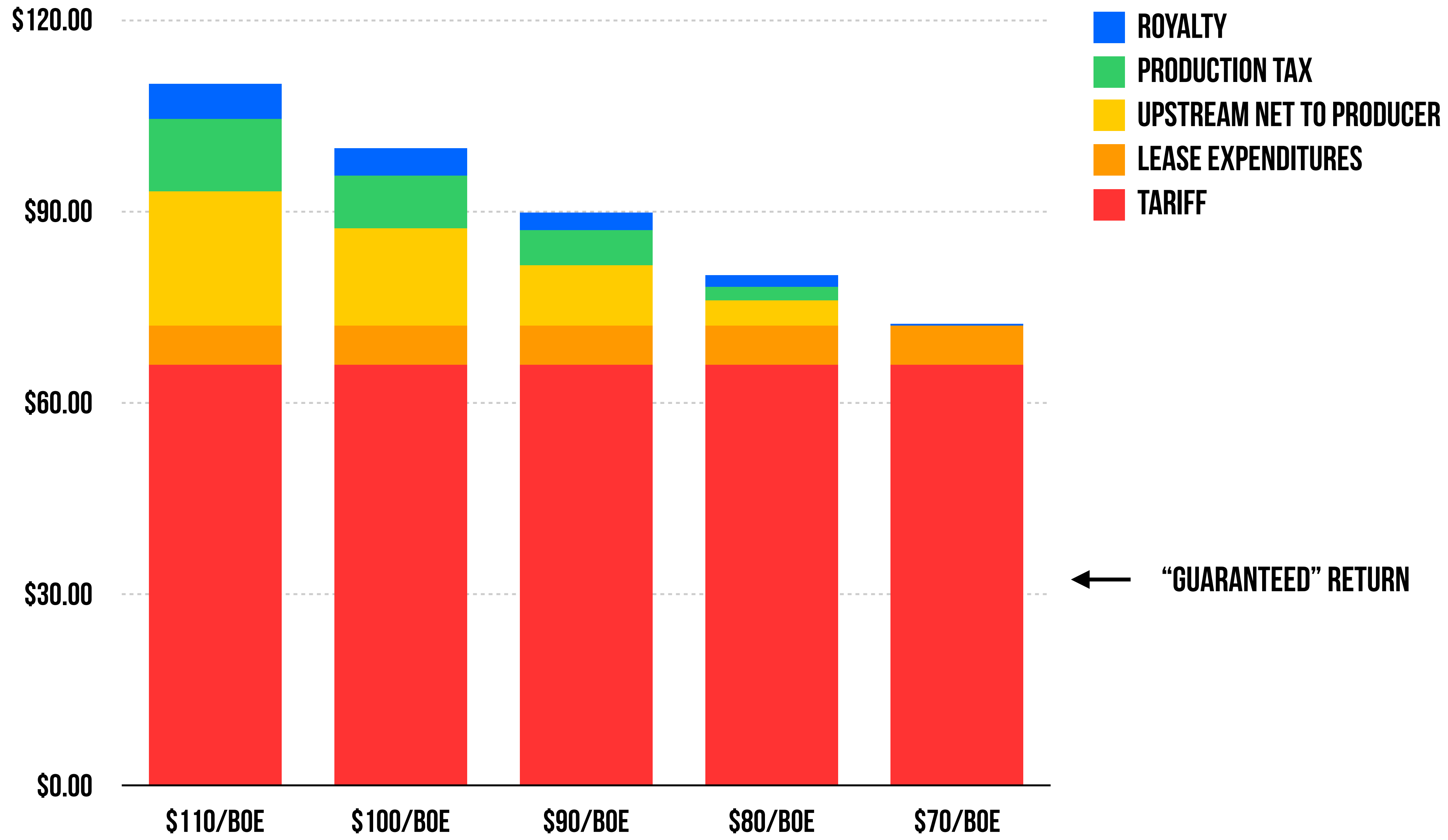
Midstream, midstream, midstream

Upstream secondary to midstream

Wellhead insufficient to drive state take

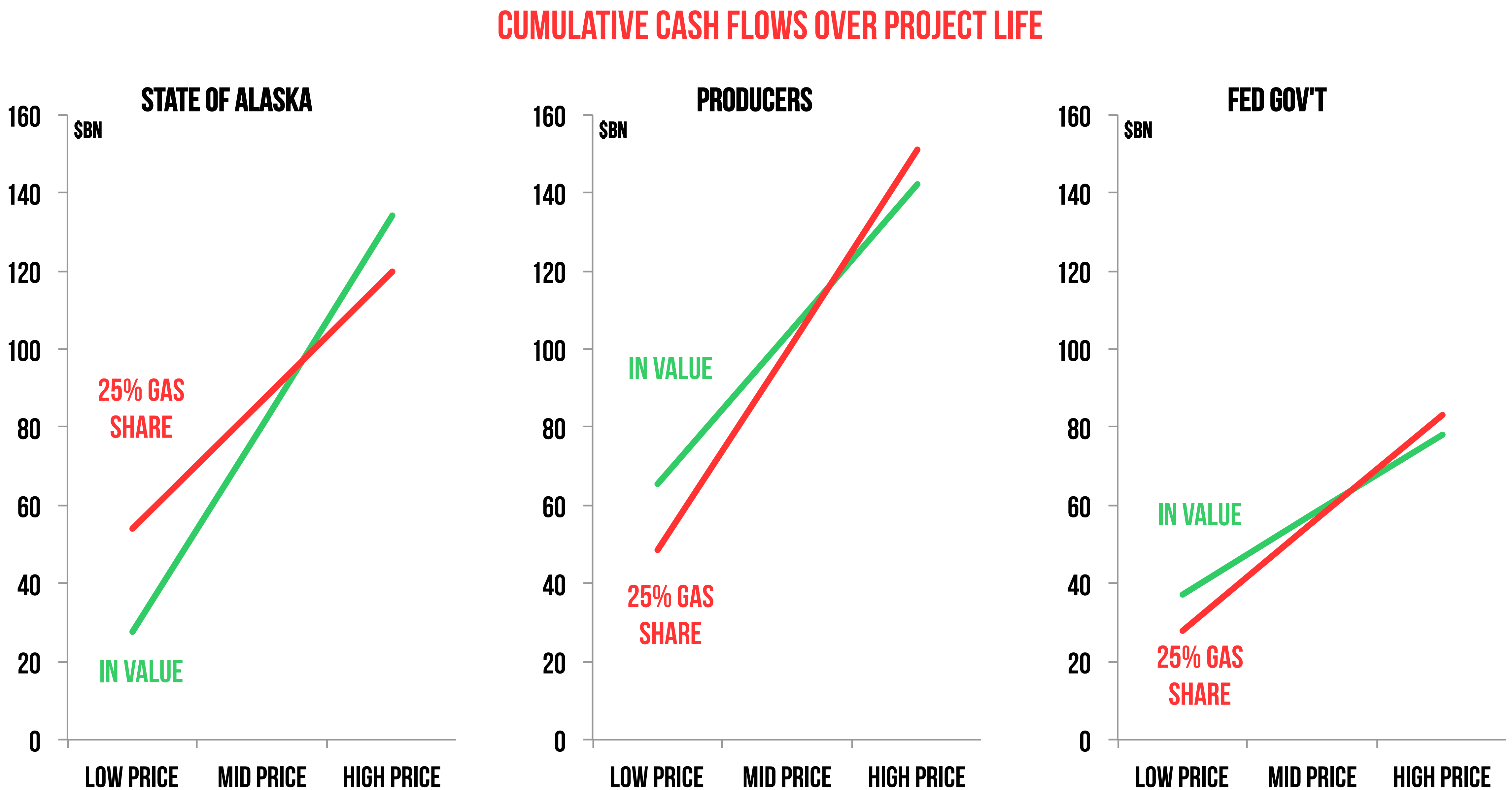
RIV MAKES UPSTREAM THE SOLE PRICE ABSORBER

Fixed nature of tariff in 'in Value' alternative amplifies impact of price movement on state returns



IN KIND W/ EQUITY OFFERS MORE DOWNSIDE PROTECTION

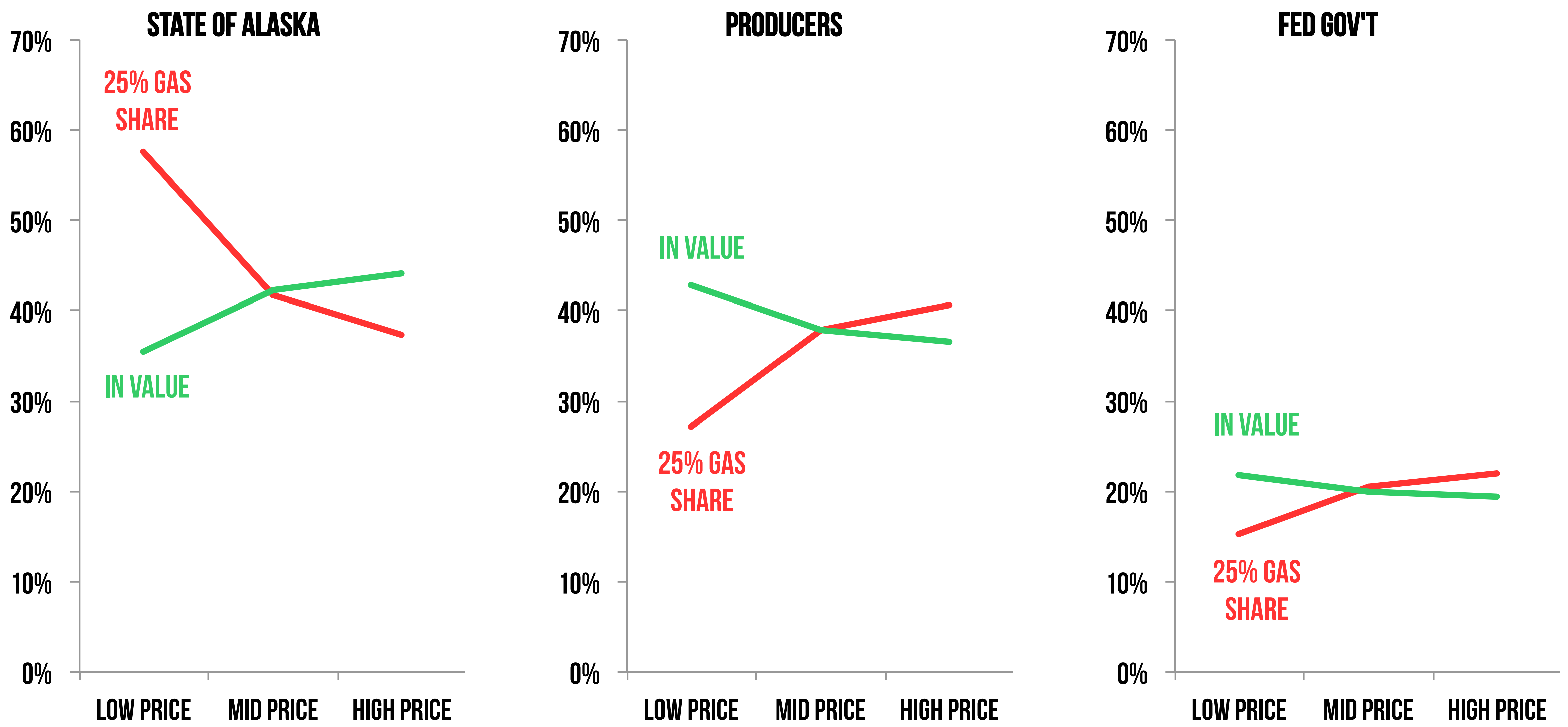
Price-absorbing in-value structure protects producers, not state, in low price environment



SOA % OF VALUE HIGHER THAN 25% EQUITY

Ability to maintain tax-exempt status is crucial to transfer value from federal government to SOA

CUMULATIVE CASH FLOWS OVER PROJECT LIFE



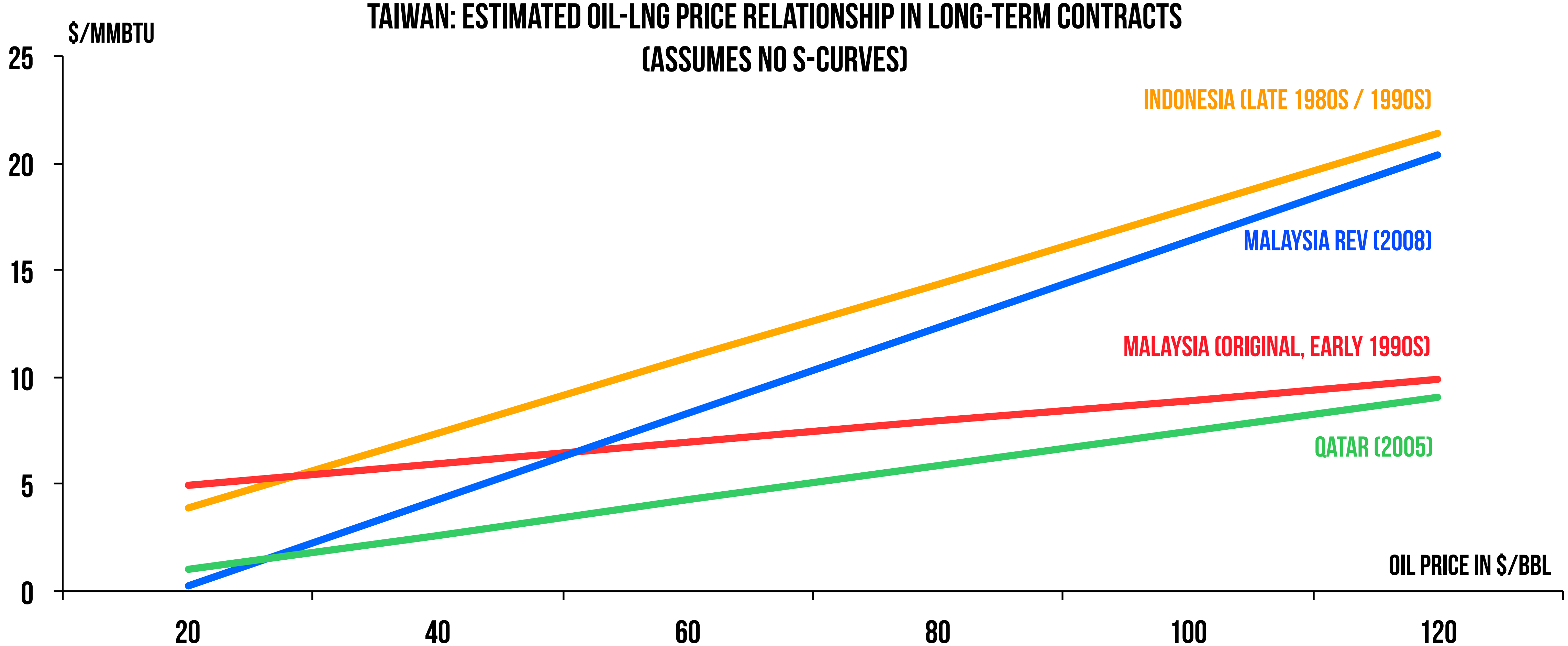
PRICE EXPOSURE DEFINED AT CONTRACT SIGNING

Oil linkage does not mean identical linkage to oil (e.g. Taiwan, below); bargaining power defines linkage

New contracts do not impact existing deals (e.g. new Henry Hub-based LNG vs. existing oil-linked SPAs)

But if price is seriously out of sync with fundamentals, parties can trigger a review clause

TAIWAN: ESTIMATED OIL-LNG PRICE RELATIONSHIP IN LONG-TERM CONTRACTS
(ASSUMES NO S-CURVES)



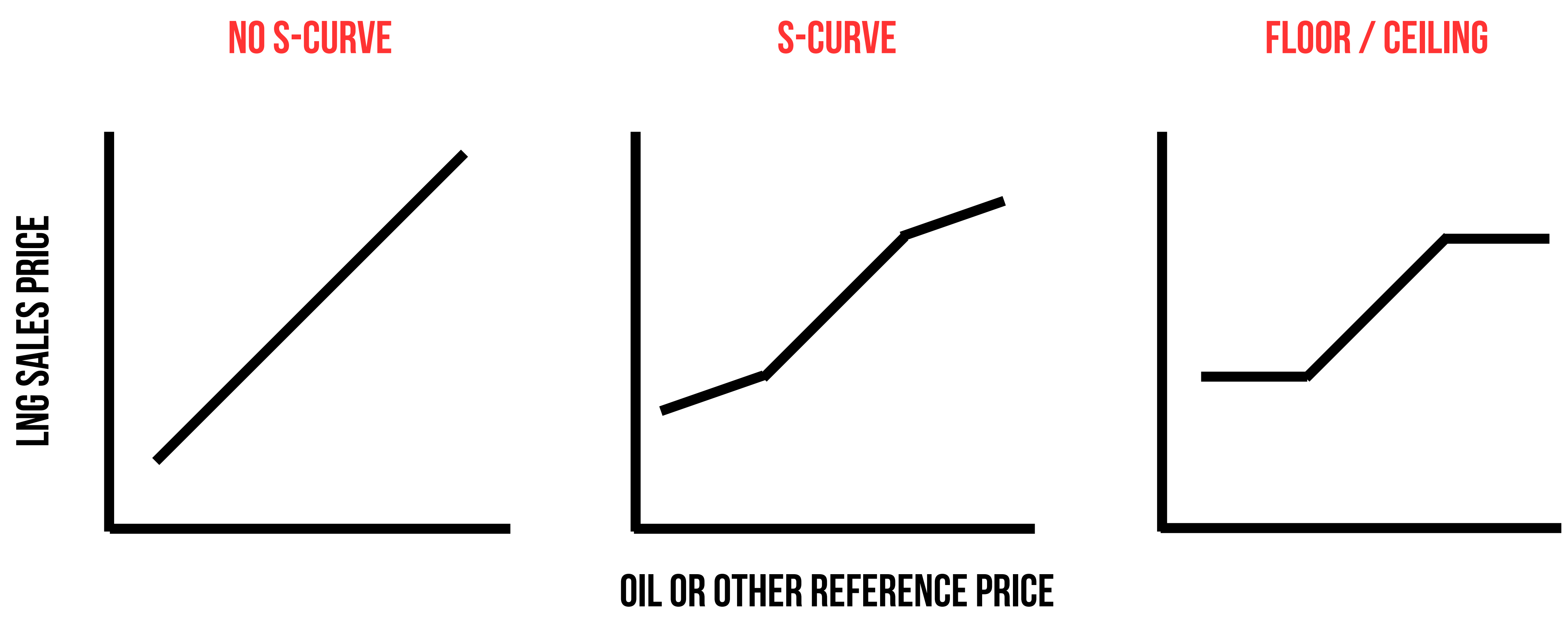
SOURCE: ENALYTICA BASED ON DATA FROM TAIWAN'S CUSTOMS ADMINISTRATION, MINISTRY OF FINANCE (HTTP://WWW.CUSTOMS.GOV.TW/STATISTICSWEBEN/IESEARCH.ASPX)

EXPENSIVE PROJECTS CAN HEDGE AGAINST VOLATILITY

"S-curves" are clauses that change the relationship between oil and gas above or below thresholds

Instead of a linear link, gas prices do not rise/fall as much if oil prices rise/fall above certain thresholds

They reduce downside risk by forgoing some upside—they can even provide a floor/ceiling on prices



PROJECT	SANCTIONED	TARGET DATE	ACTUAL DATE	DELAY	BUDGET BN	COST BN	% OVERRUN
Snøhvit (Norway)	Mar-02	2006	Sep-07	1.5 years	NOK39.50	NOK48.00	21.5%
Egyptian LNG T1	Sep-02	Aug-05	May-05	3 months early	$1.1	on budget	0%
Sakhalin-2 (Russia)	May-03	2007	Mar-09	2 years	$10.0	$22.0	120.0%
Atlantic LNG T4 (Trinidad)	Jun-03	2005	Dec-05	on time	$1.2	on budget	0%
Egyptian LNG T2	Jul-03	Jun-06	Sep-05	9 months early	$0.6	on budget	0%
Equatorial Guinea	Jun-04	Late 2007	May-07	6 months early	$1.5	on budget	0%
North West Shelf (Australia)	Jun-05	2008	Sep-08	on time	AUS$2	AUS$2.6	30.0%
Yemen	Aug-05	Dec-08	Nov-09	1 year	$3.7	$4.5	21.6%
Peru	Jan-07	mid 2010	Jun-10	on time	$3.8	$3.9	2.6%
Pluto	Jun-07	Early 2011	May-12	1.5 years	AUS$11.2	AUS$14.9	33.0%
Skikda LNG (Algeria)	Jun-07	2011	Mar-13	2 years	$2.8	?	?
Angola	Dec-07	Early 2012	Jun-13	1.5-2 years	?	$10.0	?
Gorgon (Australia)	Sep-09	2014	n/a	n/a	$37.0	$54.0	45.9%
Papua New Guinea	Dec-09	2014	n/a	n/a	$15.0	$19.0	26.7%
Queensland Curtis (Australia)	Nov-10	2014	n/a	n/a	$15.0	$20.5	36.7%
Gladstone LNG (Autralia)	Jan-12	2015	n/a	n/a	$16.0	$18.5	15.6%

SOURCE: ENALYTICA BASED ON COMPANY PRESS RELEASES AND INDUSTRY PRESS

HOW COULD ALASKA STRUCTURE THE MIDSTREAM?

- MIDSTREAM
  - PRODUCERS
  - PRODUCERS + STATE OF ALASKA
  - PRODUCERS + STATE OF ALASKA + 3RD PARTY
    - LEVERAGE AGIA (TRANSCANADA)
    - TERMINATE AGIA & LAUNCH BID

PATH OF THE MEMORANDUM OF UNDERSTANDING (MOU)

- MIDSTREAM
  - PRODUCERS
  - PRODUCERS + STATE OF ALASKA
  - PRODUCERS + STATE OF ALASKA + 3RD PARTY
    - LEVERAGE AGIA (TRANSCANADA)
    - TERMINATE AGIA & LAUNCH BID

PRODUCER-SOA ALIGNMENT	Minimize disputes over where value is allocated Tariffs reflect value maximization across the entire chain
THIRD-PARTY EXPANSION	Midstream becomes an enabler for further exploration and development Expansion principles favor development of additional transportation capacity
IN-STATE DELIVERIES	Alaskan consumers receive cost at the lowest cost possible (given adequate returns on investment)
EXECUTION	Pipeline is delivered on time and at the lowest possible cost
CONTINUITY & MOMENTUM	Project maintains and accelerates current investment interest Project leverages work to date and is not delayed by possible litigation

PRODUCER ONLY: ALIGNMENT / EXPANSION WEAK POINTS

MIDSTREAM
- PRODUCERS
- PRODUCERS + STATE OF ALASKA
- PRODUCERS + STATE OF ALASKA + 3RD PARTY
  - LEVERAGE AGIA (TRANSCANADA)
  - TERMINATE AGIA & LAUNCH BID

✗	PRODUCER-SOA ALIGNMENT	Significant potential for disputes over allocation of value, and optimal level for midstream tariff
✗	THIRD-PARTY EXPANSION	Focus on commercializing producers' resources over gas belonging to third parties
✗	IN-STATE DELIVERIES	Uncertain tariff for in-state deliveries (of SOA's gas)
✓	EXECUTION	Strong and proven ability to execute, but midstream becoming less of a core focus for majors
?	CONTINUITY & MOMENTUM	Uncertainty about possibility of litigation and loss of work done to date

SOA EQUITY: MORE EXPANSION BIAS BUT BURDEN ON SOA

MIDSTREAM
- PRODUCERS
- PRODUCERS + STATE OF ALASKA
- PRODUCERS + STATE OF ALASKA + 3RD PARTY
  - LEVERAGE AGIA (TRANSCANADA)
  - TERMINATE AGIA & LAUNCH BID

✓	PRODUCER-SOA ALIGNMENT	Strong alignment between producers and SOA
?	THIRD-PARTY EXPANSION	Relies on SOA to drive expansions, seeking new entrants and / or new partners; SOA may not be best placed to fill this role
✓	IN-STATE DELIVERIES	SOA can use its equity-entitled capacity to carry gas to local markets at lower cost
✓ / ?	EXECUTION	Strong and proven ability to execute for initial investment; expansion will depend on securing capabilities and/or another party
?	CONTINUITY & MOMENTUM	Uncertainty about possibility of litigation and loss of work done to date

MOU: EXPANSION BIAS & MOMENTUM; BUT BEST DEAL?

MIDSTREAM
- PRODUCERS
- PRODUCERS + STATE OF ALASKA
- PRODUCERS + STATE OF ALASKA + 3RD PARTY
  - LEVERAGE AGIA (TRANSCANADA)
  - TERMINATE AGIA & LAUNCH BID

✓	PRODUCER-SOA ALIGNMENT	Strong alignment between producers and SOA; capital structure for rate-setting purposes appears within norm, but unclear if new bidding could have produced lower tariff
✓✓	THIRD-PARTY EXPANSION	TransCanada will be advocate for a project structure that encourages expansion and will have incentive to drive expansion of the infrastructure based on market interest
✓✓	IN-STATE DELIVERIES	SOA can use its equity-entitled capacity to carry gas to local markets at lower cost; pro-expansion bias further incentivizes possible in-state deliveries
✓	EXECUTION	TransCanada brings execution knowhow and expertise, while producers reinforce cost discipline (to ensure lowest possible tariff)
✓	CONTINUITY & MOMENTUM	Project maintains and accelerates investment interest and leverages work done to date

BID: WILL REWARD COMPENSATE FOR COST IN TIME AND $?

MIDSTREAM ← PRODUCERS
MIDSTREAM ← PRODUCERS + STATE OF ALASKA
MIDSTREAM ← PRODUCERS + STATE OF ALASKA + 3RD PARTY

PRODUCERS + STATE OF ALASKA + 3RD PARTY ← LEVERAGE AGIA (TRANSCANADA)
PRODUCERS + STATE OF ALASKA + 3RD PARTY ← TERMINATE AGIA & LAUNCH BID

✓/ ?	PRODUCER-SOA ALIGNMENT	Strong alignment between producers and SOA; new bid could lead to a lower tariff, but it could also lead to a higher one; low investor interest could also slow down entire process
✓	THIRD-PARTY EXPANSION	Third party will have incentive to drive expansion of the infrastructure based on market interest, but would likely have less influence over current negotiations
✓✓	IN-STATE DELIVERIES	SOA can use its equity-entitled capacity to carry gas to local markets at lower cost; pro-expansion bias further incentivizes possible in-state deliveries
✓	EXECUTION	Third party would presumably bring execution knowhow and expertise, while producers would reinforce cost discipline (to ensure lowest possible tariff)
✗	CONTINUITY & MOMENTUM	Uncertainty about possibility of litigation and loss of work done to date; HOA negotiations could slow down in anticipation of new bidding process and license award

SOA NEEDS TO CAREFULLY WEIGH KEY QUESTIONS

What compensation might the SOA have to pay and what intellectual property will Alaska LNG retain?

Will the HOA process slow down if the midstream is tied in litigation?

What are the odds that a new selection process will deliver better terms than those available today?

To what extent was the AGIA process representative of the industry's interest in an Alaskan pipeline?

Would a new tariff offset absence from negotiating table; reduced momentum; cost to dissolve AGIA?

	PRODUCERS	PRODUCERS + STATE OF ALASKA	PRODUCERS + STATE OF ALASKA + TRANSCANADA	PRODUCERS + STATE OF ALASKA + 3RD PARTY
PRODUCER-SOA ALIGNMENT	✗	✓	✓	✓ / ?
THIRD-PARTY EXPANSION	✗	?	✓✓	✓
IN-STATE DELIVERIES	✗	✓	✓✓	✓✓
EXECUTION	✓	✓ / ?	✓	✓
CONTINUITY & MOMENTUM	?	?	✓	✗

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