

IN KIND VS. IN VALUE, RISKS & MIDSTREAM OPTIONS

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Before co-founding **enalytica**, 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 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 **enalytica**. 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.

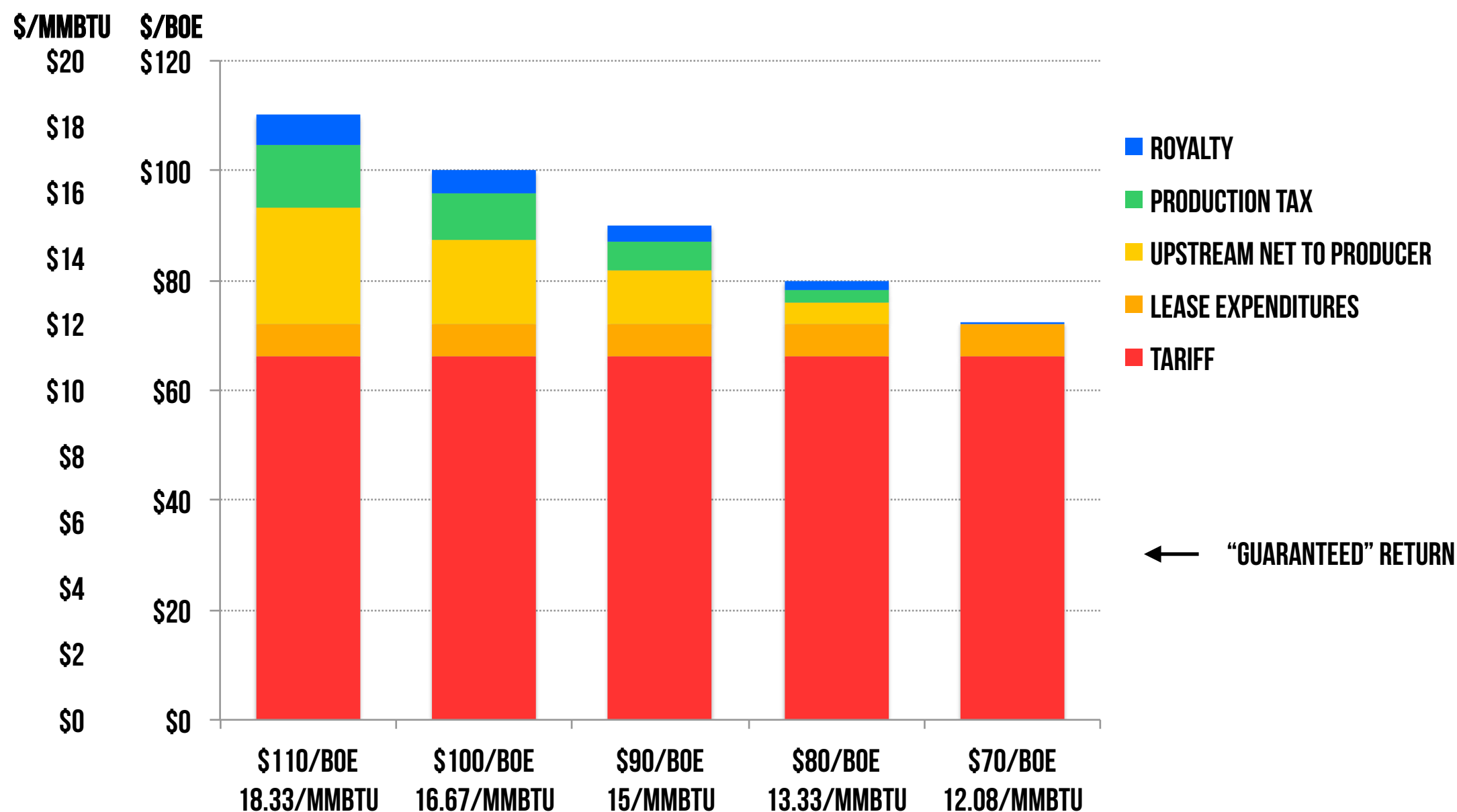
Nikos holds a BA with distinction in international relations and economics from Boston University and an MA with distinction in international relations from the Johns Hopkins School of Advanced International Studies (SAIS).

<u>System</u>		<u>SOA ownership percent</u>			<u>SOA share of CAPEX & OPEX</u>			<u>SOA cash commitments</u>	
	Value / Kind	Upstream	GTP & Pipe	LNG	Upstream	GTP & Pipe	LNG	Debt	Tariffs
Status Quo	in value	0%	0%	0%	Indirect (taxes)	0%	0%	No debt	Tariff matters for valuation
HOA	in kind	0%	25%	25%	Indirect (taxes)	25%	25%	Principal and interest	Tariff only notional
MOU Option 1	in kind	0%	10% (40% x 25%)	25%	Indirect (taxes)	10% (40% x 25%)	25%	Principal and interest	Tariff payable to T/C
MOU Option 2	in kind	0%	0%	25%	Indirect (taxes)	0%	25%	Principal and interest	Tariff payable to T/C



RIV: UPSTREAM ABSORBS ALL THE PRICE RISK

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

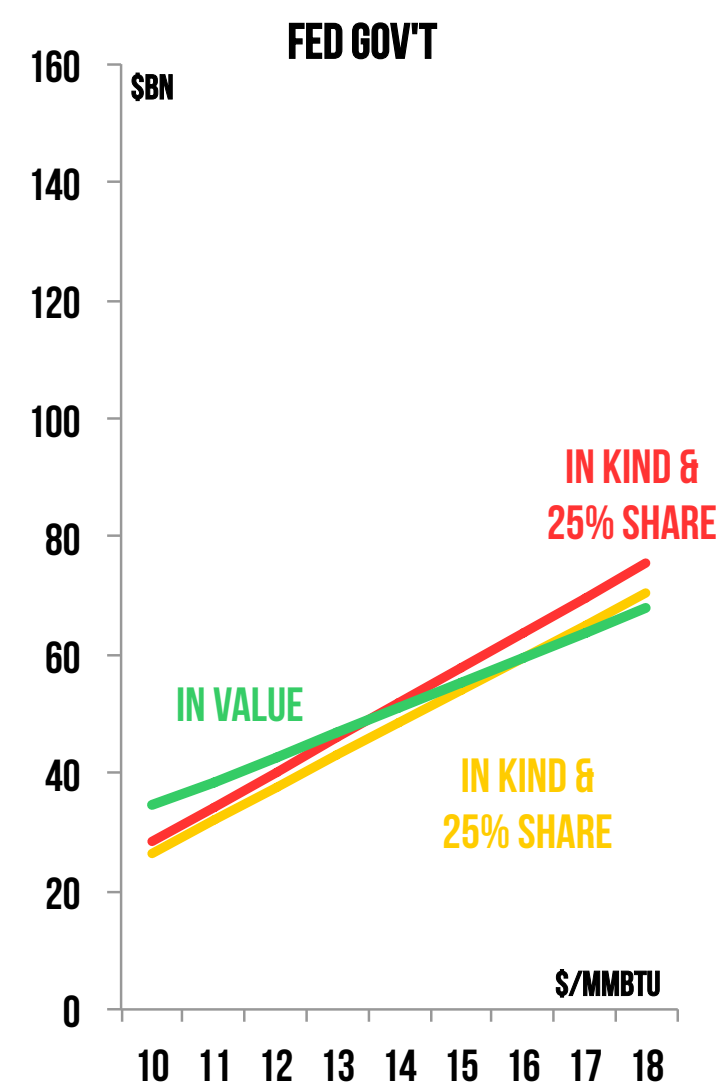
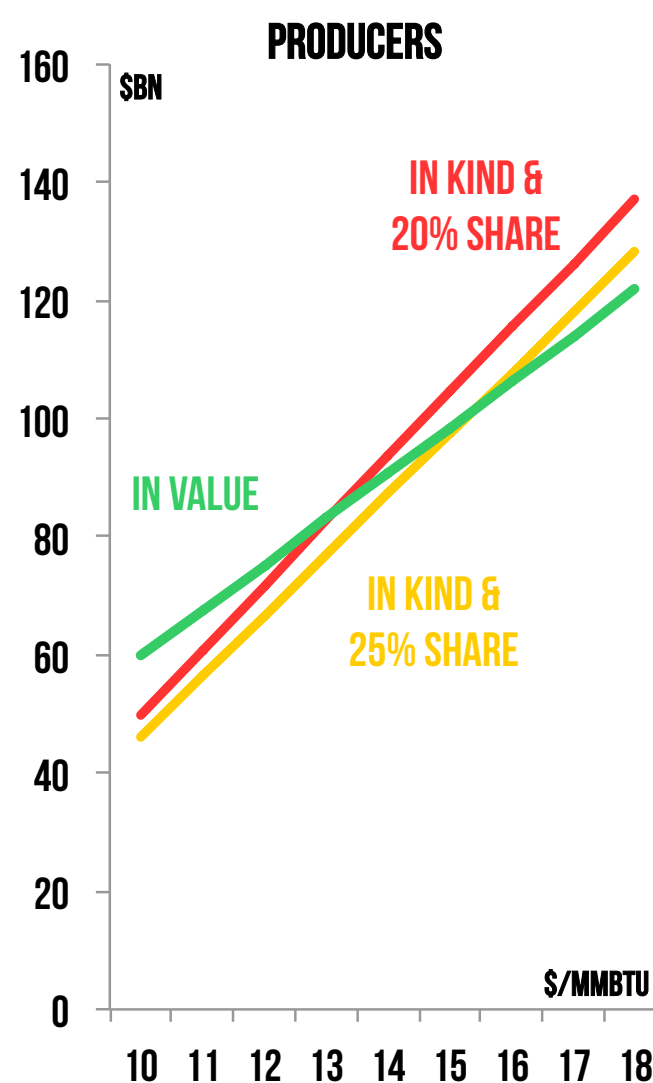
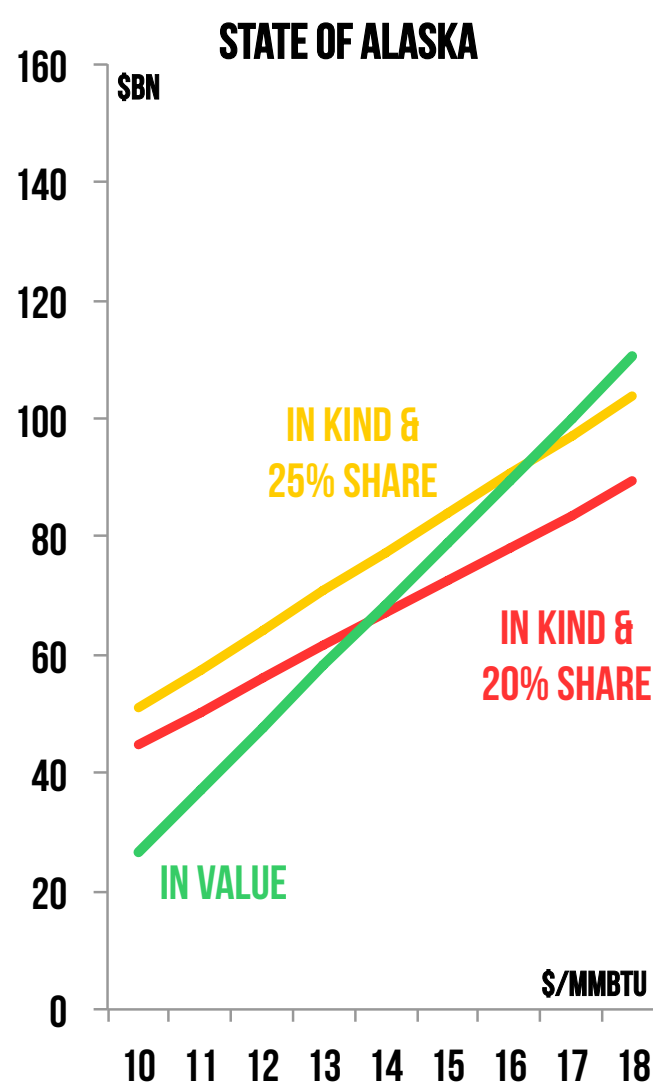


'IN KIND' W/ EQUITY OFFERS MORE DOWNSIDE PROTECTION

'In value' structure protects producers, not state, in low price environment because of tariff component

Higher SOA equity pushes up the price at which 'in value' is better than equity

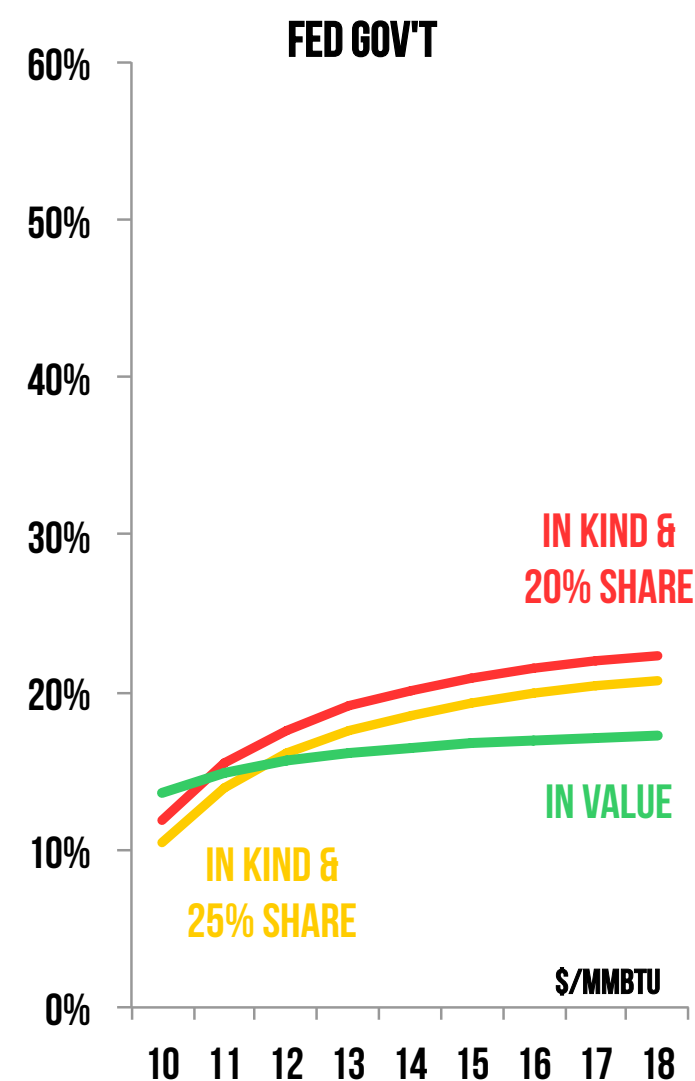
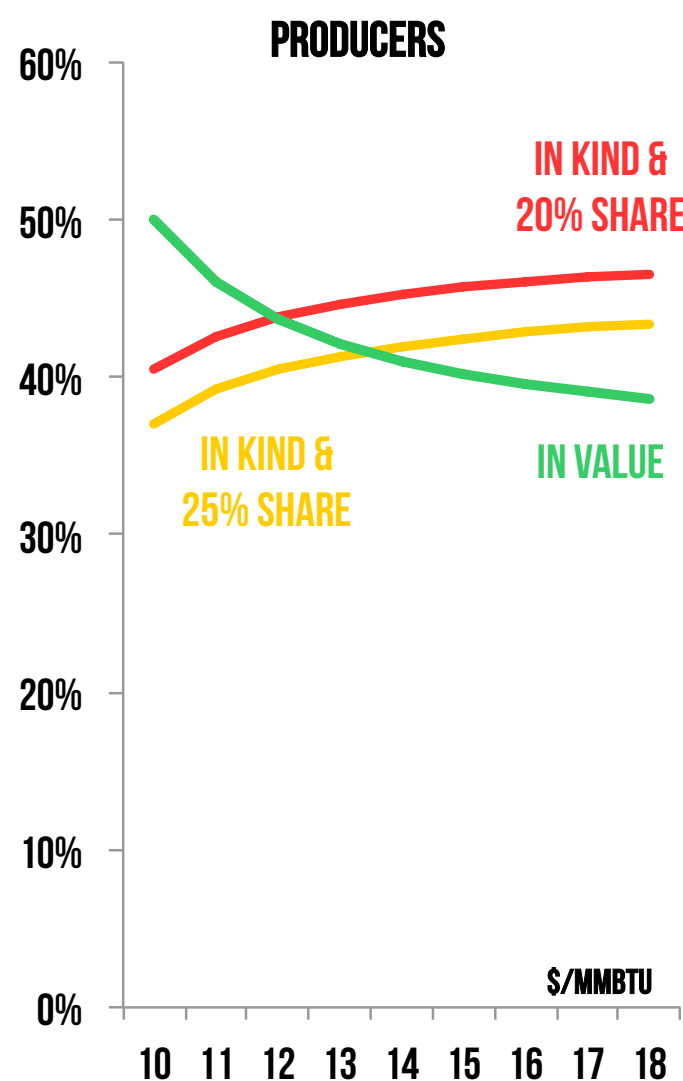
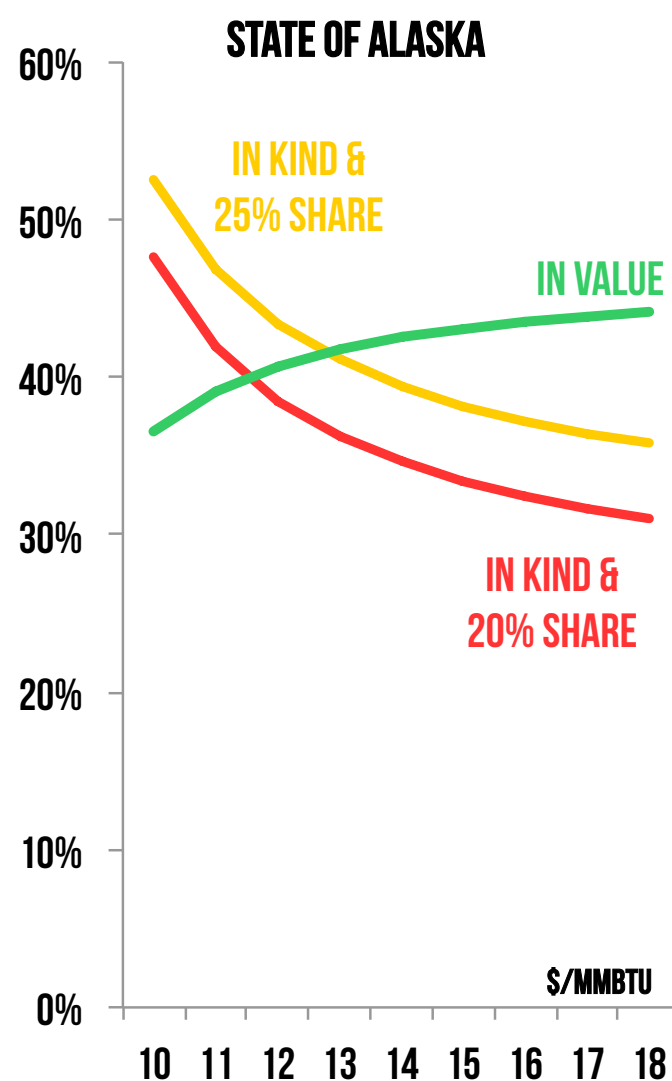
CUMULATIVE CASH FLOWS OVER PROJECT LIFE



SOA SHARE OF VALUE HIGHER THAN EQUITY SHARE

SOA participation in midstream means fixed tariff for producers no longer “guaranteed”

PERCENT OF NET PRESENT VALUE OVER PROJECT LIFE

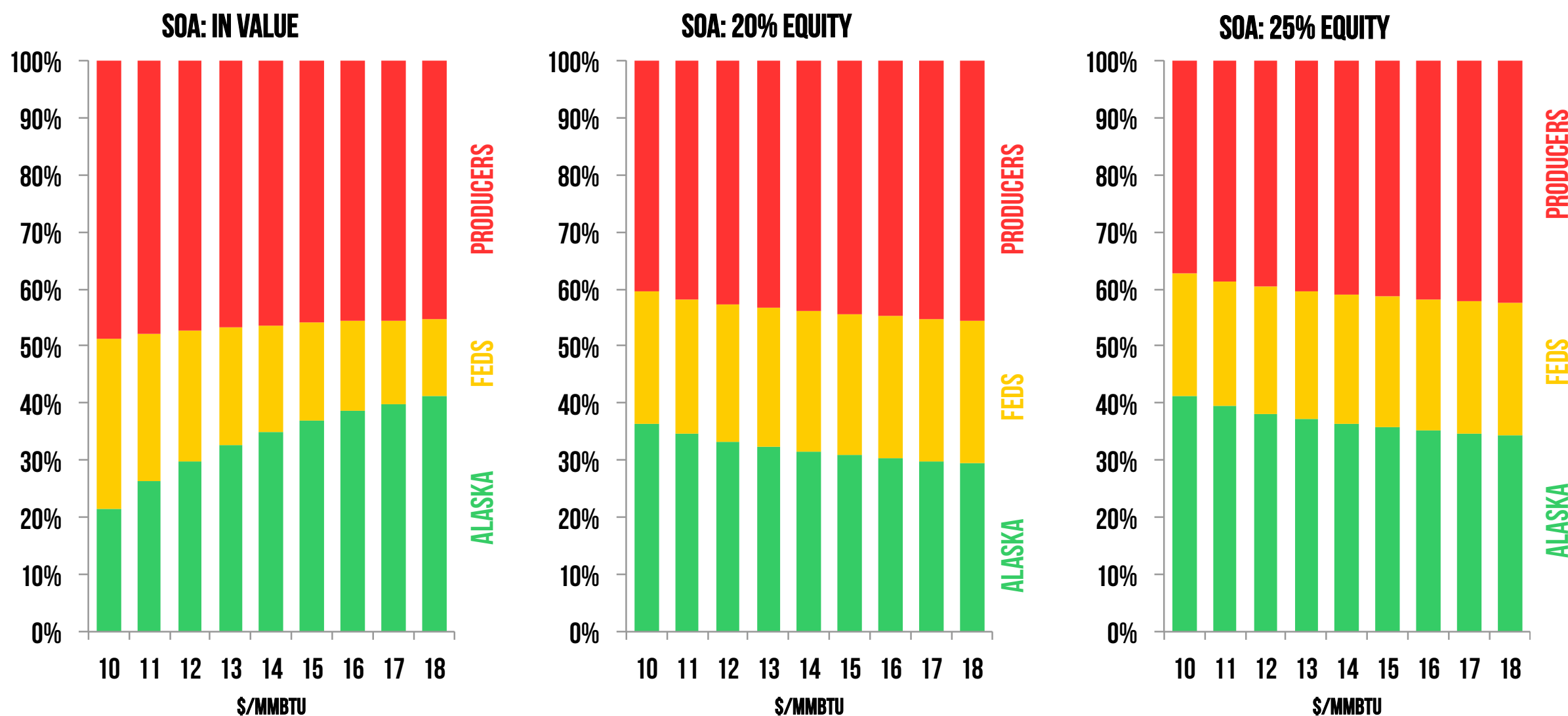


SOA EQUITY LEADS TO HIGHER GOV'T TAKE ON AVERAGE

'In value' entails lowest government take, especially in low prices as cash goes to producers

Split between Fed vs. SOA split depends on both 'in value' vs. 'in kind' as well as SOA equity share

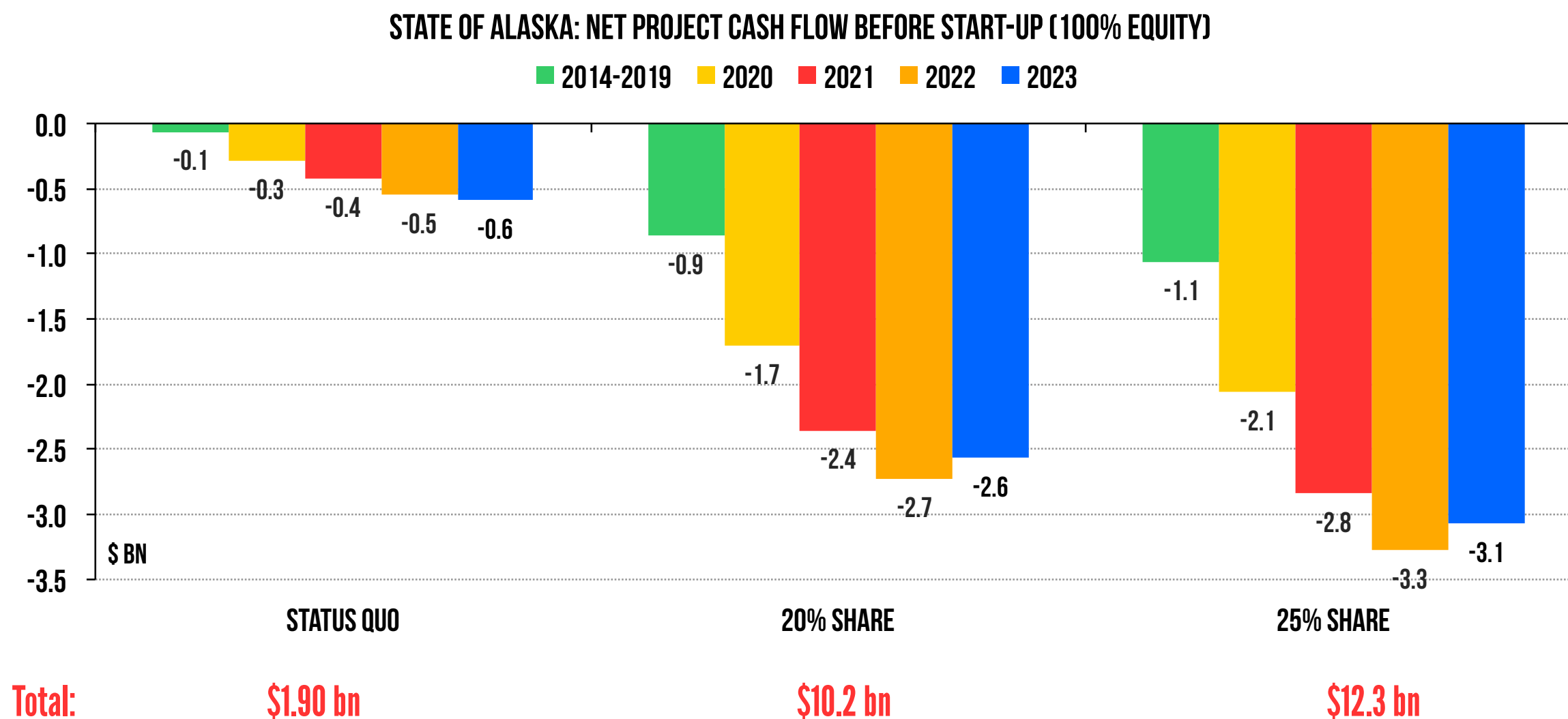
PERCENT OF CUMULATIVE CASH FLOWS OVER PROJECT LIFE



EQUITY BOOSTS SOA OUTLAYS TO \$10.2-\$12.3 BN

Annual outlays could peak at \$2.7 (20% equity) to \$3.3 bn (25% equity), assuming no debt

Even in status quo ('in value'), state has outlays through the tax system



IN KIND VS. IN VALUE › PRICE & COST RISKS › MIDSTREAM OPTIONS

cost escalation / delays › selling equity › project finance › cash outlays with debt financing › price exposure › volatility protection

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 (Australia)	Jan-12	2015	n/a	n/a	\$16.0	\$18.5	15.6%

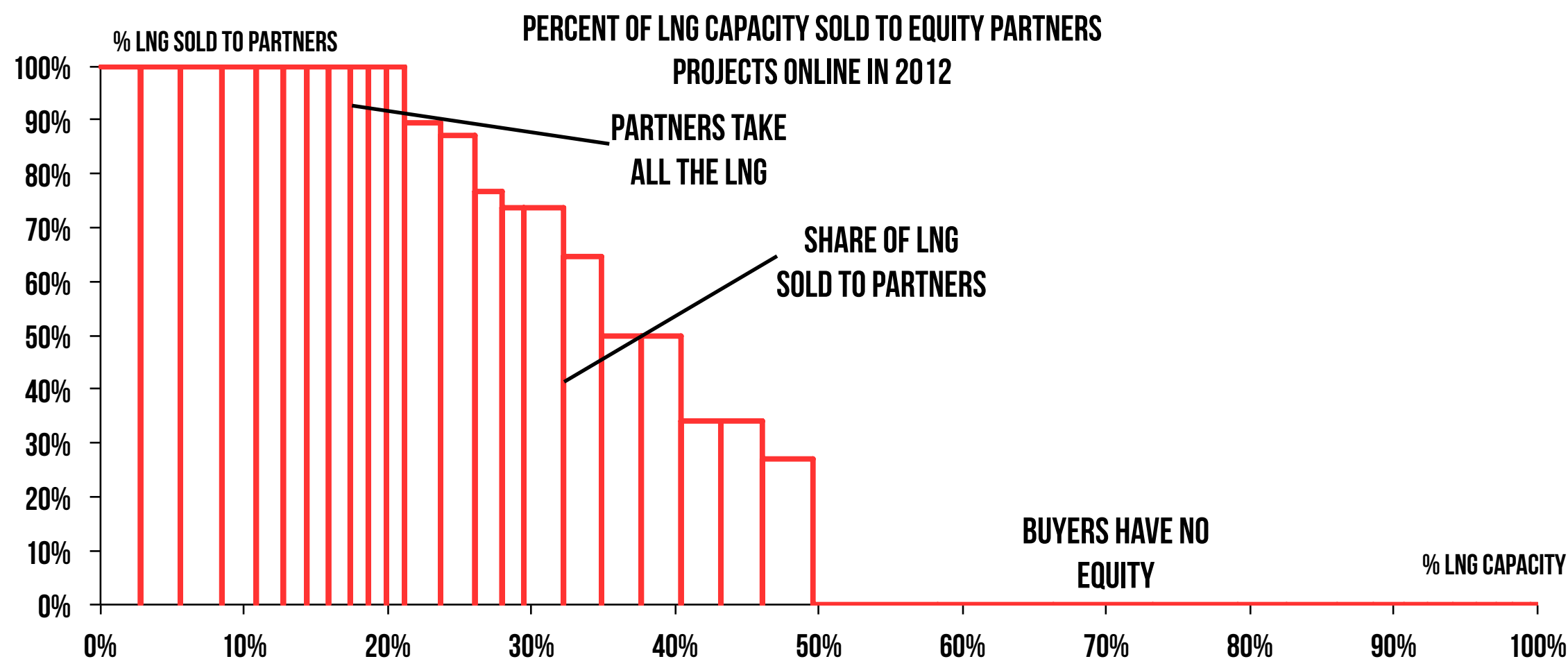
SOURCE: ENALYTICA BASED ON COMPANY PRESS RELEASES AND INDUSTRY PRESS

BUYERS OFTEN TAKE EQUITY IN LNG PROJECTS

In half of the world's LNG capacity, a share of the LNG is sold to equity partners

Such deals can mitigate risk by aligning supplier-buyer interests (e.g. **output shortfall**)

Buyers get sense of supply security, and these deals often open up the project to third-party financing



SOURCE: BASED ON GIIGNL, THE LNG INDUSTRY IN 2012, [HTTP://WWW.GIIGNL.ORG/SITES/DEFAULT/FILES/PUBLICATION/GIIGNL_THE_LNG_INDUSTRY_2012.PDF](http://www.giignl.org/sites/default/files/publication/GIIGNL_THE_LNG_INDUSTRY_2012.PDF)

PROJECT FINANCE WELL ESTABLISHED IN LNG

IHS estimates that LNG projects raised over **\$97 billion** in third-party financing since 2000

Financing from project sponsors, export credit agencies, multilateral banks and commercial banks

Commercial loans can also secure sovereign guarantees as insurance

The Japan Bank of International Cooperation (**JBIC**) is the largest single provider of funds

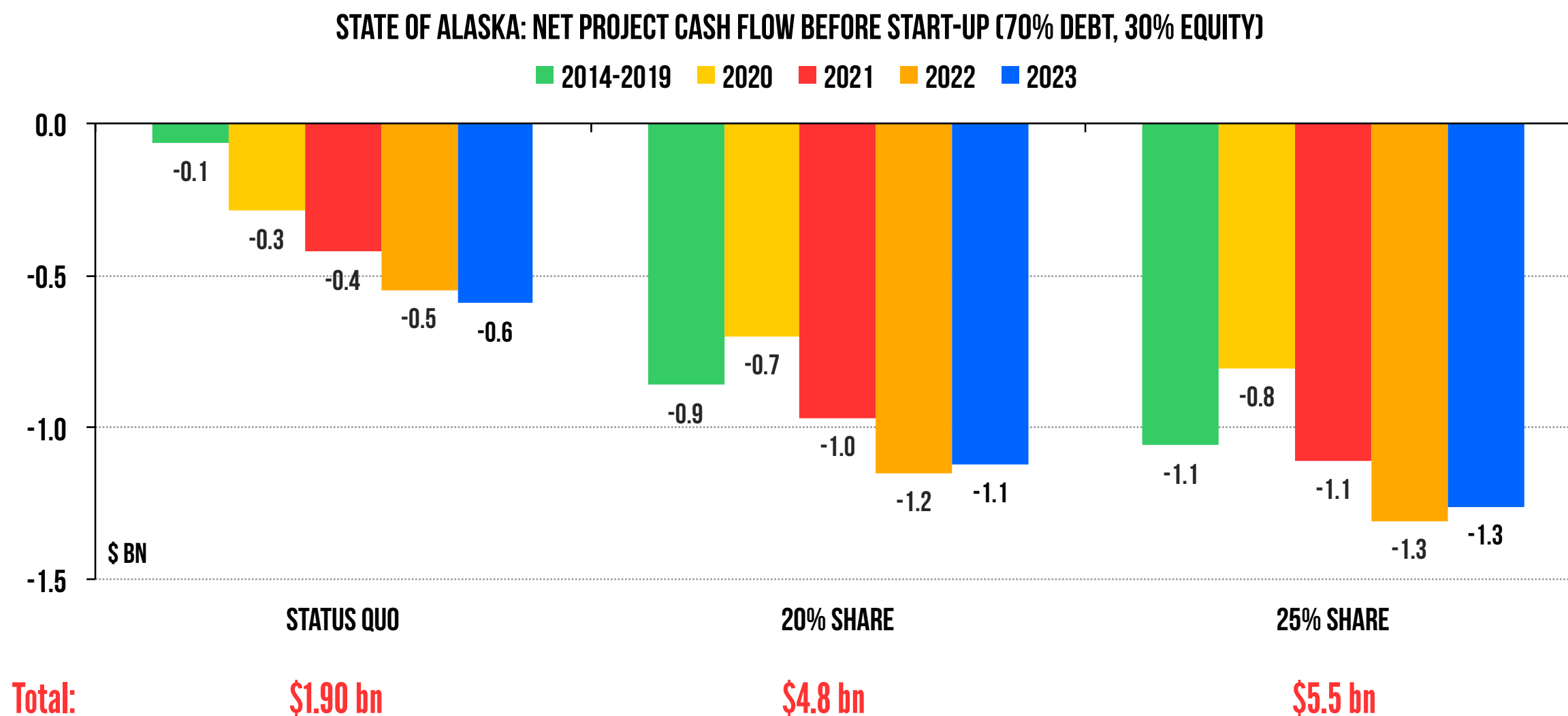
Examples

AP LNG	\$5.8 billion	US EXIM, China EXIM, banks
Ichthys	\$20 billion	JBIC, Korea and Australia EXIM, banks, sponsors (\$4 bn)
Papua New Guinea	\$14 billion	Six ECAs and 17 banks, ExxonMobil
Peru	\$2.25 billion	IADB, US EXIM, Korea EXIM, IFC, others
Sakhalin-2	\$6.4 billion	JBIC, NEXI, banks
Tangguh	\$3.5 billion	JBIC, ADB, banks

SOURCES: IHS IN LEDESMA, ET. AL, "THE COMMERCIAL AND FINANCING CHALLENGES OF AN INCREASINGLY COMPLEX LNG CHAIN," LNG 17 (APRIL 2013); INDUSTRY PRESS

SOA CASH CALL \$4.8-\$5.5BN WITH 70/30 DEBT/EQUITY

Peak outlays shrink to \$1.2 to \$1.3 bn depending on equity level (20% or 25%)

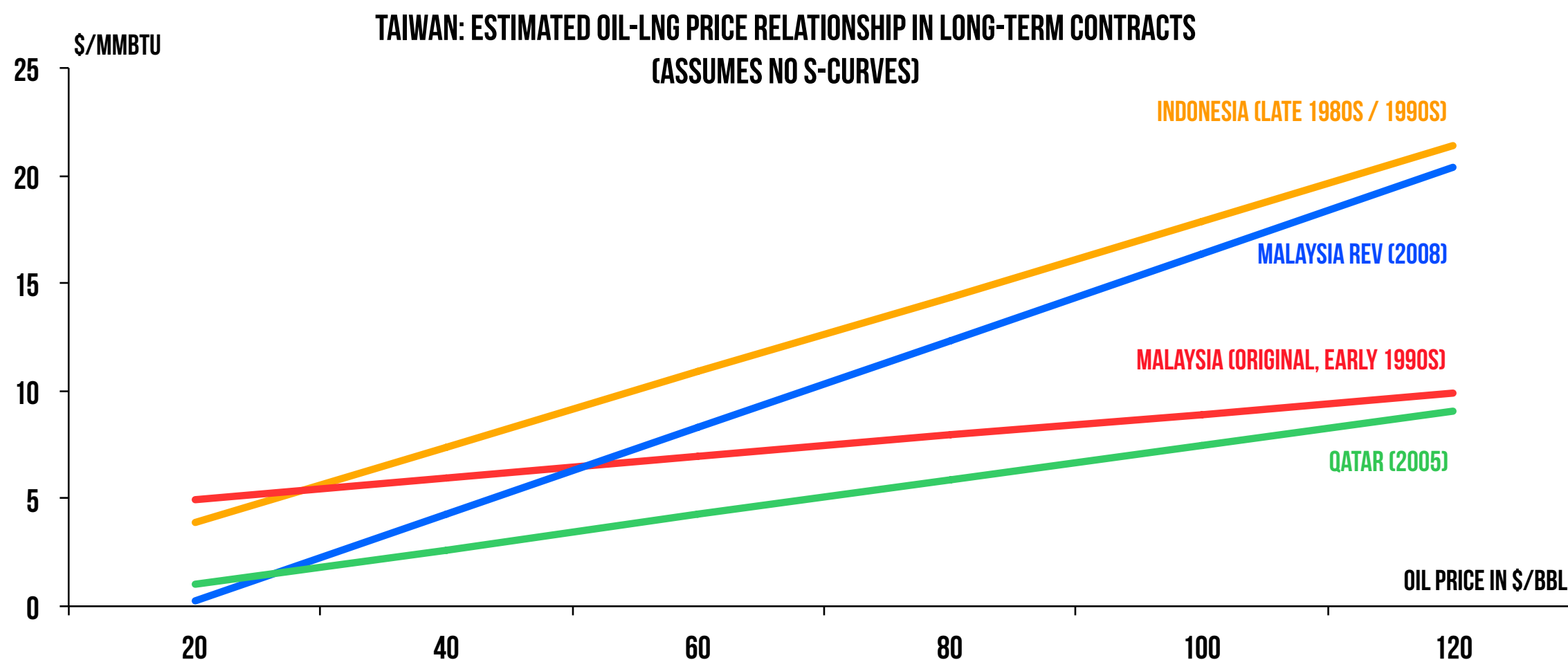


PRICE EXPOSURE DEFINED AT CONTRACT SIGNING

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**



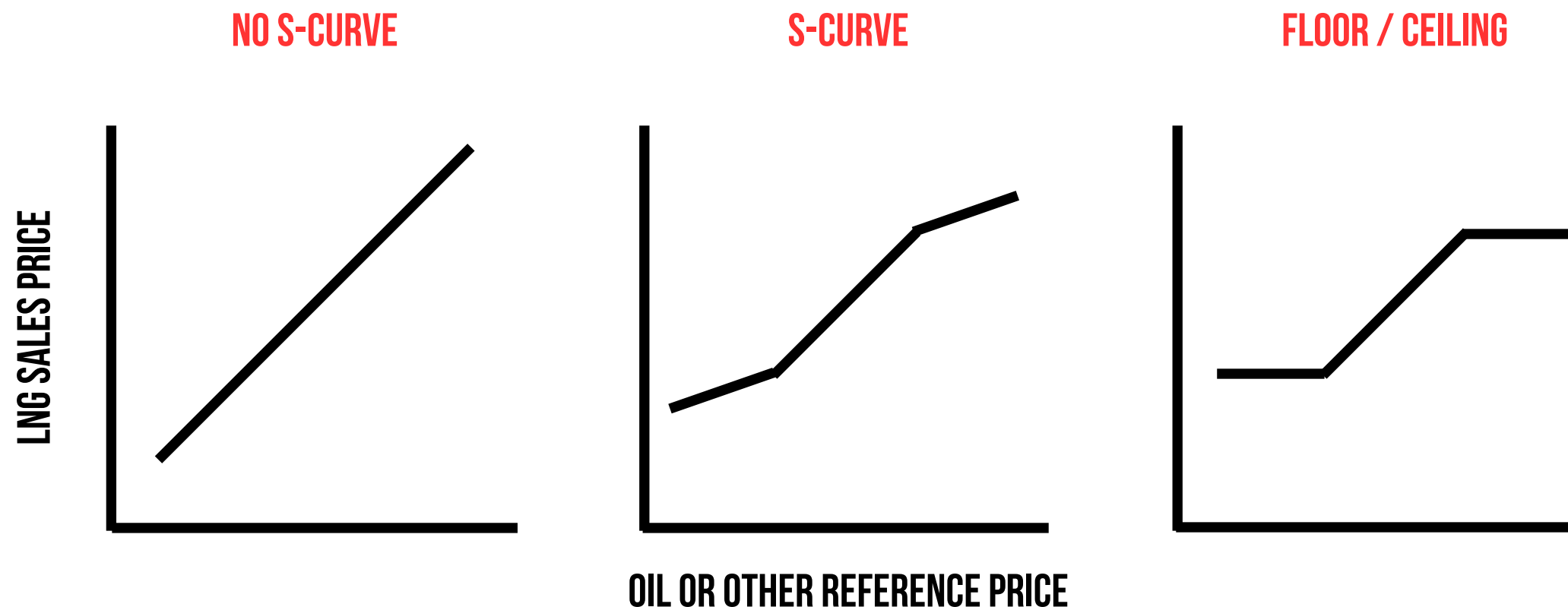
SOURCE: ENALYTICA BASED ON DATA FROM TAIWAN'S CUSTOMS ADMINISTRATION, MINISTRY OF FINANCE ([HTTP://WWW.CUSTOMS.GOV.TW/STATISTICSWEBEN/IESEARCH.ASPX](http://www.customs.gov.tw/statisticsweb/en/ieSearch.aspx))

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



IN KIND VS. IN VALUE › PRICE & COST RISKS › MIDSTREAM OPTIONS

project structure › options › state interests › producer-only › producer + SOA › MOU › bid › assessment › cash flow › outlays

	<u>System</u>	<u>SOA ownership percent</u>			<u>SOA share of CAPEX & OPEX</u>			<u>SOA cash commitments</u>	
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HOW COULD ALASKA STRUCTURE THE MIDSTREAM?



PATH OF THE MEMORANDUM OF UNDERSTANDING (MOU)



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)

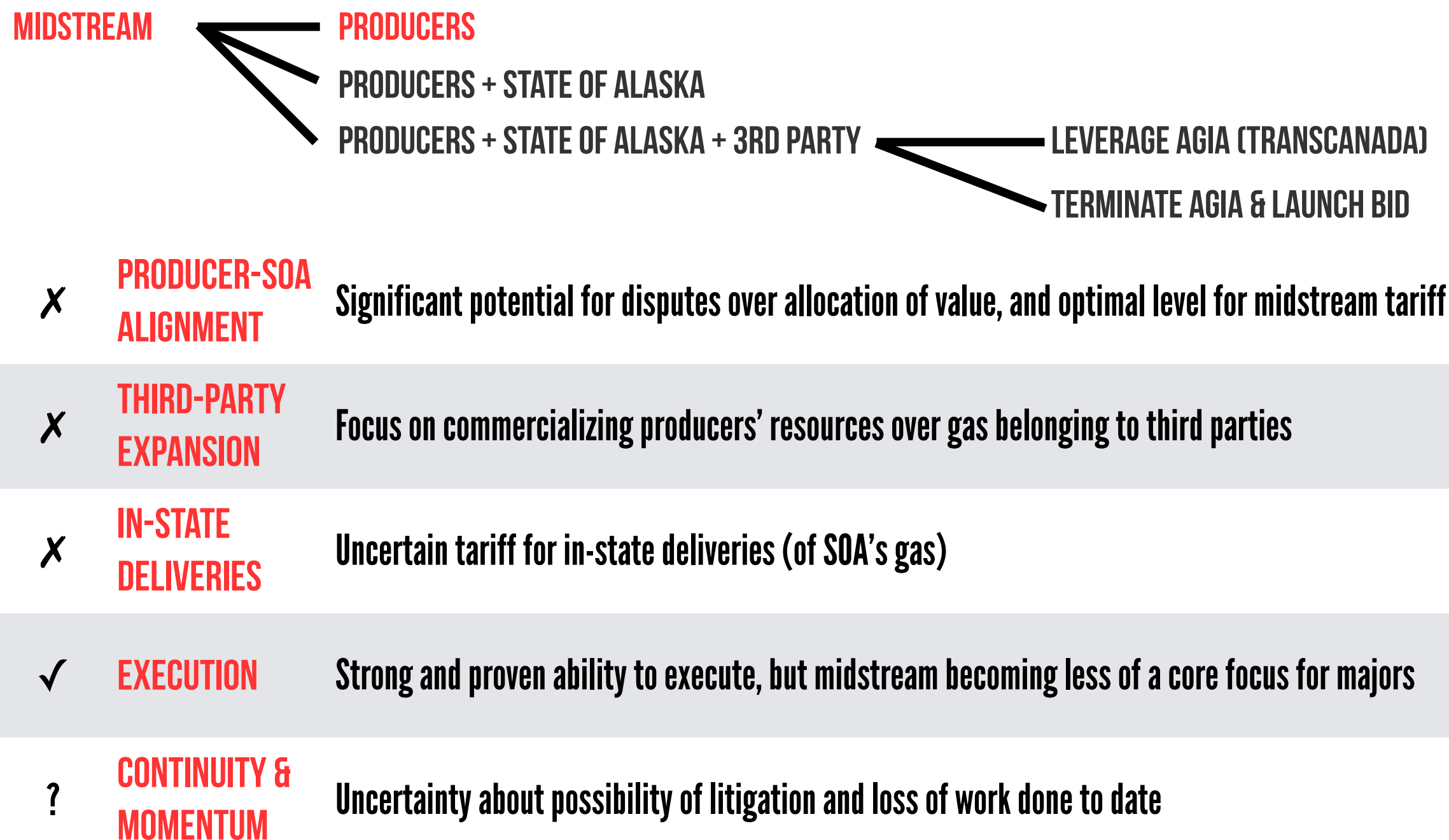
EXECUTION

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



SOA EQUITY: MORE EXPANSION BIAS BUT BURDEN ON SOA



✓ **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?



✓ **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 \$?



✓/? **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?

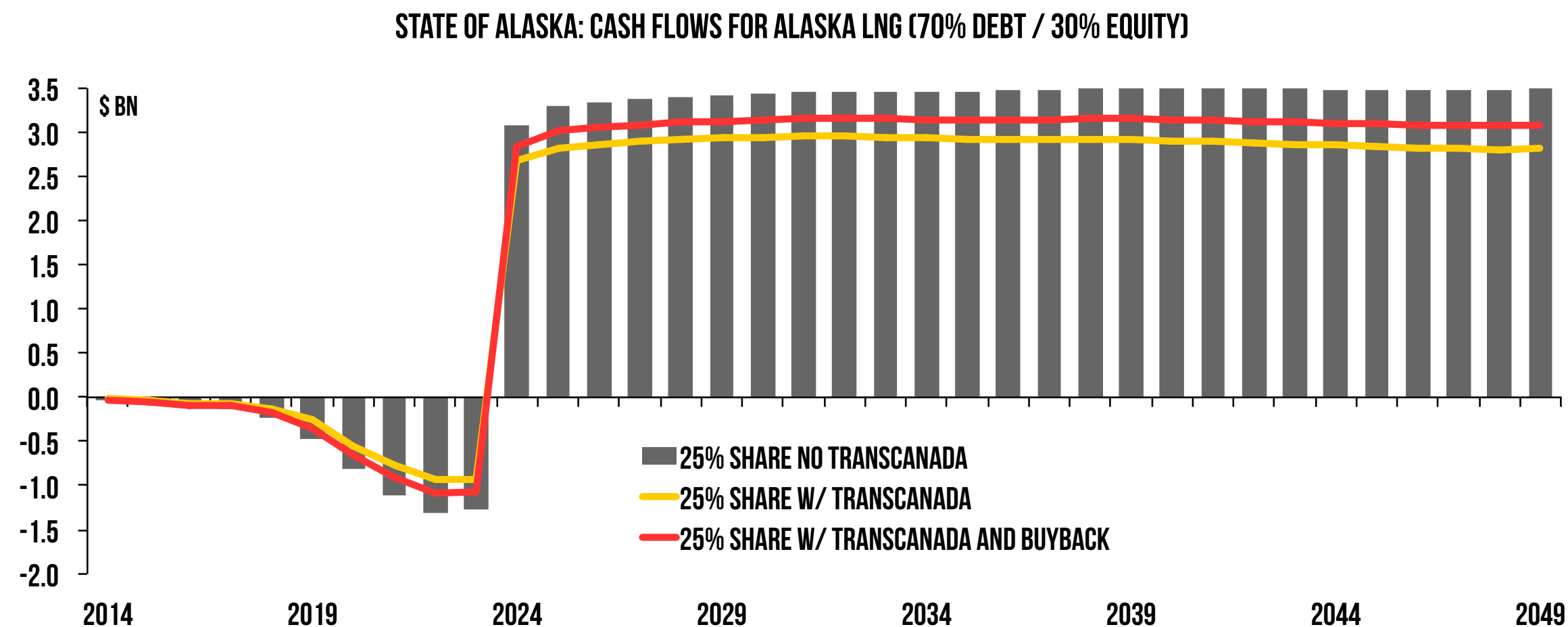
*Would a new tariff **offset** absence from negotiating table; reduced momentum; cost to dissolve AGIA?*

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

FINANCIALLY, TRANSCANADA DEAL IS AKIN TO A LOAN

TransCanada shoulders a share of SOA's capital commitments and Alaska repays over time with tariff

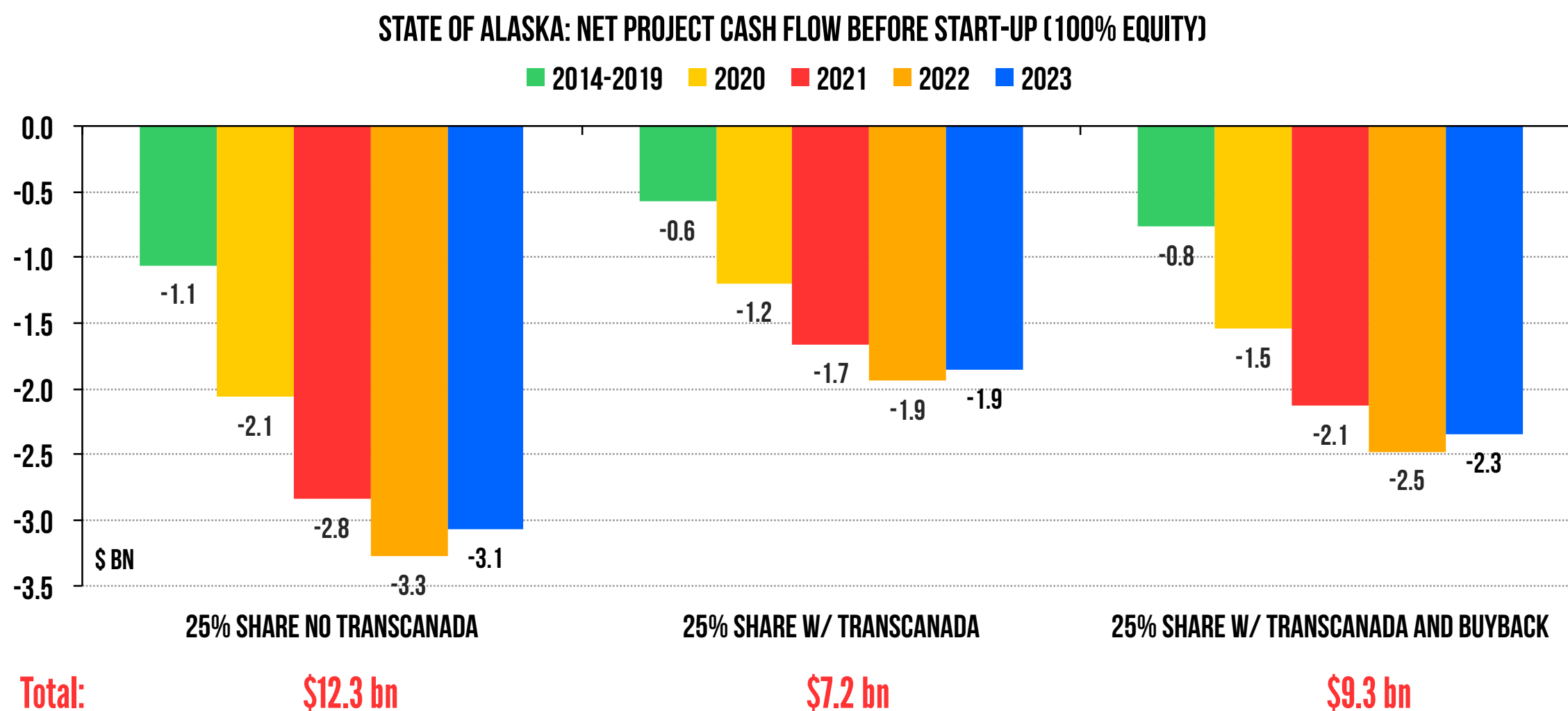
SOA outlays fall by \$1,700 mm (no buyback) to \$1 bn (buyback) during development period



TRANSCANADA LOWERS SOA OUTLAYS BY \$3-5 BN

TransCanada's participation would lower SOA peak outlays by \$0.8 bn to \$1.4

Buyback option also lowers outlays before FID (pre-2019)



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