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 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).

		System	SOA ownership percent			SOA share of CAPEX & OPEX			SOA cash commitments	
		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
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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
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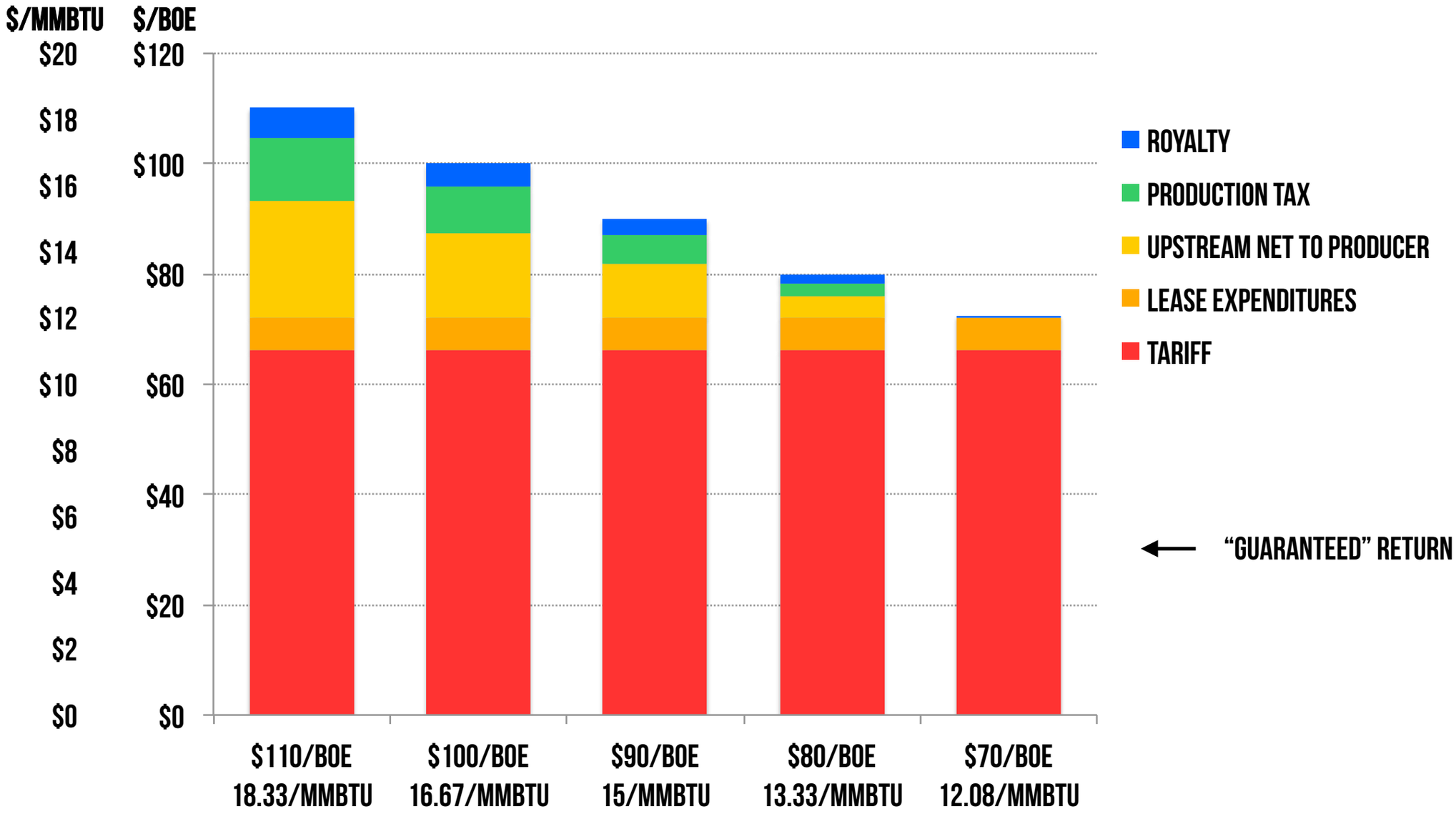
RIV: UPSTREAM ABSORBS ALL THE PRICE RISK

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

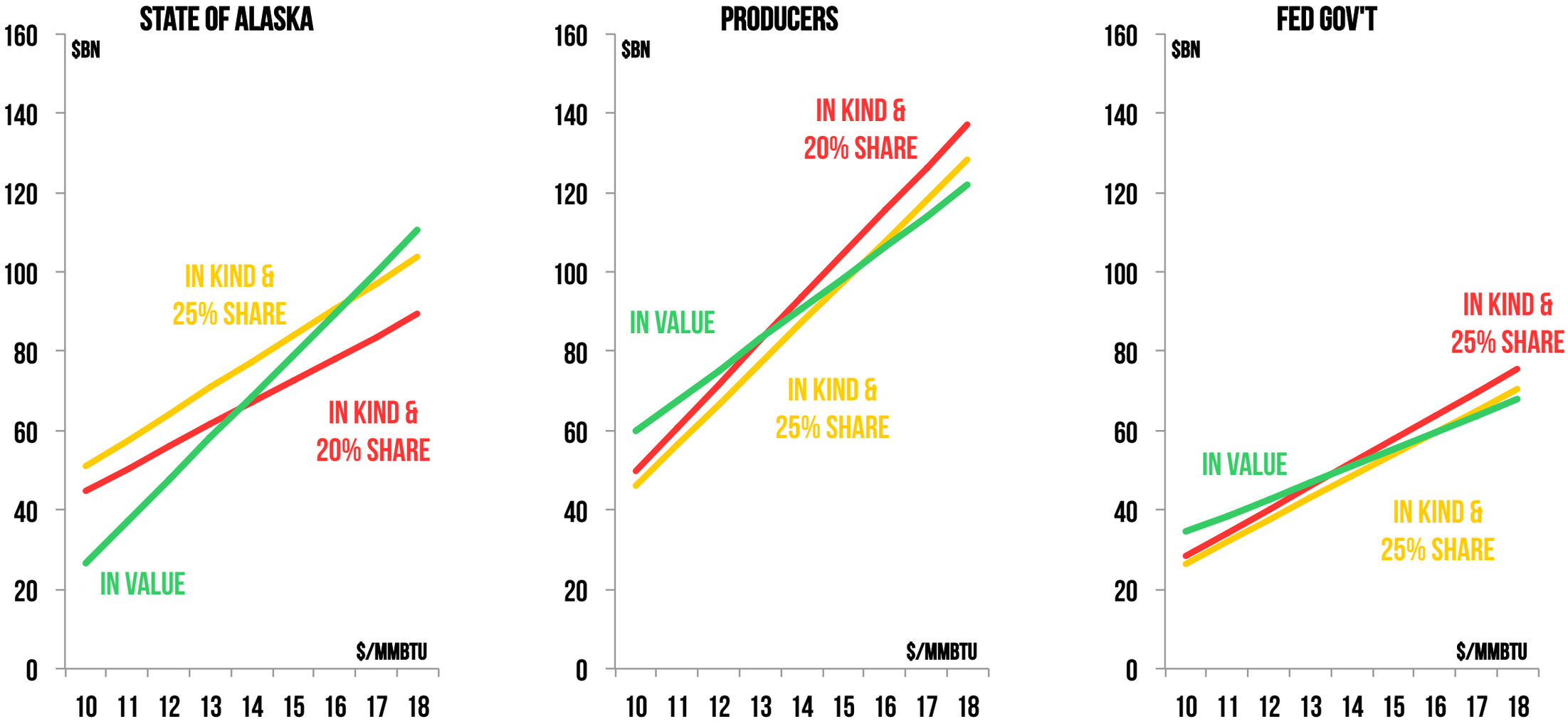


‘IN KIND’ W/ EQUITY OFFERS MORE DOWNSIDE PROTECTION

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

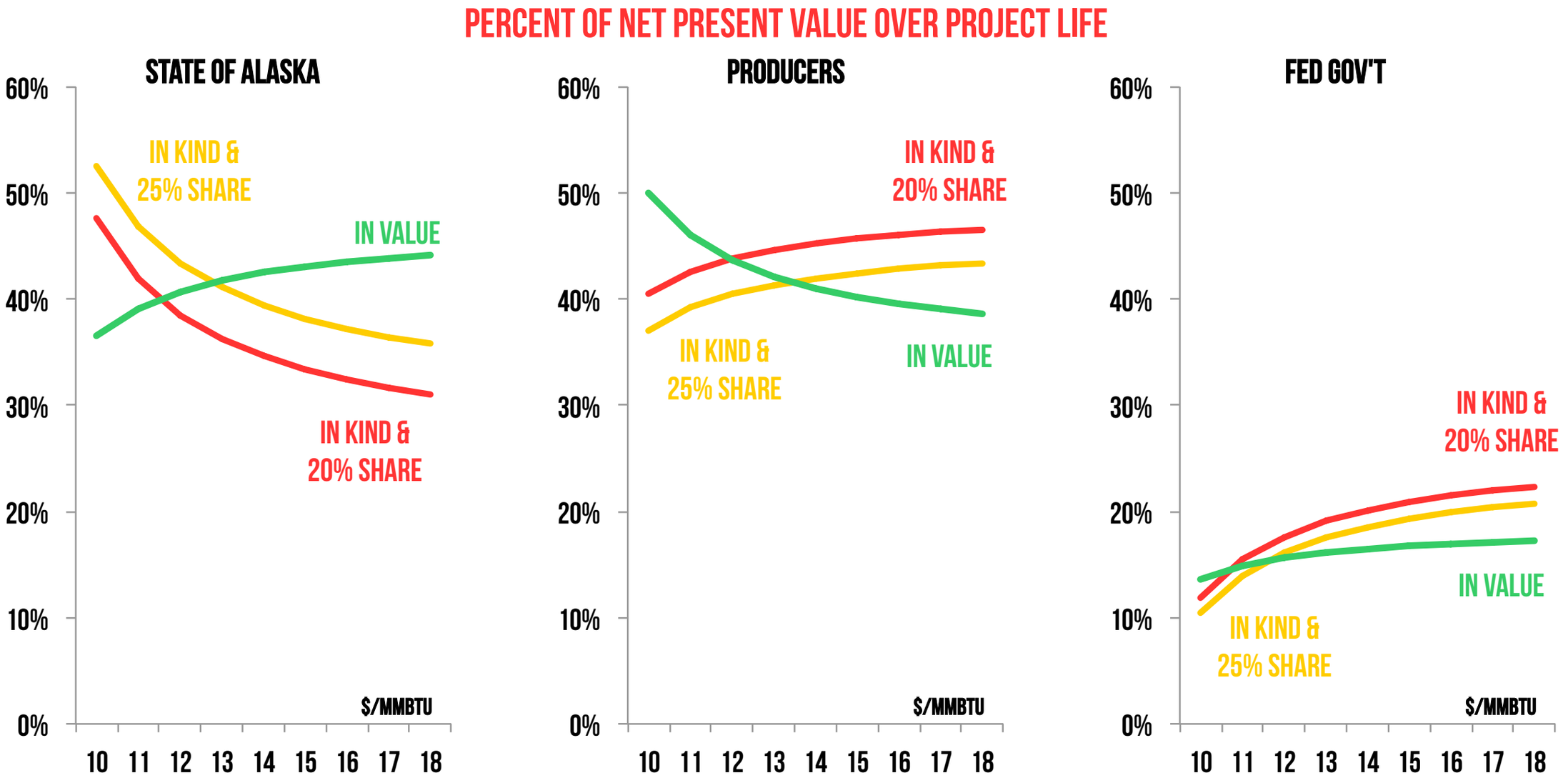
Higher SOA equity pushes up the price at which ‘in value’ is better than equity

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"



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

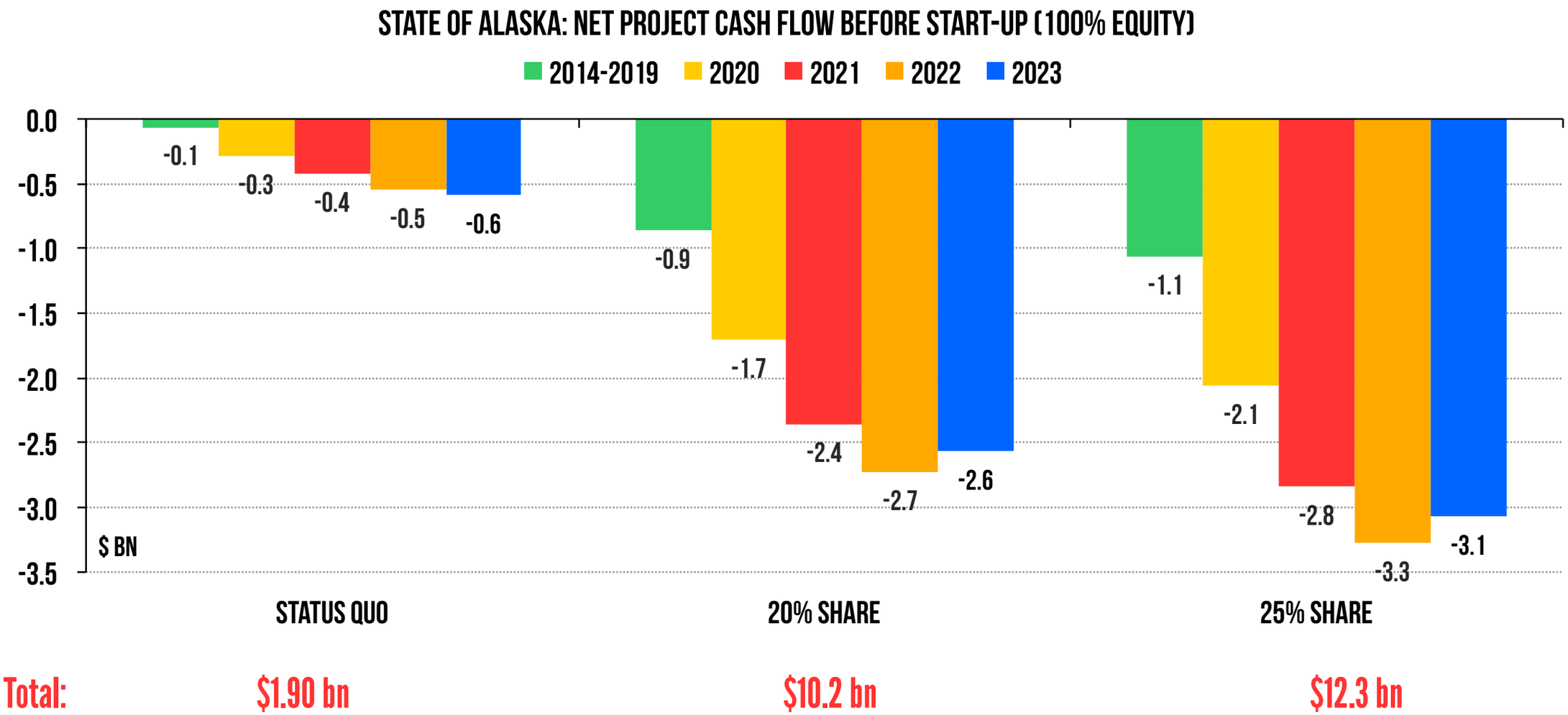
Split between Fed vs. SOA split depends on both 'in value' vs. 'in kind' as well as SOA equity share

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



	STATUS QUO	20% SHARE	25% SHARE
Total:	$1.90 bn	$10.2 bn	$12.3 bn

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%

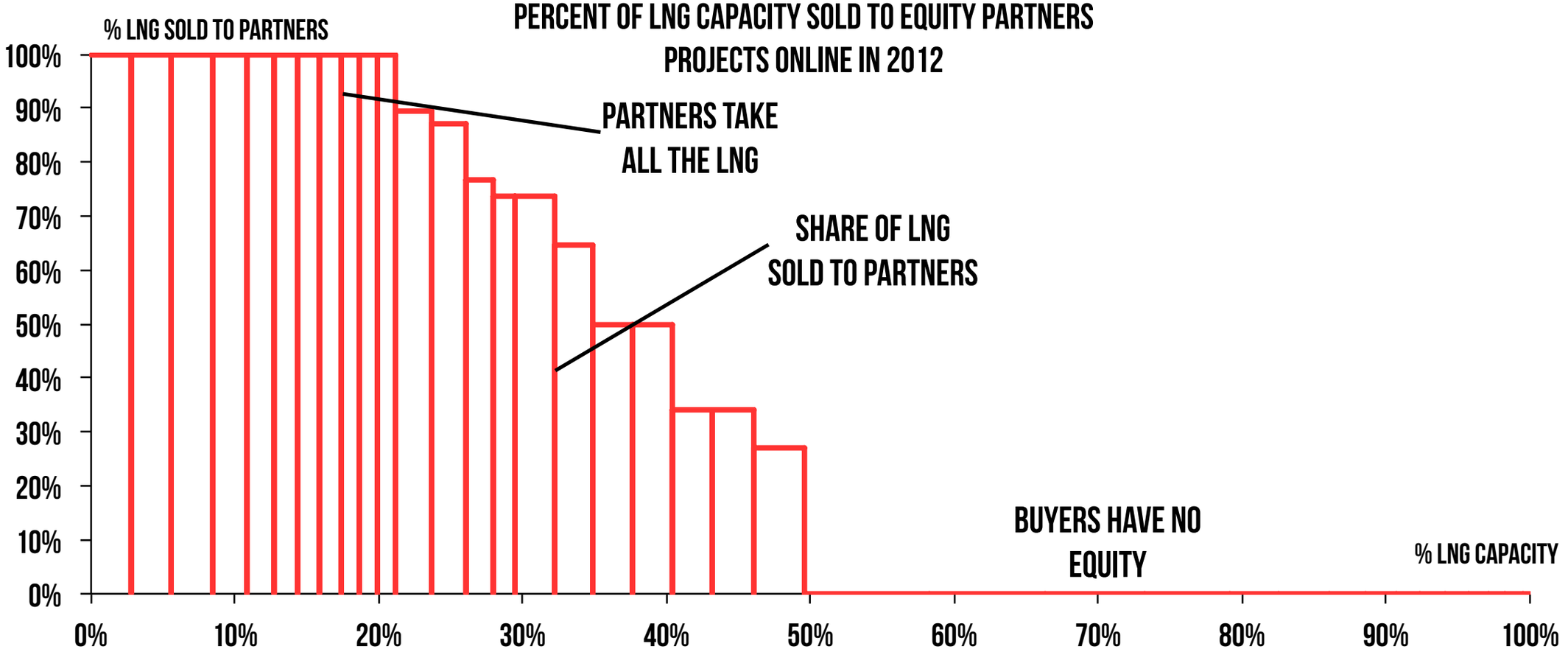
SOURCE: ENALYTICA BASED ON COMPANY PRESS RELEASES AND INDUSTRY PRESS

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

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

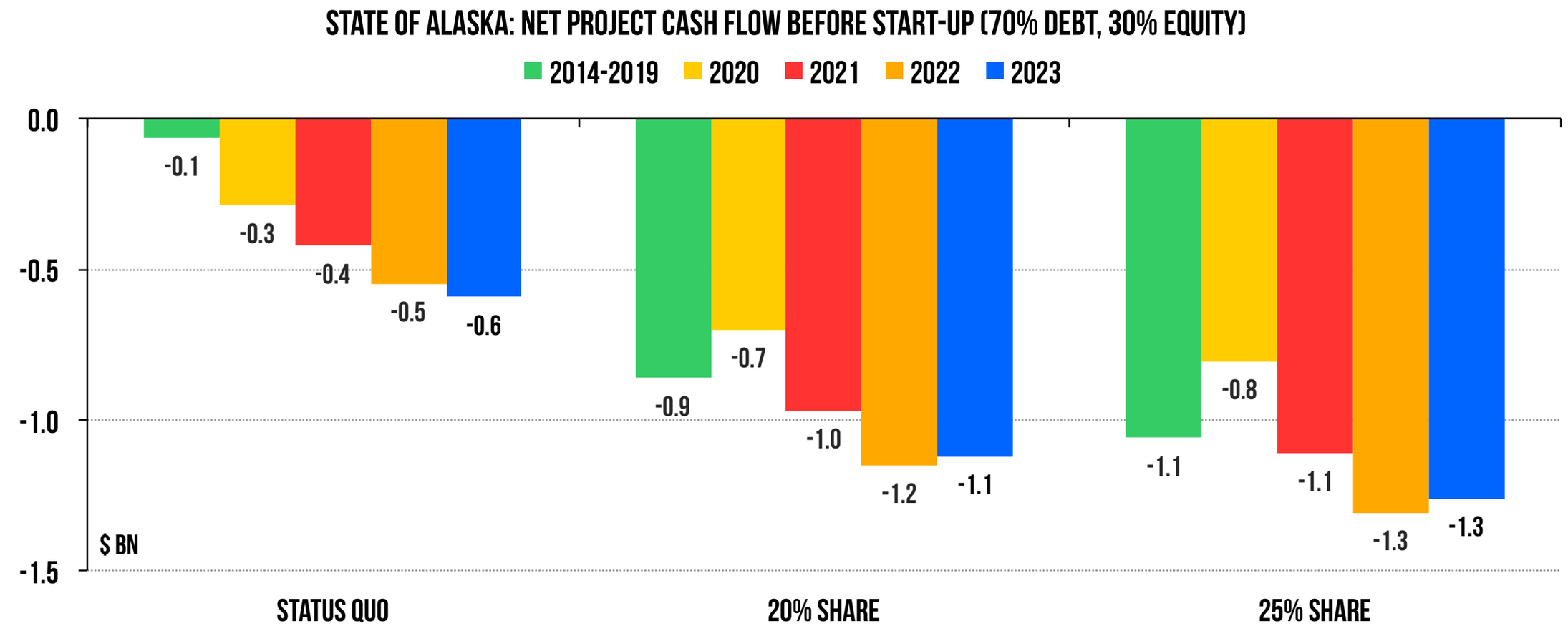
The Japan Bank of International Cooperation (JBIC) is the largest single provider of funds

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%)



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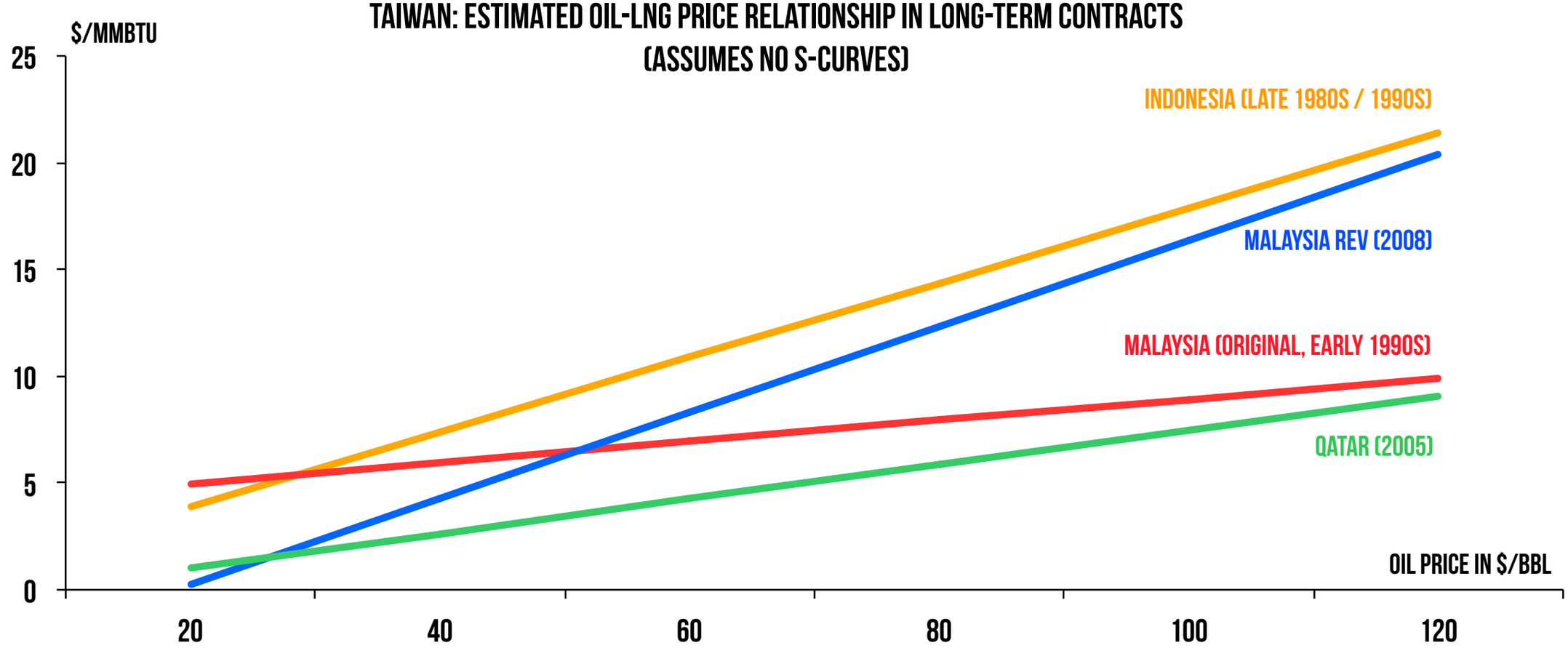
Total:	$1.90 bn	$4.8 bn	$5.5 bn

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



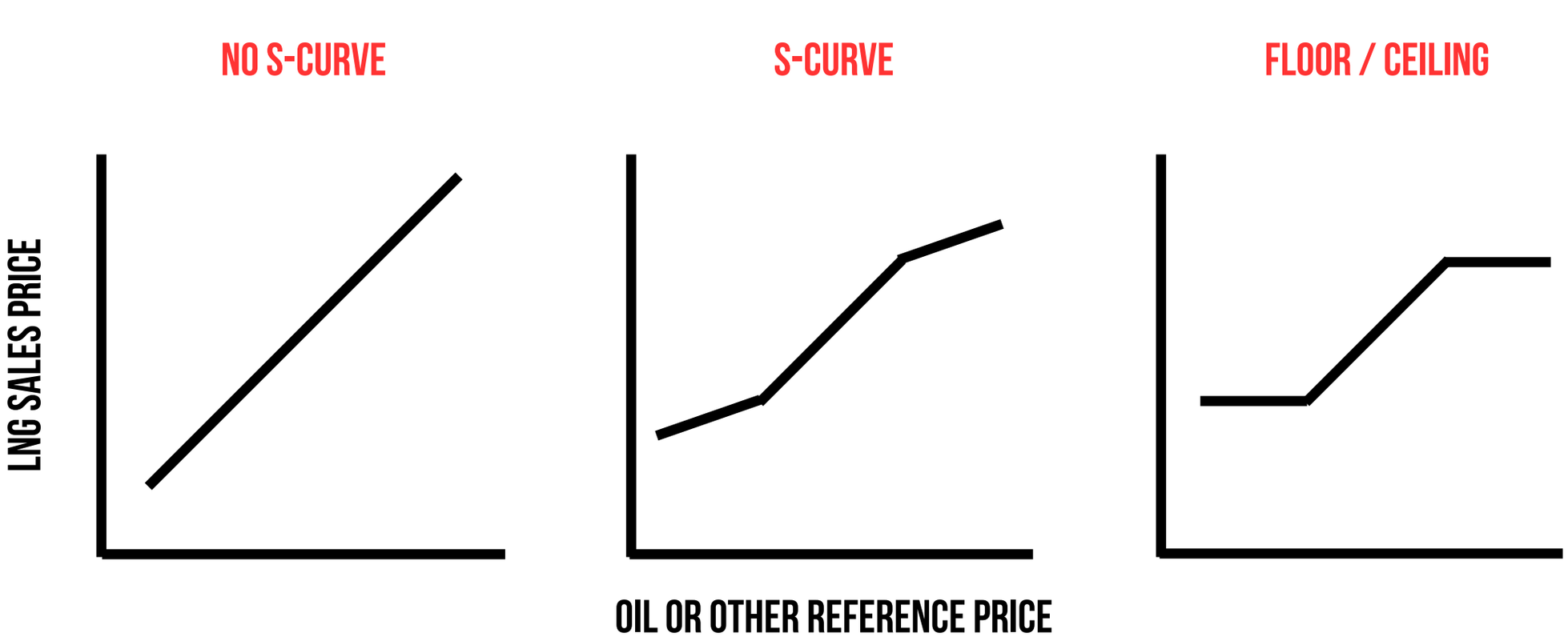
SOURCE: ENALYTICA BASED ON DATA FROM TAIWAN'S CUSTOMS ADMINISTRATION, MINISTRY OF FINANCE (HTTP://WWW.CUSTOMS.GOV.TW/STATISTICSWEBEN/IESEARCH.ASPX)

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



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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

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

✓	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 $?

✓/?	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?

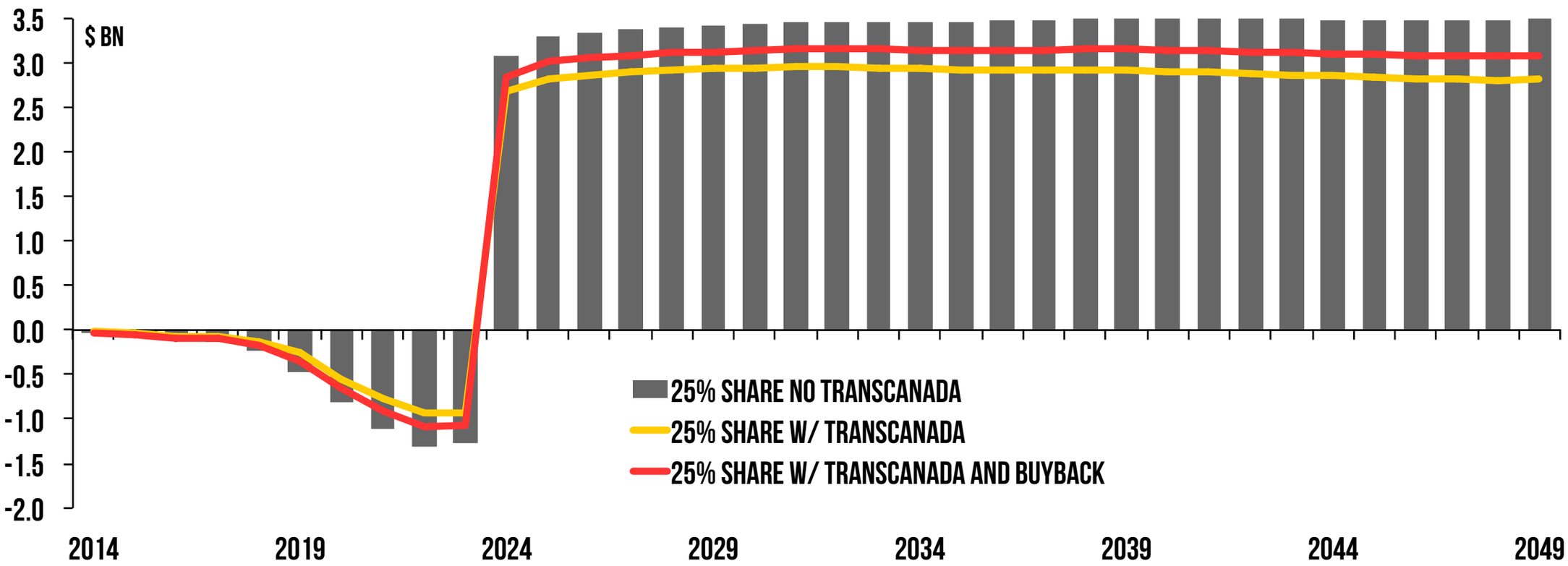
	PRODUCERS	PRODUCERS + STATE OF ALASKA	PRODUCERS + STATE OF ALASKA + TRANSCANADA	PRODUCERS + STATE OF ALASKA + 3RD PARTY
PRODUCER-SOA ALIGNMENT	✗	✓	✓	✓/?
THIRD-PARTY EXPANSION	✗	?	✓✓	✓
IN-STATE DELIVERIES	✗	✓	✓✓	✓✓
EXECUTION	✓	✓/?	✓	✓
CONTINUITY & MOMENTUM	?	?	✓	✗

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

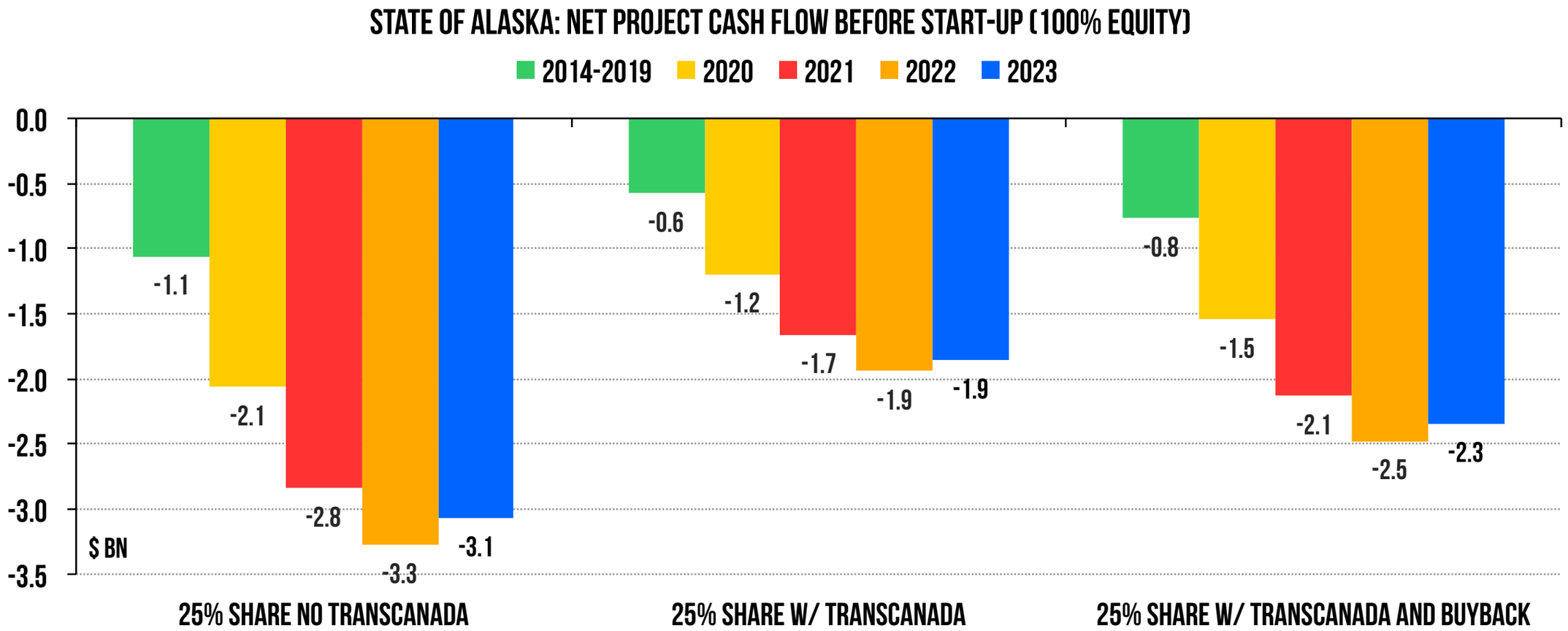
STATE OF ALASKA: CASH FLOWS FOR ALASKA LNG (70% DEBT / 30% EQUITY)



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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