

# ALIGNMENT, IN KIND VS. IN VALUE & PROJECT / COST RISKS

Prepared for Senate Resources Committee  
Juneau, Alaska > February 14, 2014

Janak Mayer, Partner > [janak.mayer@enalytica.info](mailto:janak.mayer@enalytica.info)  
Nikos Tsafos, Partner > [nikos.tsafos@enalytica.info](mailto:nikos.tsafos@enalytica.info)

<http://enalytica.info>



**JANAK MAYER**  
PARTNER

*en*alytica

[JANAK.MAYER@ENALYTICA.INFO](mailto:JANAK.MAYER@ENALYTICA.INFO)

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.



**NIKOS TSAFOS**  
PARTNER

*en*alytica

**NIKOS.TSAFOS@ENALYTICA.INFO**

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).

# IF LNG WERE OIL › IN KIND VS. IN VALUE › PRICE & COST EXPOSURE

oil netback › oil vs. gas prices › oil vs. gas midstream › LNG netback › LNG with lower oil price › LNG with higher costs › conclusion

## FY 2015 PRODUCTION TAX ESTIMATE USING INCOME STATEMENT FORMAT

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

## OIL VALUE CHAIN



**Oil ~\$105/bbl**



**Midstream costs ~\$10/bbl**



**Lease expenditures \$46/bbl**



**Production tax on ~\$49/bbl netback**

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

# IF LNG WERE OIL › IN KIND VS. IN VALUE › PRICE & COST EXPOSURE

oil netback › oil vs. gas prices › oil vs. gas midstream › LNG netback › LNG with lower oil price › LNG with higher costs › conclusion

## FY 2015 PRODUCTION TAX ESTIMATE USING INCOME STATEMENT FORMAT

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

## 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")*

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

# IF LNG WERE OIL › IN KIND VS. IN VALUE › PRICE & COST EXPOSURE

oil netback › oil vs. gas prices › oil vs. gas midstream › LNG netback › LNG with lower oil price › LNG with higher costs › conclusion

## 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 Transportation	(\$3.46)		
TAPS Tariff	(\$6.18)		
Other	(\$0.40)		
Total Transportation Costs	(\$10.03)	158,611	(\$1,591.0)
Deductible 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

## 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*

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

# IF LNG WERE OIL › IN KIND VS. IN VALUE › PRICE & COST EXPOSURE

oil netback › oil vs. gas prices › oil vs. gas midstream › LNG netback › LNG with lower oil price › LNG with higher costs › conclusion

## INDICATIVE TAX BEFORE CREDITS FOR ALASKA LNG PROJECT @ ANS

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

## 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)

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

# IF LNG WERE OIL › IN KIND VS. IN VALUE › PRICE & COST EXPOSURE

oil netback › oil vs. gas prices › oil vs. gas midstream › LNG netback › LNG with lower oil price › LNG with higher costs › conclusion

## INDICATIVE TAX BEFORE CREDITS FOR ALASKA LNG PROJECT @ ANS

	Price	Barrels (Thousands)	Value (\$ million)
<b>Avg LNG Price (\$/boe) &amp; Daily Production</b>	\$72.18	384	\$27.7
<b>Annual Production</b>			
Total		140,306	\$10,127.3
Royalty, Federal & other barrels		(19,643)	(\$1,417.8)
<b>Taxable bbls from companies w/ tax liability</b>		120,664	\$8,709.5
<b>Downstream (Transportation) Costs (\$/boe)</b>			
Marine Transporation	(\$6.00)		(\$724.0)
Pipeline & GTP Tariff	(\$24.18)		(\$2,917.6)
Liquefaction Tariff	(\$36.00)		(\$4,343.9)
<b>Total Transportation Costs</b>	(\$66.18)	120,664	(\$7,985.5)
<b>Deductable Lease Expenditures</b>			
Deductible Operating Expenditures	(\$3.00)		(\$362.0)
Deductible Capital Expenditures	(\$3.00)		(\$362.0)
<b>Total Lease Expenditures</b>	(\$6.00)	120,664	(\$724.0)
<b>Production Tax</b>			
Gross Value Reduction			\$0.0
Production Tax Value (PTV)	\$0.00		\$0.0
Base Tax (35%*PTV)			\$0.0
<b>Total Tax before credits</b>			\$0.0

## INDICATIVE LNG CHAIN: \$89/BBL ANS



**A drop to \$89/bbl ANS ...**

**... wipes out any production tax value**





# IF LNG WERE OIL › IN KIND VS. IN VALUE › PRICE & COST EXPOSURE

oil netback › oil vs. gas prices › oil vs. gas midstream › LNG netback › LNG with lower oil price › LNG with higher costs › conclusion

## INDICATIVE TAX BEFORE CREDITS FOR ALASKA LNG PROJECT @ ANS

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

## INDICATIVE LNG CHAIN: HIGHER COSTS



**A 12.2% hike in costs / tariffs**



**... wipes out any production tax value**



# IF LNG WERE OIL › IN KIND VS. IN VALUE › PRICE & COST EXPOSURE

oil netback › oil vs. gas prices › oil vs. gas midstream › LNG netback › LNG with lower oil price › LNG with higher costs › conclusion

## INDICATIVE TAX BEFORE CREDITS FOR ALASKA LNG PROJECT @ ANS

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

## IMPLICATIONS FOR STATE OF ALASKA



**Fair market price critical for top line**

**Midstream, midstream, midstream**



**Upstream secondary to midstream**

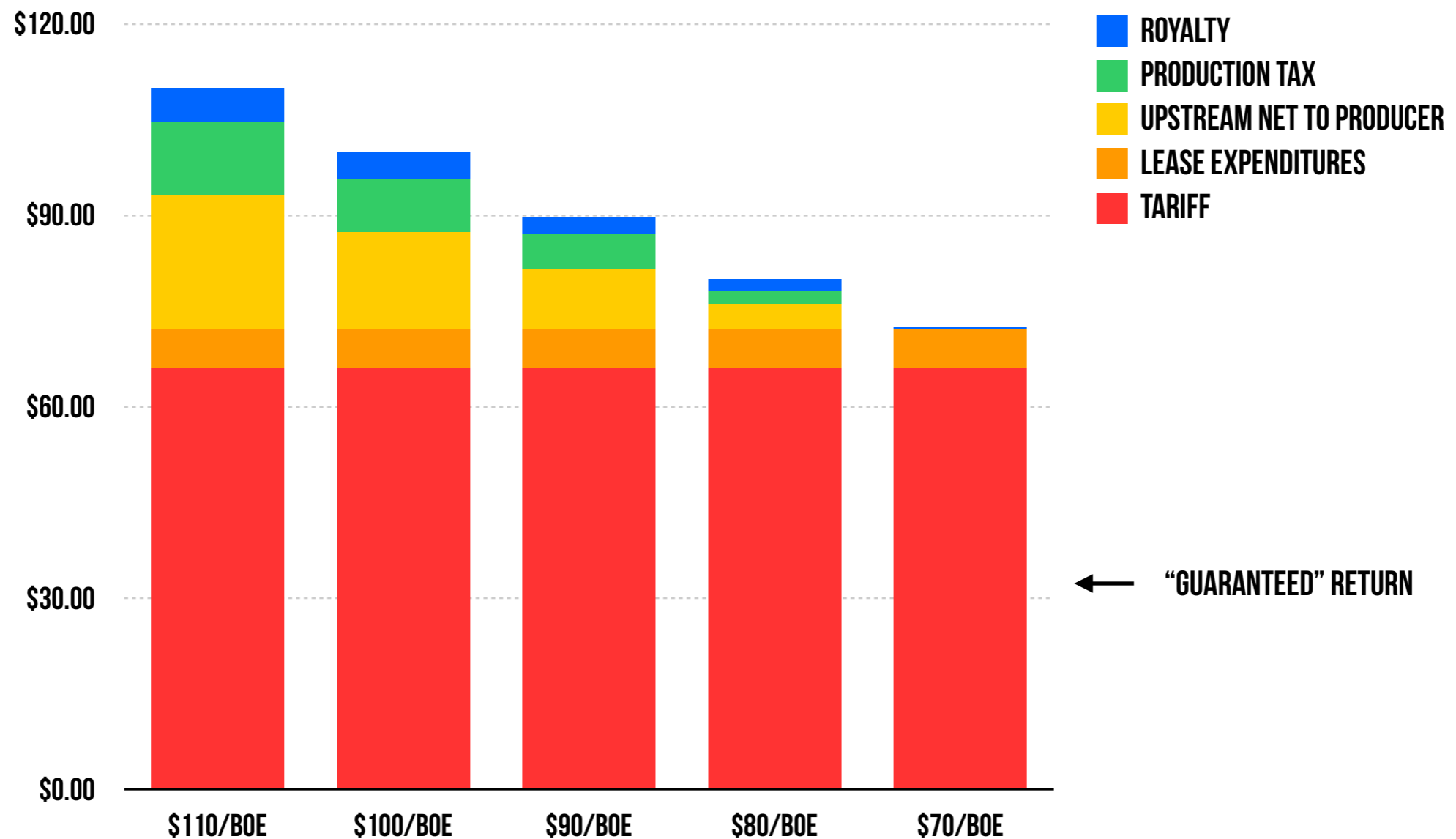


**Wellhead insufficient to drive state take**



# RIV MAKES UPSTREAM THE SOLE PRICE ABSORBER

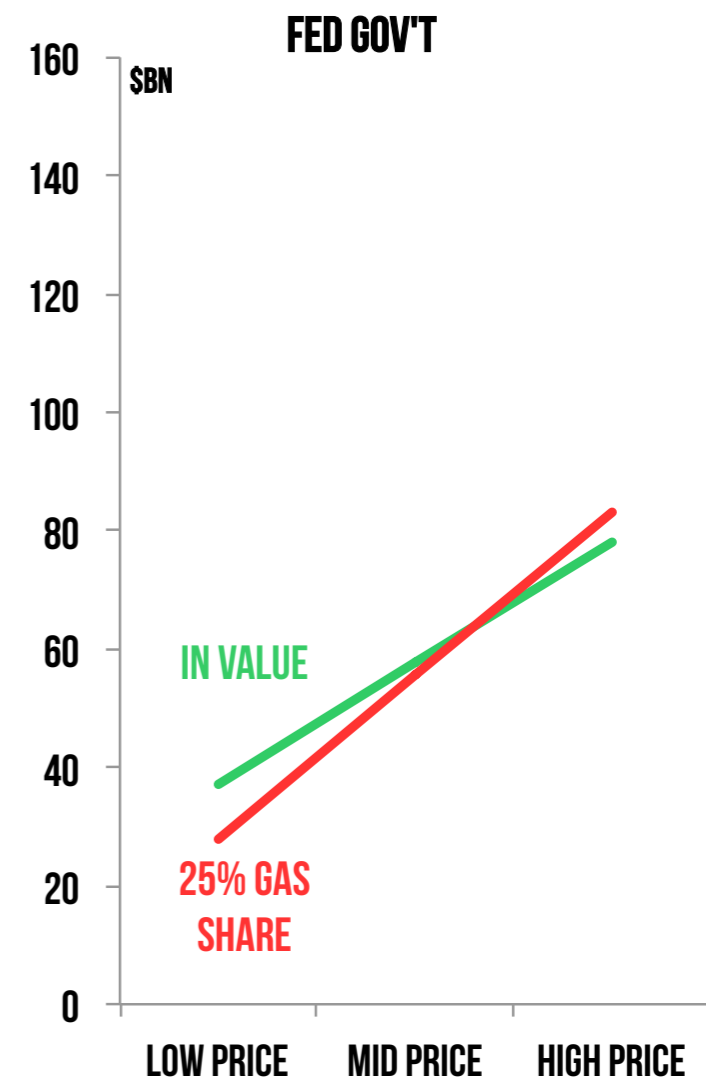
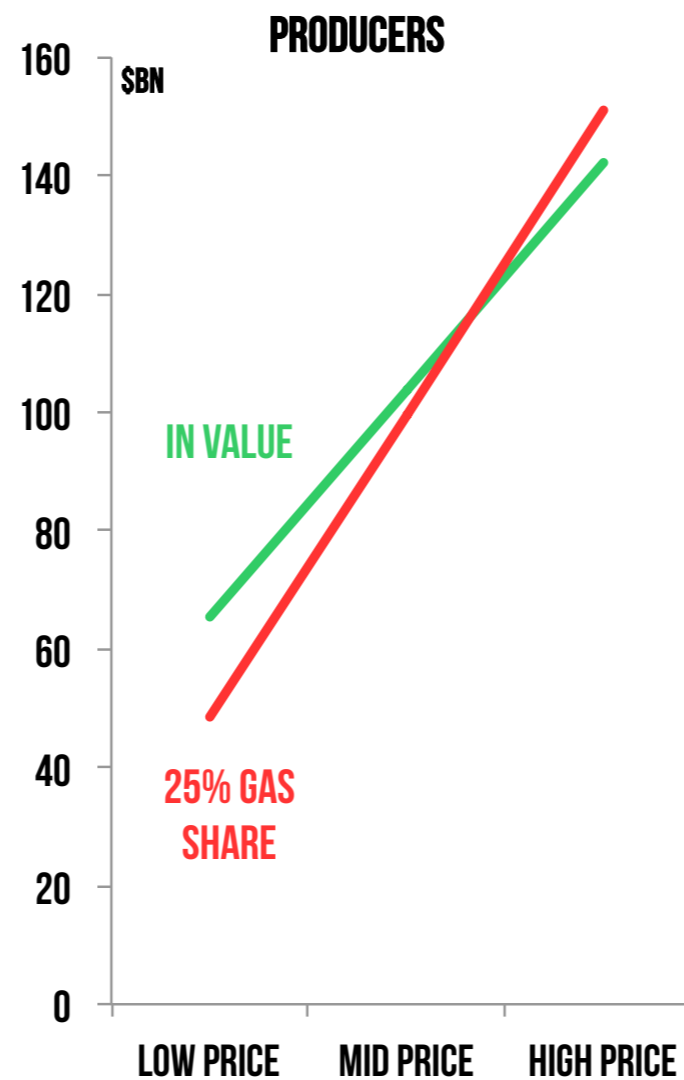
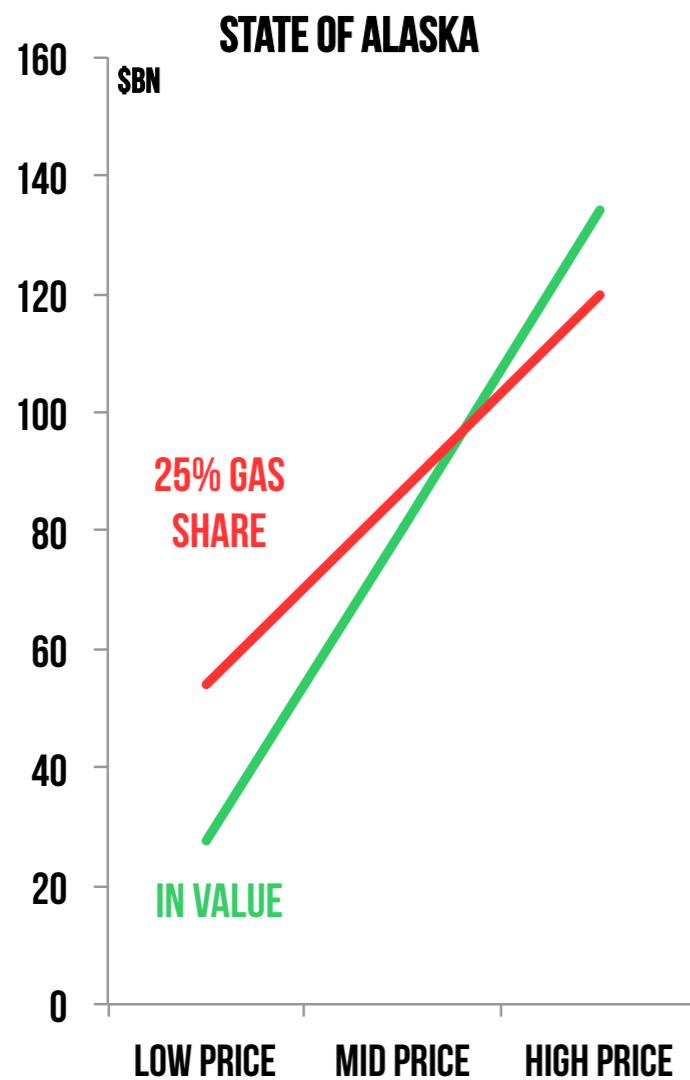
Fixed nature of tariff in 'in Value' alternative amplifies impact of price movement on state returns



# IN KIND W/ EQUITY OFFERS MORE DOWNSIDE PROTECTION

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

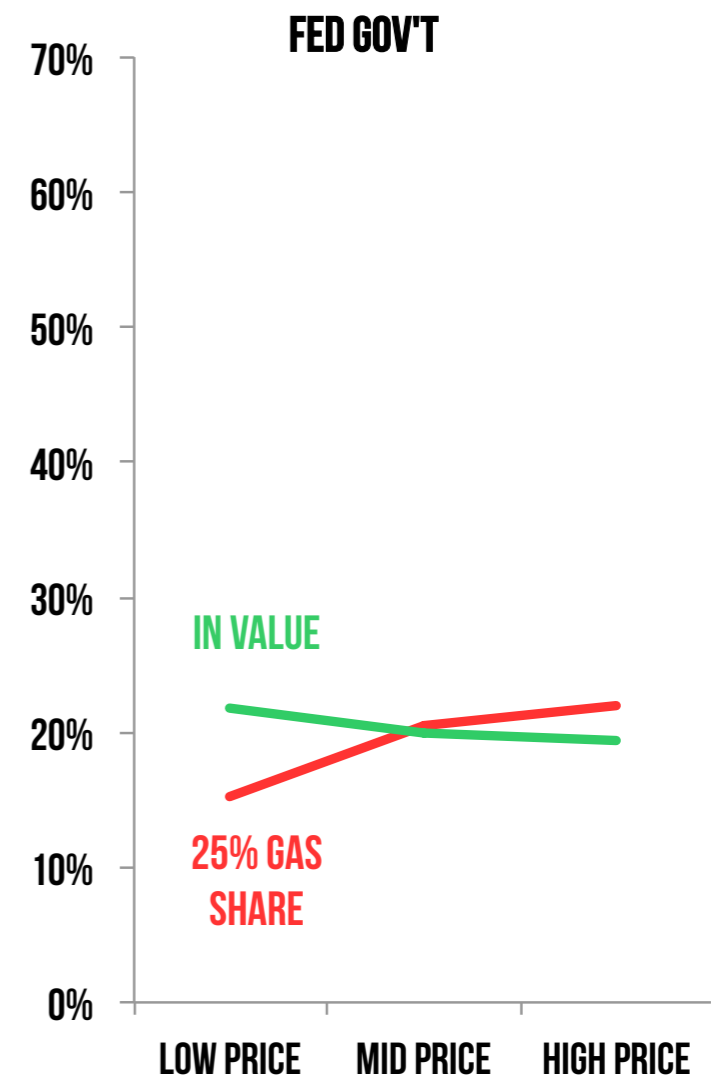
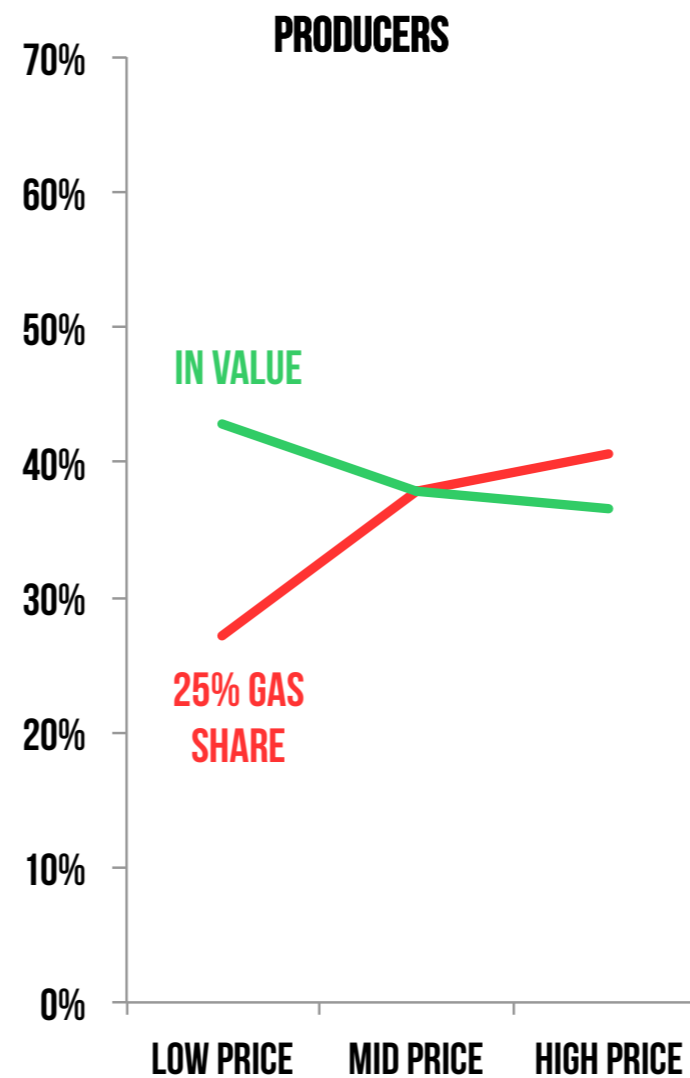
## CUMULATIVE CASH FLOWS OVER PROJECT LIFE



# 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

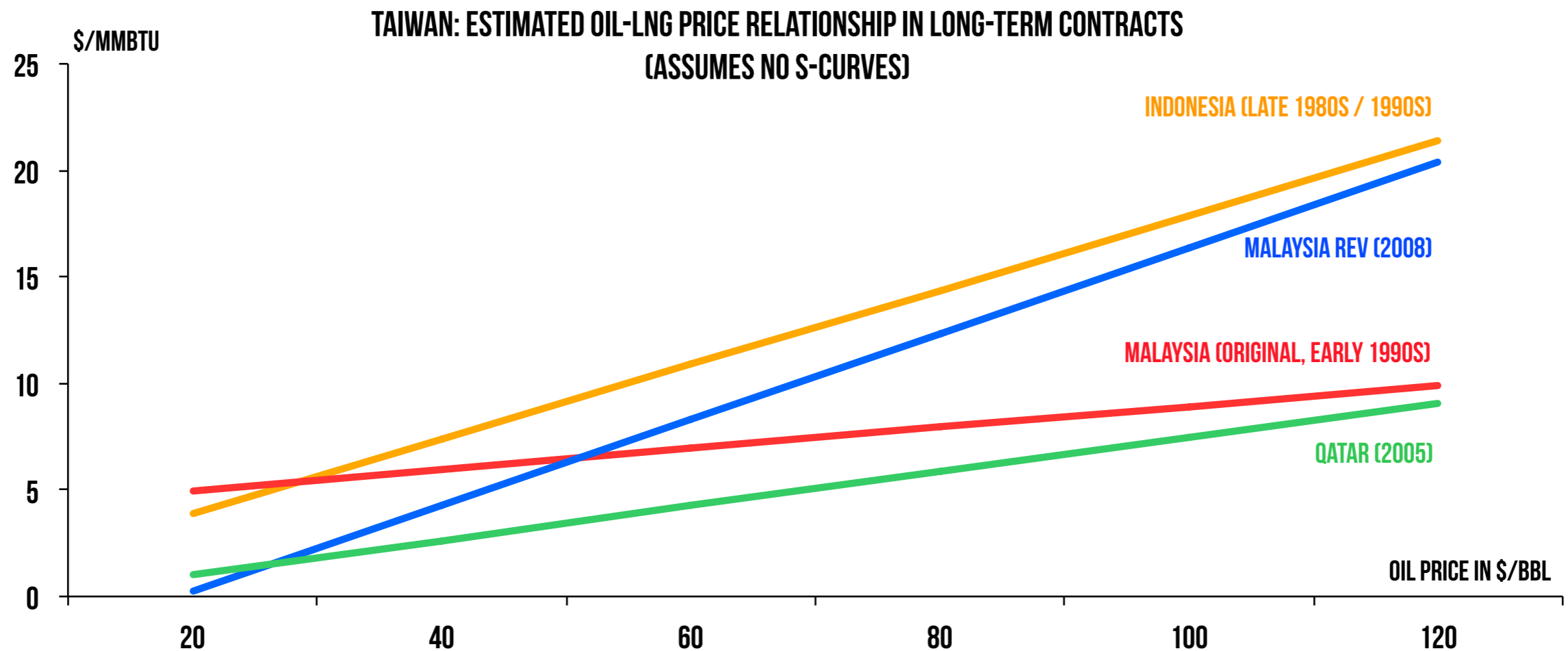


# PRICE EXPOSURE DEFINED AT CONTRACT SIGNING

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**



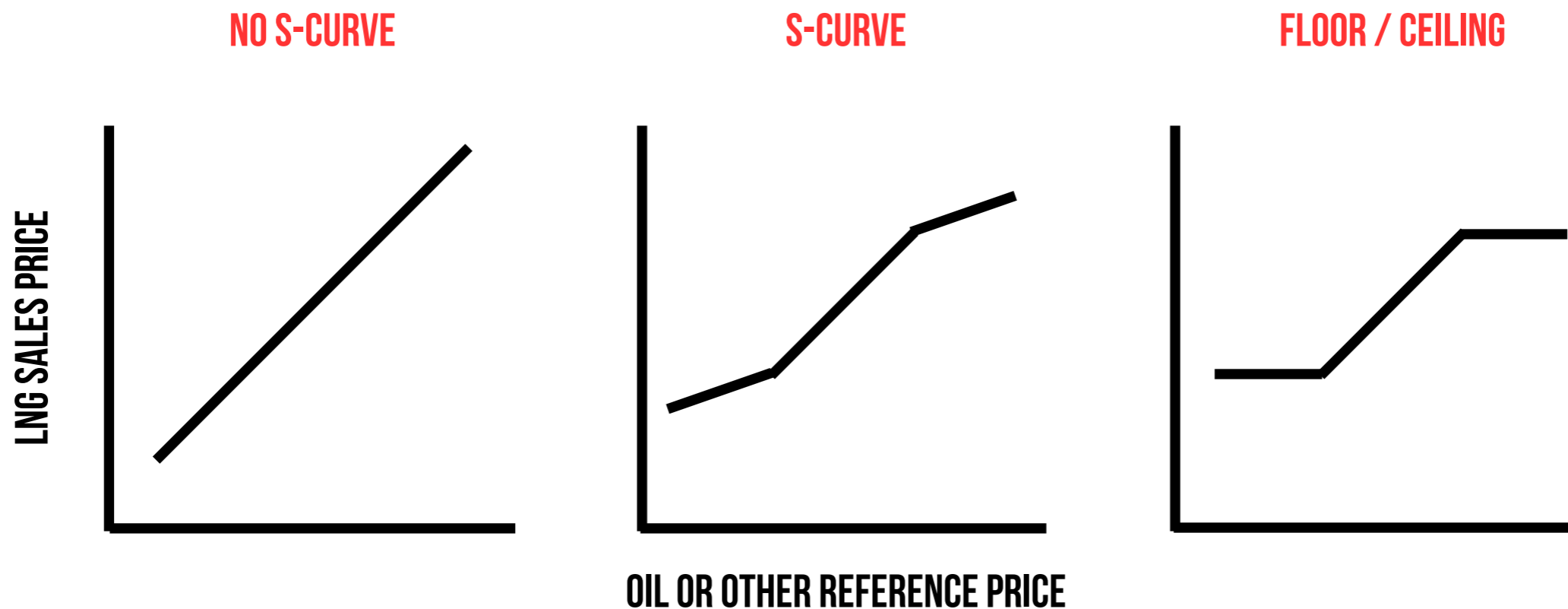
SOURCE: ANALYTICA BASED ON DATA FROM TAIWAN'S CUSTOMS ADMINISTRATION, MINISTRY OF FINANCE ([HTTP://WWW.CUSTOMS.GOV.TW/STATISTICSWEBEN/IESEARCH.ASPX](http://www.customs.gov.tw/statisticsweb/en/ieSearch.aspx))

# 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



# IF LNG WERE OIL › IN KIND VS. IN VALUE › PRICE & COST EXPOSURE

price exposure › volatility protection › cost escalation and delay risks

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: ANALYTICA BASED ON COMPANY PRESS RELEASES AND INDUSTRY PRESS



<http://enalytica.info>