Gaffney, Cline & Associates

MUNICIPAL ADVISORY GAS PROJECT REVIEW BOARD

Agenda Item: "Status Quo Property Tax Model"

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November 12th, 2014

The Disclaimer

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This Excel spreadsheet model has been prepared by Gaffney, Cline & Associates ("GCA") on behalf of the State of Alaska ("SoA") for the purposes of supporting the Municipal Advisory Gas Project Review Board's evaluation of the Alaska LNG project. It is referred to below as "the GCA/SoA Model".

Estimating the future liabilities of the AK LNG project under the Alaska Oil and Gas Property Tax AS 43.56 is a very challenging task and subject to significant uncertainties due, among other things, to the wide range of interpretation possible under the existing statute, the uncertainties surrounding the project itself, and the general uncertainty caused by the nature of the annual assessment process called for under the statute, which looks at each year afresh, without reference to prior determinations.

The GCA/SoA Model is a good faith attempt to independently allow interested parties who wish to examine potential applications of AS 43.56 on the Alaska LNG Project; including by applying different input assumptions.

The GCA/SoA Model does not purport to be all inclusive, nor to contain all of the information that an interested party might need to understand the application of AS 43.56 in any particular circumstance. All of the information included is drawn from public domain sources and has not been independently verified. The GCA/SoA Model and the methodology reflected therein should not be relied upon in assessing any transaction, investment, liability, or other matter and neither GCA nor the SoA shall be responsible for any conclusions, direct or implied, arising from its use. Further, GCA and its respective officers, directors, employees, agents, advisors and representatives make no representations or warranties, expressed or implied, concerning the GCA/SoA Model, nor the methodology or information employed therein, and does not make any claim as to the accuracy or appropriateness of the methodology or calculations in relation to any current or future interpretation of AS 43.56.

Recap on previous MAGPR discussions

Moving From Current Legislation to a Suitable PT basis for AK LNG project

Defining principles for new LNG PT

- **Fair**
  - Must be fair and equitable to all stakeholders
- **Clarity**
  - Must be easy to be understood
- **Robust**
  - Should be able to cope with changing future needs
- **Unambiguous**
  - Should not be subject to judgement and interpretation
- **Commercially sound**
  - Must enable Alaskan LNG project to compete in global market

There are key defining principles that a new PT methodology for LNG should take into consideration

Agenda:

- Overall process stages
- Excel model inputs, capabilities and limitations
- Parameters and risks that are difficult to predict going forward and not addressed by the Excel model
- Concept of maintaining an “area under the curve”
- Property Tax in context of AK LNG competitiveness

Overall Process Stages

- 5-6 August
  - Background on LNG value chain and global perspective
  - Initial insights into Property Tax alternatives
- 11 September
  - Oil and gas value chain comparison
  - Basic Property Tax design parameters
- 27 October
  - Project Presentations
- 12 November
  - Model distributed to MAG Board members [29 October]
  - Initial Property Tax spreadsheet model workshop

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PT Excel model – summary, capabilities and limitations

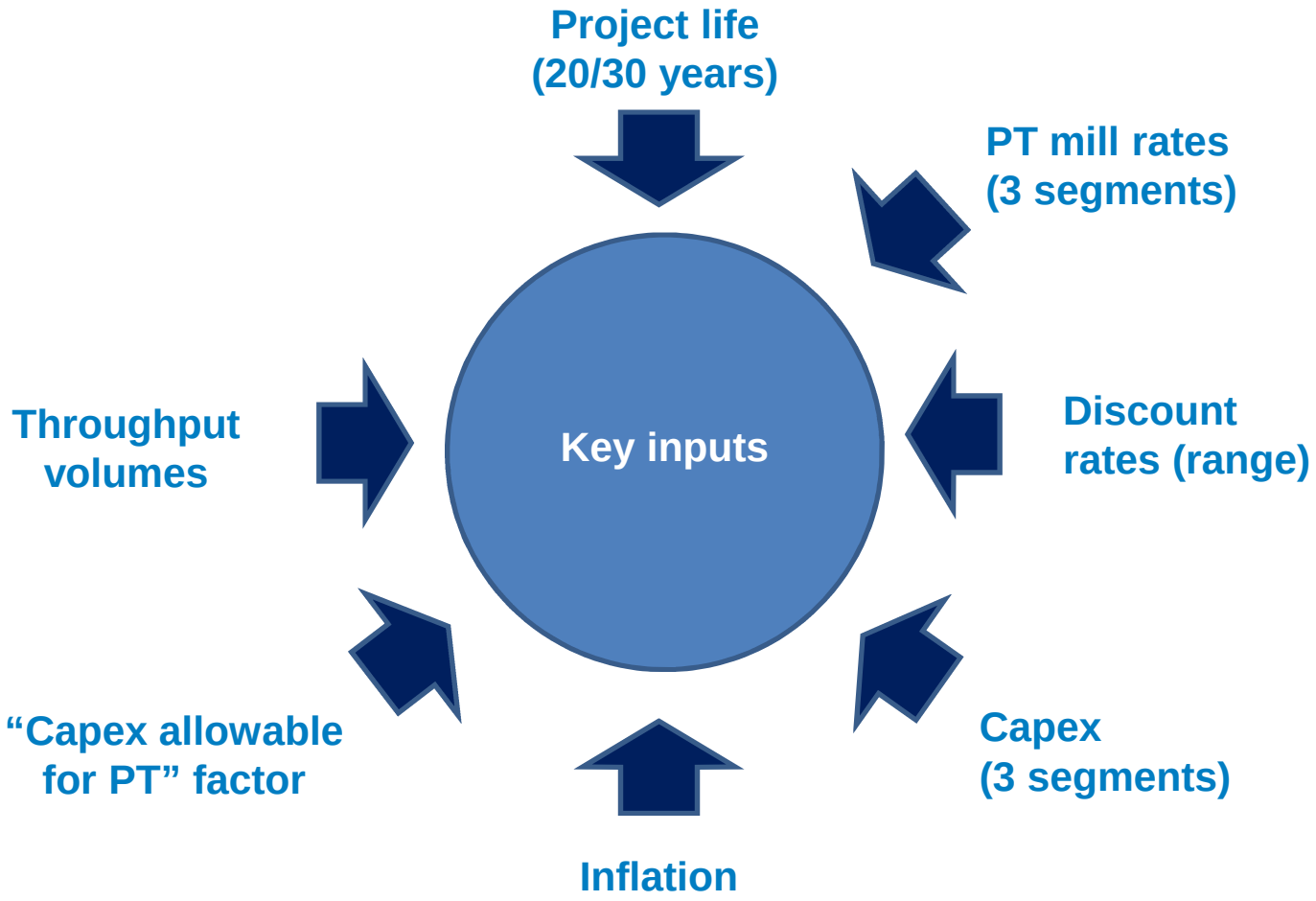
Background and Approach

- On behalf of the State of Alaska ("SoA"), GCA prepared a model for estimating indicative Property Tax under various assumptions, for the purposes of supporting the Municipal Advisory Gas Project Review Board's evaluation of the Alaska LNG project
  - GCA worked closely the Department of Revenue economics, tax and legislature teams
  - Insight was sought from other global projects and domestic projects in Alaska
- Model being developed in two stages
  - Basic functionality and design for single case *(this is what has been distributed)*
  - Expanded capability to address additional / alternate structures
- The model has capability allow the user to change a variety of inputs, to drive a series of fixed outputs
  - The key inputs and outputs are discussed later in this presentation
- Given that it is designed to be a simplistic model, there are known limitations
  - The known limitations are discussed later in this presentation

The Model has several key capabilities, but there are also limitations that should be borne in mind

The model allows for the user to adjust several inputs…

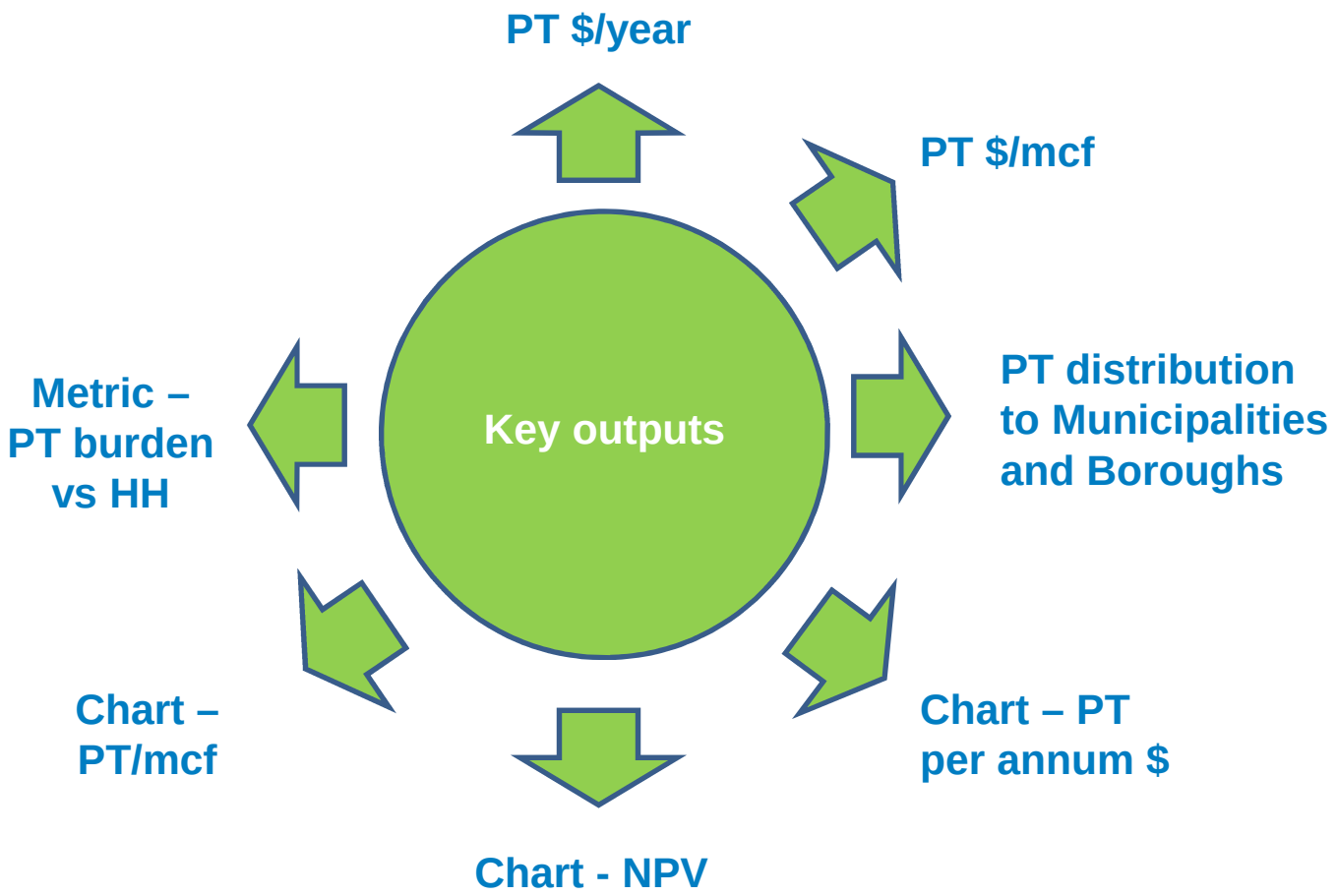
Key Inputs



These inputs reflect current basic version

… so that the model could provide a series of key outputs

Key Outputs



These outputs reflect current basic version

Inputs that can be changed by the user…

Headline project assumptions can be entered and changed

ASSUMPTIONS		PLEASE ONLY INPUT/OVERWRITE IN CELLS MARKED IN YELLOW.
Key Inputs		
Project Life (years)	30	*Model can currently model 20 or 30 year life*
Depreciation Factor	3.33%	*= 1 / Project Life (yrs)*
Property Tax Rate (mills, note % equivalent)		
GTP	18.5	*e.g. 0.5% = 5 mills*
Pipeline	20.0	*e.g. 1.0% = 10 mills*
Liquefaction Terminal	4.5	*e.g. 1.5% = 15 mills*
		e.g. 2.0% = 20 mills
Discount Rates (used for NPV comparisons)	5.0%	*Range of discount rates for illustration purposes only and creating NPV chart*
	6.0%	
	7.0%	
	8.0%	
	9.0%	
	10.0%	

- **Project life:** the present version of the model can accommodate a 20 or 30 year life
- **Depreciation:** in present version calculated on a straight line basis over project life
- **PT mill rates:** the model can handle different mill rates across each part of the project
- **Discount rates:** can be selected by the user to calculate NPV's of PT cashflows

Inputs that can be changed by the user…

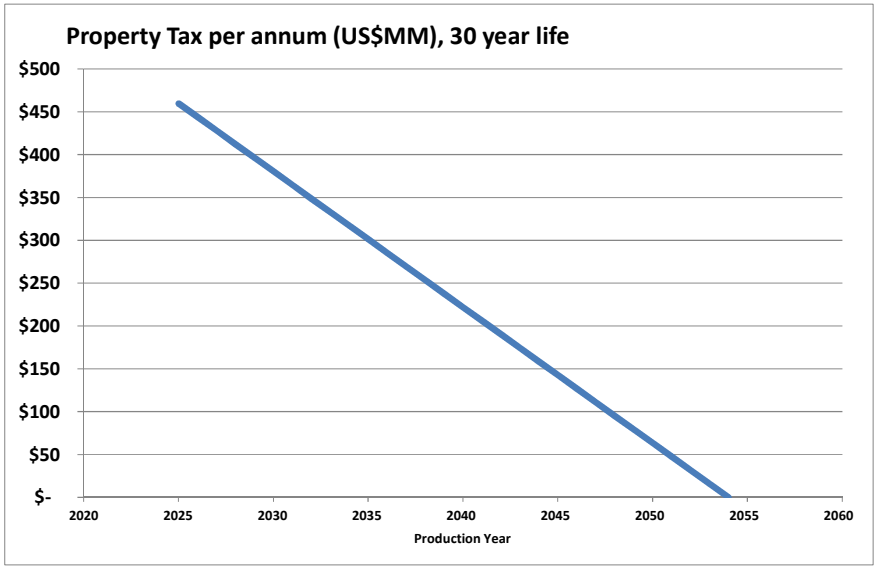
Capex is a key input assumption

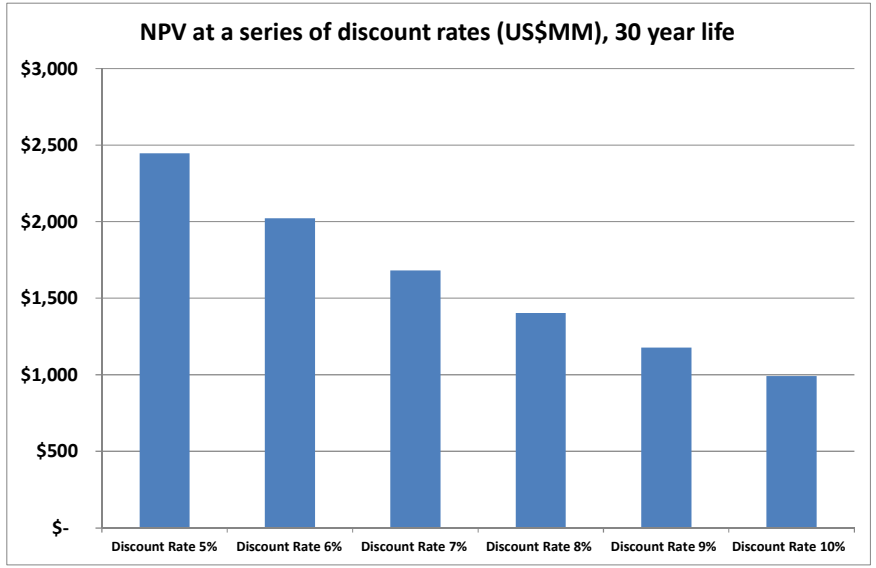
Estimated Total Capex (2013 $ real)			
GTP	$	10,000	2013 $ Headline Project Capex (will be escalated to 2025 and then reduced by allowable % factor below)
Pipeline	$	12,000	US$MM e.g. $10 billion = $10,000
Liquefaction Terminal	$	23,000	
Total Project Headline Capex ($'000,000)	**$**	**45,000**	
Capex Annual Inflation Factor		**0%**	Enter a % annual inflation factor (to take 2013 $ real estimate to 2025 $) e.g. 2% per annum will inflate Headline Capex of $100 to about $127
Estimated Total Capex (2025 $ nominal)			
GTP	$	10,000	Calculated automatically by taking "2013 Capex x compunded Capex Annual Inflation Factor"
Pipeline	$	12,000	Calculated automatically by taking "2013 Capex x compunded Capex Annual Inflation Factor"
Liquefaction Terminal	$	23,000	Calculated automatically by taking "2013 Capex x compunded Capex Annual Inflation Factor"
Total Project Headline Capex ($'000,000)	**$**	**45,000**	2025 $ Headline Project Capex (will be reduced by % factor below)
Capex allowable for PT (enter %)		**90%**	Enter a %age to reduce Total Project Capex to "Capex Allowable for Property Tax" e.g. 90% will reduce $100m to $90m
Estimated Total Capex allowable for PT (2025 $ nominal)			
GTP	$	9,000	Calculated automatically by taking "Headline Capex x Capex Allowable Factor"
Pipeline	$	10,800	Calculated automatically by taking "Headline Capex x Capex Allowable Factor"
Liquefaction Terminal	$	20,700	Calculated automatically by taking "Headline Capex x Capex Allowable Factor"
Total Capex (for PT calculation basis)	**$**	**40,500**	This number is used to calculate Property Tax (i.e. reduced for assumed disallowable capex under PT regime)

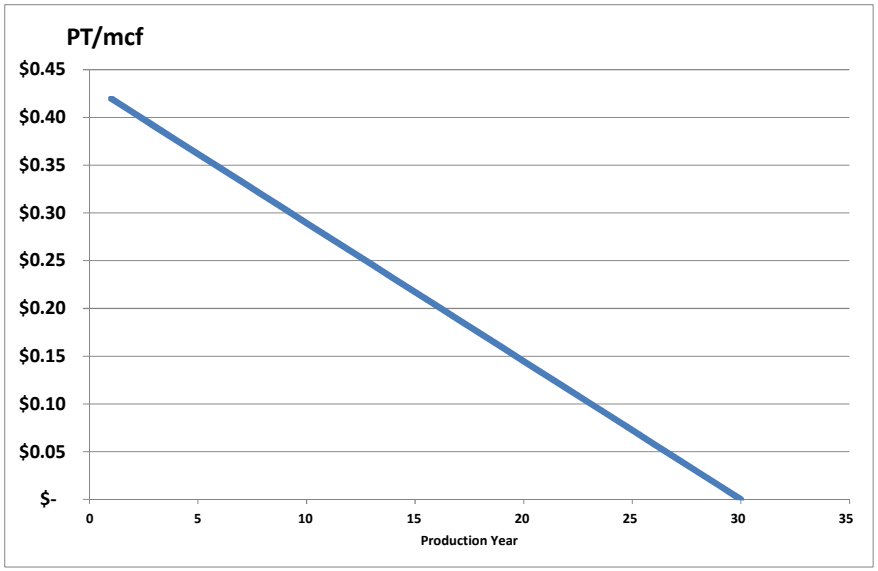
- **Headline Capex (2013$ real):** is split between the GTP, pipeline and liquefaction terminal
- **Headline Capex (2025$ nominal):** 2013 real is inflated to a 2025 nominal figure using an assumed annual inflation factor
- **Capex for PT:** is adjusted by a reduction factor to give Capex component included in PT computation (allows for costs such as land, services, finance, other factors not subject to PT)

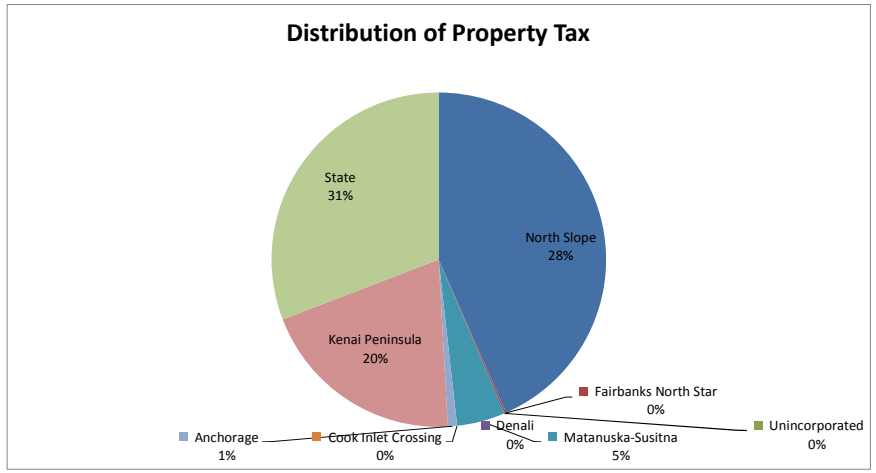
Output Dashboard generated by the model…

The model generates several charts









Additional outputs shown later

Calculation methodology in the model

- **Headline Capex (2013$ real):** is split between the GTP, pipeline and liquefaction terminal
- **Headline Capex (2025$ nominal):** 2013 real is inflated to a 2025 nominal figure using an assumed annual inflation factor. Model automatically calculates this based on input inflation rate
- **Capex for PT:** is adjusted by a reduction factor to give Capex allowable for PT
- **Depreciation:** calculated on a straight line basis over project life based on “2025$ nominal capex” multiplied by “Capex for PT”
- **Property Tax:** is calculated separately for each of the 3 segments of the project at the input Mil rates
- **Property Tax:** is calculated on the closing Net Book Value each year
- **Volumes:** in this version of the model, are assumed to be continuous throughout the chain, with no separation for fuel gas or domestic gas use
- **NPV of cashflows:** calculated using Excel standard end of year discounting NPV formula
- **Distribution of PT:** Property tax from unincorporated boroughs and property tax levied in excess of local property tax rates is designated for the State’s account

Agenda:

- Overall process stages
- Excel model inputs, capabilities and limitations
- Parameters and risks that are difficult to predict going forward and not addressed by the Excel model
- Concept of maintaining an “area under the curve”
- Property Tax in context of AK LNG competitiveness

Project life considerations

- **Gas supply**
  - Existing Reserves capable of ~20 years supply before starting to decline
    New supplies required to maintain output at initial rates (or expand)
  - Potentially large pool of additional gas, but economics as yet undefined
- **Duration of gas contracts**
  - 5-20 years historically
  - Shorter contract duration trend / spot markets
- **Life of physical assets**
  - Oldest LNG facilities approaching 50 years
  - Periodic major maintenance required

Project expansion considerations

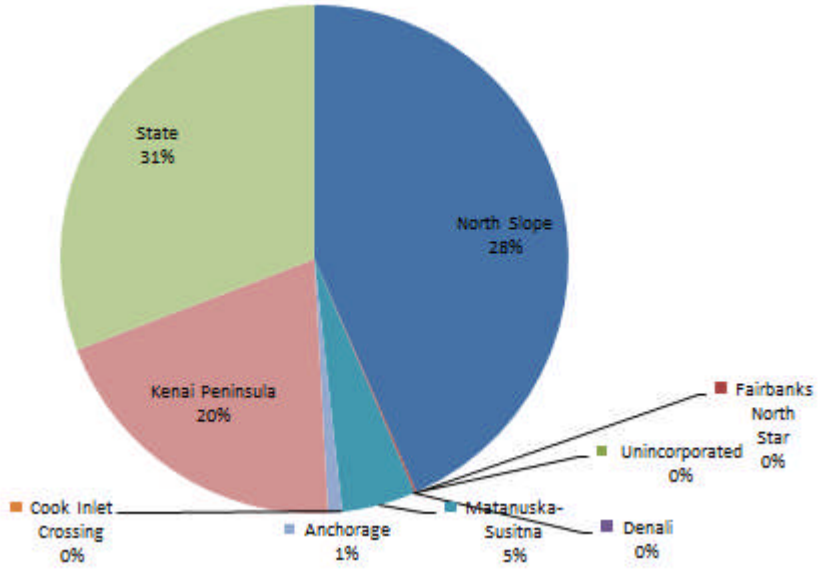
- Extending planned life
- De-bottlenecking
- Additional Trains

Other considerations

Distribution of Property Tax

- The Excel model calculates an assumed distribution of PT amongst municipalities and boroughs
- Property tax from unincorporated boroughs and property tax levied in excess of local property tax rates is designated in this analysis to be for the State's account
- The distribution of PT based on "default" parameters: 30 year project life, $45bn headline ($2013) capex, is illustrated below

Mill rates GTP 18.5, Pipeline 20, Liq Term 4.5



- The overall Property Tax liability and proportionate State share will increase if Mill rates are used in excess of the default values

Sharing of Property Tax Between Municipalities

Full Property Tax distribution by Municipalities and Boroughs								
	North Slope Borough	Fairbanks North Star Borough	Unincorporated State	Denali Borough	Matanuska-Susitna Borough	Cook Inlet Crossing N/A	Anchorage Municipality	Kenai Peninsula Borough
Share of GTP PT	100.0%							
Share of Pipeline PT	20.0%	0.5%	37.5%	10.5%	21.0%	3.5%	2.5%	4.5%
Share of Liq Term PT								100.0%

- Pipeline share estimated from regulatory filings, but can be varied by user

Distribution of Property Tax

	North Slope	Fairbanks North Star	Unincorporated	Denali	Matanuska-Susitna	Cook Inlet Crossing	Anchorage	Kenai Peninsula
Local Mill Rate	18.5	12.971	0.0	0.0	9.852	0.0	15.56	4.50
GTP Mill Rate	20							
Local share of GTP PT	0.93							
Pipeline Mill Rate	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Local share of Pipeline PT	0.93	0.65	0.00	0.00	0.49	0.00	0.78	0.23
Liq Term Mill Rate								20
Local share of Liq Term PT								0.23

Property tax from unincorporated boroughs and property tax levied in excess of local property tax rates is designated in this analysis for the State's account.

Full Property Tax distribution by Municipalities and Boroughs

	North Slope	Fairbanks North Star	Unincorporated	Denali	Matanuska-Susitna	Cook Inlet Crossing	Anchorage	Kenai Peninsula	STATE BALANCE	TOTAL
Share of GTP PT	100.0%									**100.0%**
Share of Pipeline PT	20.0%	0.5%	37.5%	10.5%	21.0%	3.5%	2.5%	4.5%		**100.0%**
Share of Liq Term PT								100.0%		**100.0%**
1	200	1	0	0	22	0	4	92	465	**783**
2	193	1	0	0	21	0	4	89	449	**756**
3	186	1	0	0	20	0	4	86	433	**729**
4	179	1	0	0	19	0	4	83	417	**702**
5	172	1	0	0	19	0	4	79	401	**675**
6	165	1	0	0	18	0	3	76	385	**648**
7	158	1	0	0	17	0	3	73	369	**621**
8	151	1	0	0	16	0	3	70	353	**594**
9	145	0	0	0	16	0	3	67	337	**567**
10	138	0	0	0	15	0	3	64	321	**540**
11	131	0	0	0	14	0	3	60	305	**513**
12	124	0	0	0	13	0	3	57	289	**486**
13	117	0	0	0	13	0	2	54	273	**459**
14	110	0	0	0	12	0	2	51	257	**432**
15	103	0	0	0	11	0	2	48	240	**405**
16	96	0	0	0	10	0	2	44	224	**378**
17	89	0	0	0	10	0	2	41	208	**351**
18	83	0	0	0	9	0	2	38	192	**324**
19	76	0	0	0	8	0	2	35	176	**297**
20	69	0	0	0	7	0	1	32	160	**270**
21	62	0	0	0	7	0	1	29	144	**243**
22	55	0	0	0	6	0	1	25	128	**216**
23	48	0	0	0	5	0	1	22	112	**189**
24	41	0	0	0	4	0	1	19	96	**162**
25	34	0	0	0	4	0	1	16	80	**135**
26	28	0	0	0	3	0	1	13	64	**108**
27	21	0	0	0	2	0	0	10	48	**81**
28	14	0	0	0	1	0	0	6	32	**54**
29	7	0	0	0	1	0	0	3	16	**27**
30	0	0	0	0	0	0	0	0	0	**0**
	2,994	**10**	**-**	**-**	**324**	**-**	**61**	**1,382**	**6,974**	**11,745**
	North Slope	**Fairbanks North Star**	**Unincorporated**	**Denali**	**Matanuska-Susitna**	**Cook Inlet Crossing**	**Anchorage**	**Kenai Peninsula**	**State**	
	25.5%	**0.1%**	**0.0%**	**0.0%**	**2.8%**	**0.0%**	**0.5%**	**11.8%**	**59.4%**	**100.0%**

- Assumed Mill rates for example:
  - GTP 18.5
  - Pipeline 20
  - Liquefaction Terminal 4.5
- State takes balance up to Mill rate of 20

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- Overall process stages
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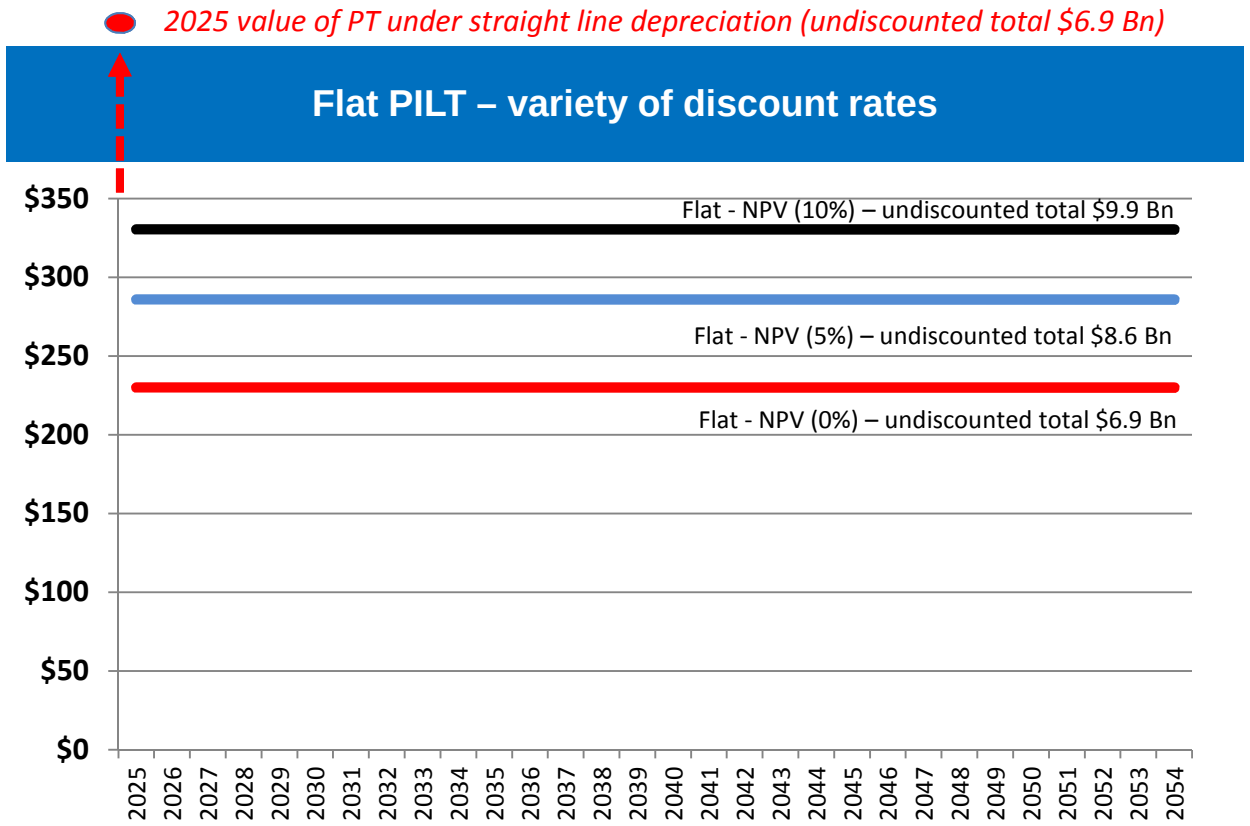
- **NEXT STEP:** Concept of maintaining an “area under the curve”
- Property Tax in context of AK LNG competitiveness

Alternative cashflow profiles - PILT

- **Alternative profiles:** Having modelled the Property Tax cashflows from the basic depreciation methodology, the next step was taken to look at alternative cashflow profiles which could be derived
- **"Maintaining the area under the curve":** This concept was taken as a pre-requisite for arriving at alternative cashflow profiles. Simply, it ensures that Municipalities receive equal value regardless of approach taken
- **PILT mechanism:** A Payment in Lieu of Tax (PILT) mechanism was used to generate the Property Tax (cash flow)
- **Different types of PILT structure:** consider alternatives such as a flat PILT and an escalating PILT in order to inform discussion at the municipality level. Further alternatives may include features such as gas price indexation.
- **Profiles at different discount rates:** In order to "maintain the area under the curve", and calculate the alternative PILT structures, cashflow profiles were calculated for a series of NPV discount rates. This allows users to reflect different assumptions of the time value of money

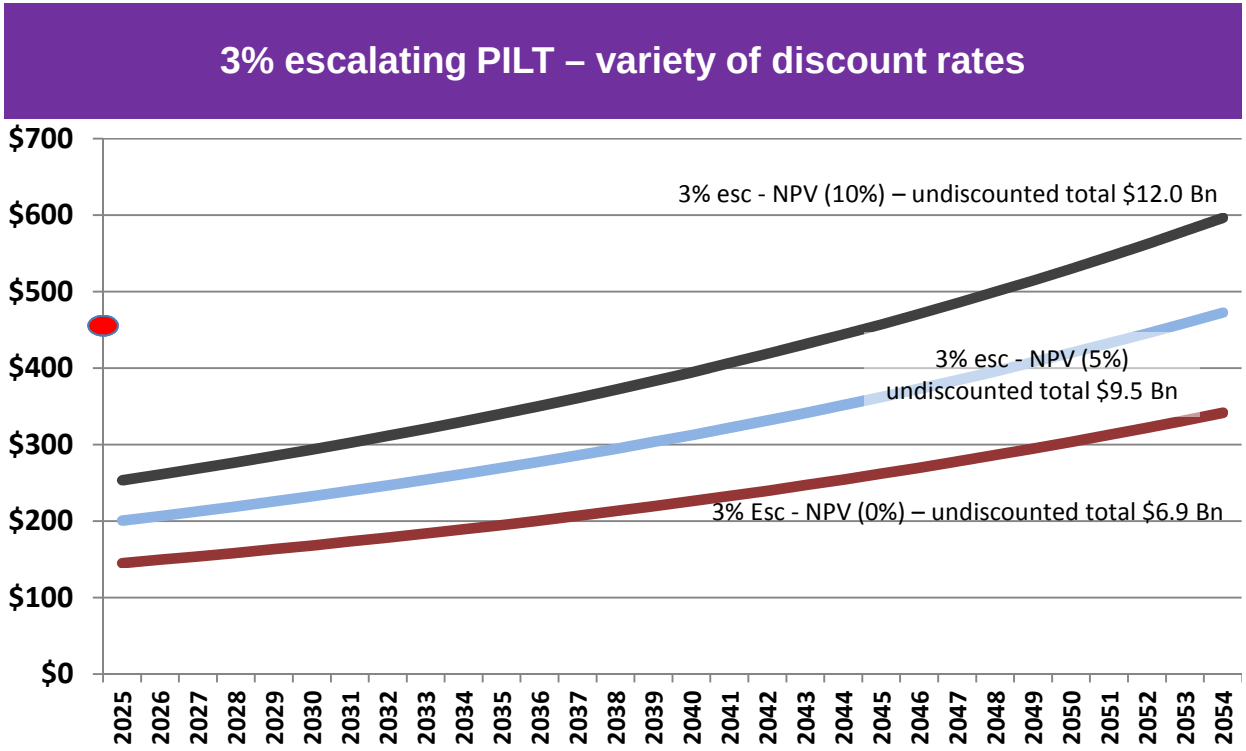
Example of a flat PILT



Note: Based on "default" parameters: 30 year project life, $45bn headline capex, GTP mill rate 18.5, Pipeline mill rate 20, Liquefaction Terminal mill rate 4.5

Year	Annual $MM PT PILT Payments		
	0%	5%	10%
2025	230	286	330
2026	230	286	330
2027	230	286	330
2028	230	286	330
2029	230	286	330
2030	230	286	330
2031	230	286	330
2032	230	286	330
2033	230	286	330
2034	230	286	330
2035	230	286	330
2036	230	286	330
2037	230	286	330
2038	230	286	330
2039	230	286	330
2040	230	286	330
2041	230	286	330
2042	230	286	330
2043	230	286	330
2044	230	286	330
2045	230	286	330
2046	230	286	330
2047	230	286	330
2048	230	286	330
2049	230	286	330
2050	230	286	330
2051	230	286	330
2052	230	286	330
2053	230	286	330
2054	230	286	330

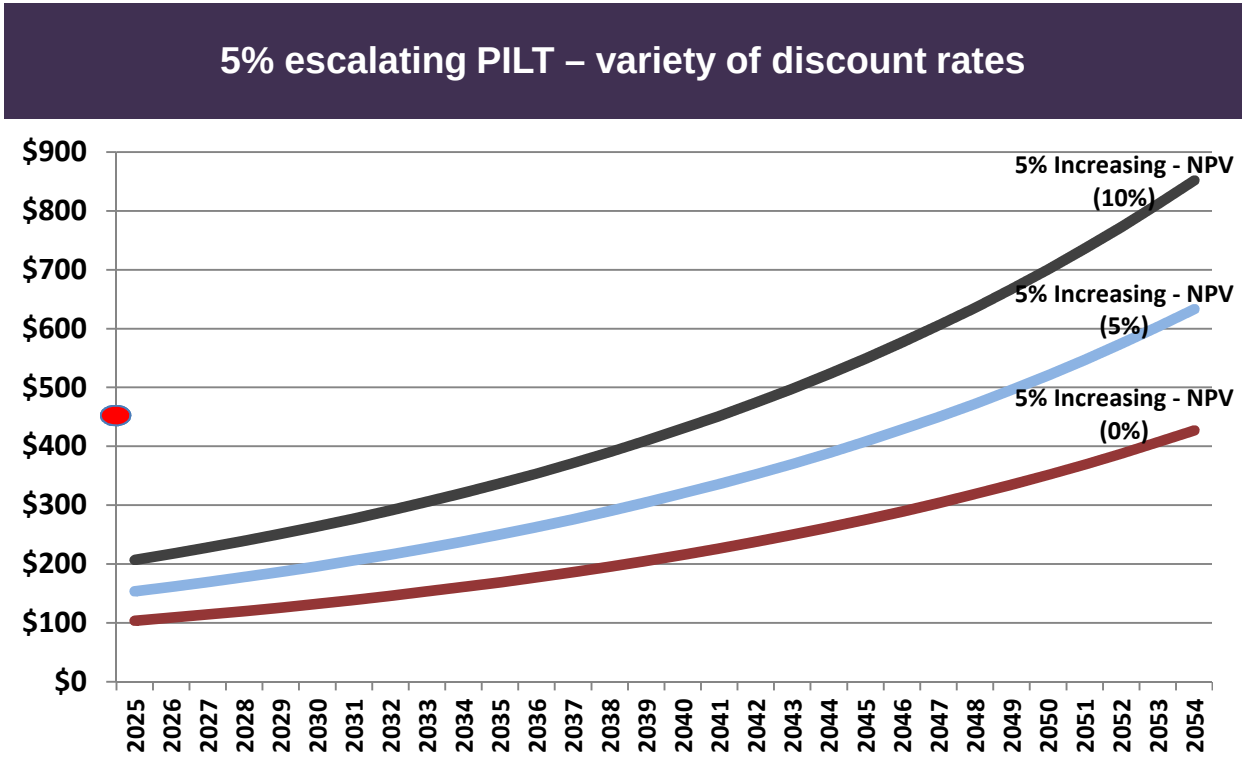
Example of a 3% escalating PILT



Note: Based on "default" parameters: 30 year project life, $45bn headline capex, GTP mill rate 18.5, Pipeline mill rate 20, Liquefaction Terminal mill rate 4.5

Year	Annual $MM PT PILT Payments		
	0%	5%	10%
2025	145	200	253
2026	149	206	261
2027	154	213	269
2028	158	219	277
2029	163	226	285
2030	168	232	293
2031	173	239	302
2032	178	247	311
2033	184	254	321
2034	189	262	330
2035	195	269	340
2036	201	278	350
2037	207	286	361
2038	213	294	372
2039	219	303	383
2040	226	312	394
2041	233	322	406
2042	240	331	418
2043	247	341	431
2044	254	352	444
2045	262	362	457
2046	270	373	471
2047	278	384	485
2048	286	396	500
2049	295	408	515
2050	304	420	530
2051	313	432	546
2052	322	445	562
2053	332	459	579
2054	342	472	597

Example of a 5% escalating PILT

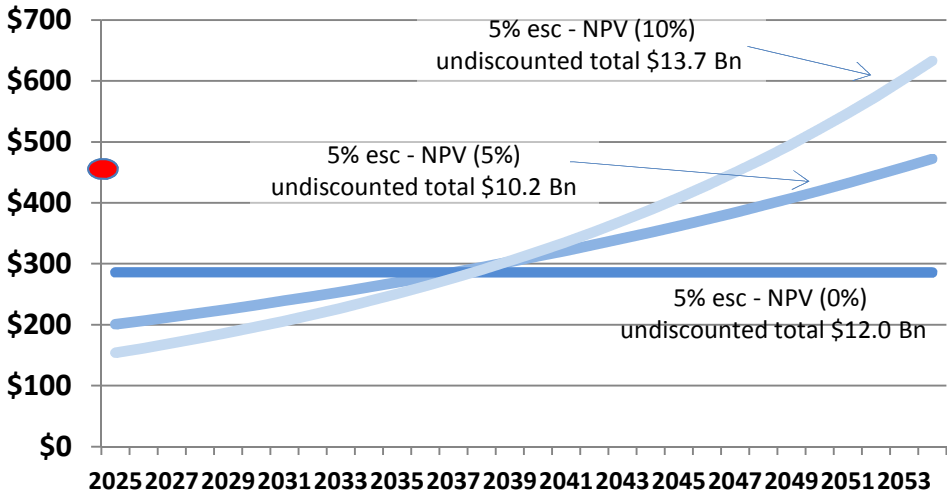


Note: Based on "default" parameters: 30 year project life, $45bn headline capex, GTP mill rate 18.5, Pipeline mill rate 20, Liquefaction Terminal mill rate 4.5

Year	Annual $MM PT PILT Payments		
	0%	5%	10%
2025	104	154	207
2026	109	161	217
2027	114	170	228
2028	120	178	240
2029	126	187	252
2030	132	196	264
2031	139	206	277
2032	146	216	291
2033	153	227	306
2034	161	239	321
2035	169	251	337
2036	178	263	354
2037	186	276	372
2038	196	290	390
2039	206	305	410
2040	216	320	430
2041	227	336	452
2042	238	353	474
2043	250	370	498
2044	262	389	523
2045	275	408	549
2046	289	428	576
2047	304	450	605
2048	319	472	636
2049	335	496	667
2050	352	521	701
2051	369	547	736
2052	388	574	773
2053	407	603	811
2054	427	633	852

PILTS – flat vs 3% esc vs 5% esc example (NPV5%)

Variety of PILTs – all at a 5% discount rate



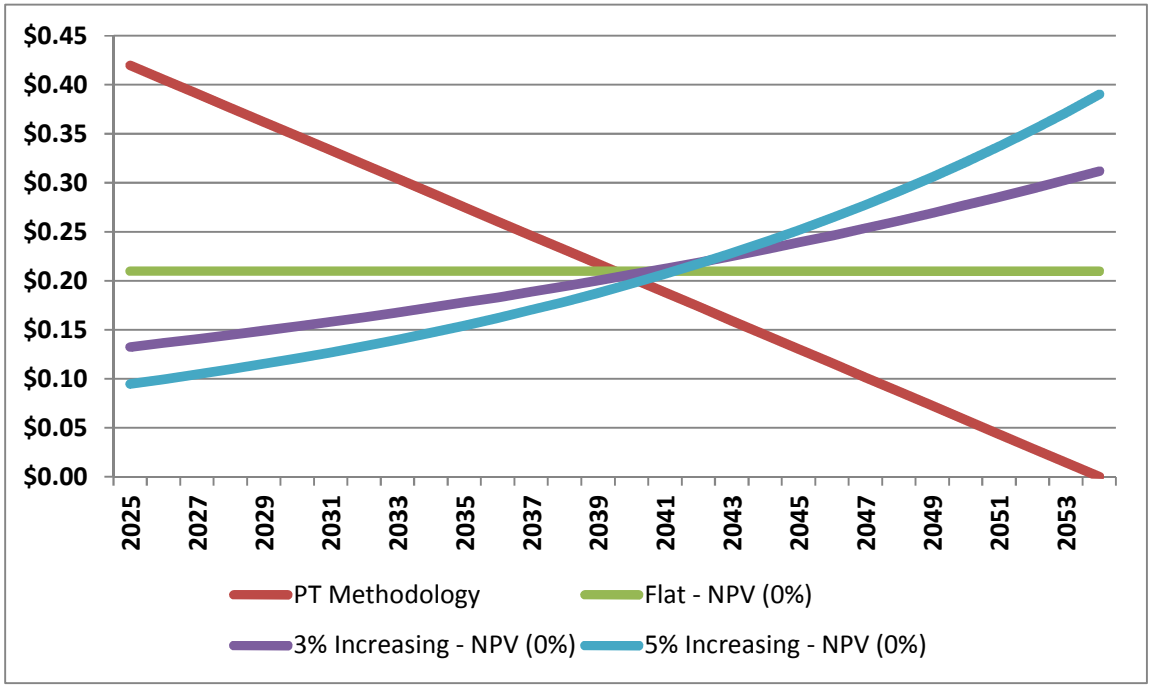
Note: Based on "default" parameters: 30 year project life, $45bn headline capex, GTP mill rate 18.5, Pipeline mill rate 20, Liquefaction Terminal mill rate 4.5

- Even a small percentage change in escalation leads to a large change in $ PILT payments

Year	Flat - NPV (5%)	3% Increasing - NPV (5%)	5% Increasing - NPV (5%)
2025	$286	$200	$154
2026	$286	$206	$161
2027	$286	$213	$170
2028	$286	$219	$178
2029	$286	$226	$187
2030	$286	$232	$196
2031	$286	$239	$206
2032	$286	$247	$216
2033	$286	$254	$227
2034	$286	$262	$239
2035	$286	$269	$251
2036	$286	$278	$263
2037	$286	$286	$276
2038	$286	$294	$290
2039	$286	$303	$305
2040	$286	$312	$320
2041	$286	$322	$336
2042	$286	$331	$353
2043	$286	$341	$370
2044	$286	$352	$389
2045	$286	$362	$408
2046	$286	$373	$428
2047	$286	$384	$450
2048	$286	$396	$472
2049	$286	$408	$496
2050	$286	$420	$521
2051	$286	$432	$547
2052	$286	$445	$574
2053	$286	$459	$603
2054	$286	$472	$633

Comparing PT methodologies on a $/mcf basis

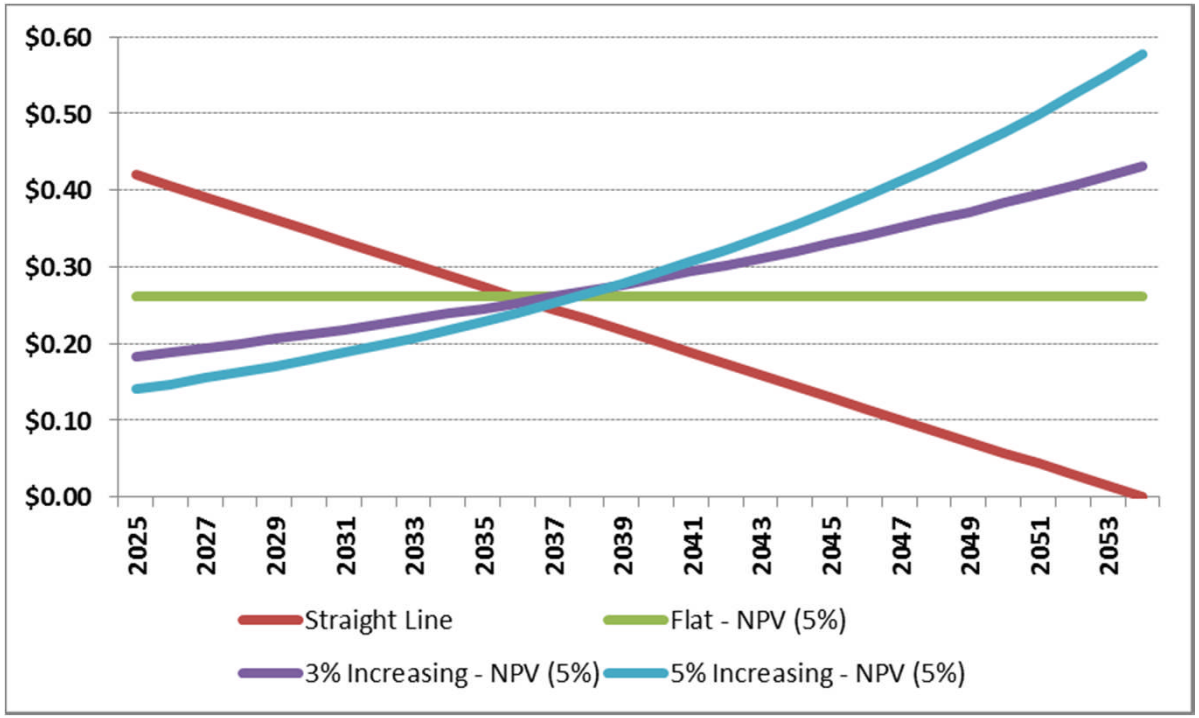
- Comparisons were calculated between the modelled PT methodology, a flat PILT, a 3% escalating PILT and a 5% escalating PILT
- These comparisons were compiled on a $/mcf metric basis, assuming a single simplified gas flow rate



- Calculation on undiscounted (NPV 0%) basis

Comparing PT methodologies on a $/mcf basis

- Comparisons were calculated between the modelled PT methodology, a flat PILT, a 3% escalating PILT and a 5% escalating PILT
- These comparisons were compiled on a $/mcf metric basis, assuming a single simplified gas flow rate



- Calculation on an NPV 5% basis

Benefits of, and risks addressed using a PILT mechanism

Considerations in using a PILT mechanism

- **Unambiguous:** Once set, he PILT rate is not subject to judgement
- **Clarity:** the PILT rate is clear and the same for all
- **Greater certainty:** for producers and project shareholders
- **Tailored:** to nature of an LNG project
- **Budgeting:** gives a certain level of certainty to Municipality budgets given flat and stable volume profile of an LNG project during plateau (15-30 years)
- **Escalation:** allows for Municipality budgets to cope with general inflation

Issues addressed by using a PILT mechanism

- **Debottlenecking:** a greater flow leads to a greater PT payment
- **Expansion:** future users pay the same $/mcf rate
- **Project life:** PILT carries on for as long as the project continues

Issues still to consider further

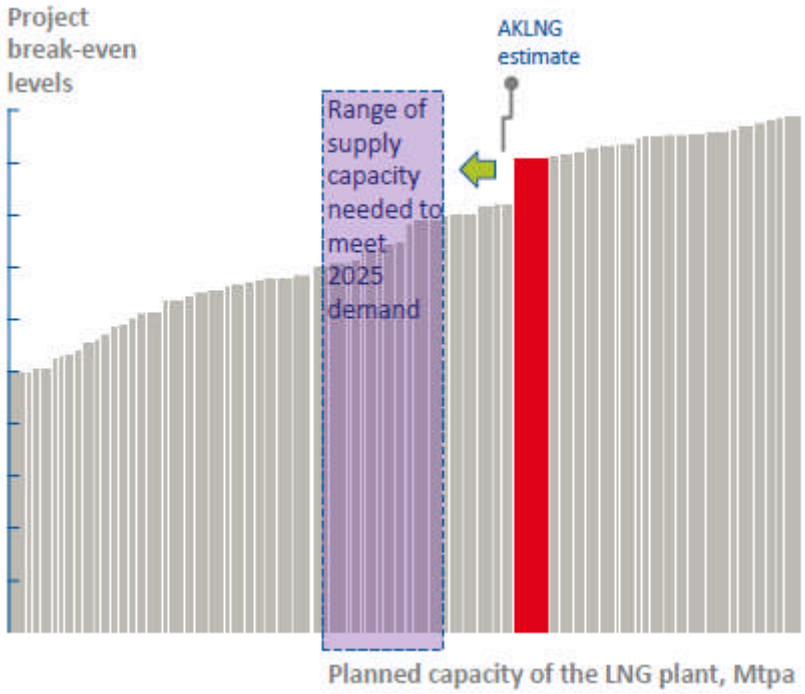
- **Gas Pricing:** Impact on project life and opportunity, profitability, indexation
- **Gas distribution:** Impact of in-State gas, losses through system

Agenda:

- Overall process stages
- Excel model inputs, capabilities and limitations
- Parameters and risks that are difficult to predict going forward and not addressed by the Excel model
- Concept of maintaining an “area under the curve”
- Property Tax in context of AK LNG competitiveness

Project Feasibility Hinges on Competitive Situation

- Two key considerations are
  - Feasibility of delivering gas at a price market can sustain
  - Other risk factors such as stable government, accessible workforce, supply chain etc
- AK LNG is challenged on the first, but has some advantages on the second



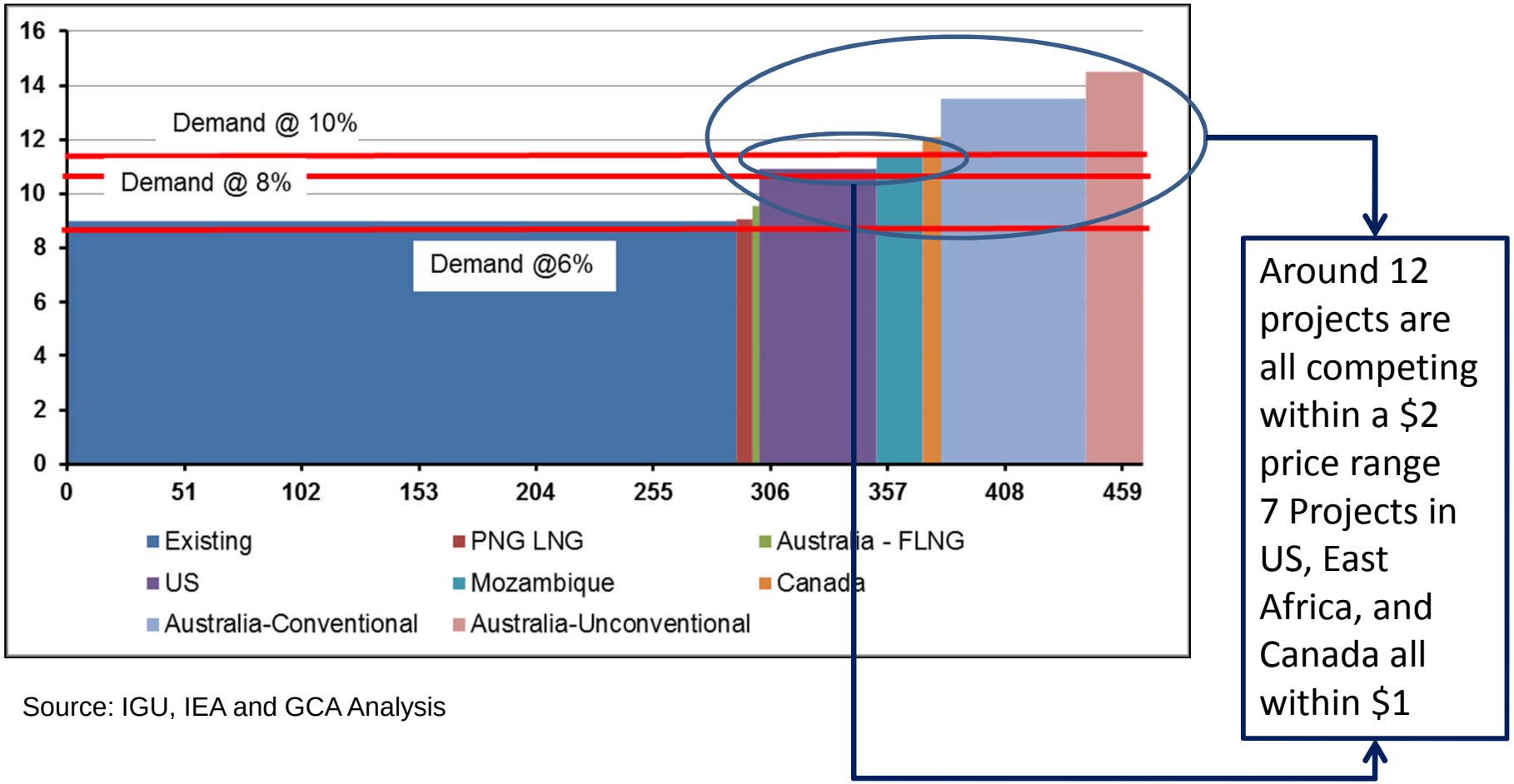
Illustrative diagram showing approximate LNG merit order for 2025 supply horizon:

"Projects more economic than Alaska can provide ~340 MTPA new supply, more than required to meet global LNG demand (~250-300 MTPA)"

Source: Alaska North Slope Royalty Study, November 2013

Near Term LNG Project Competitiveness (up to 2020)

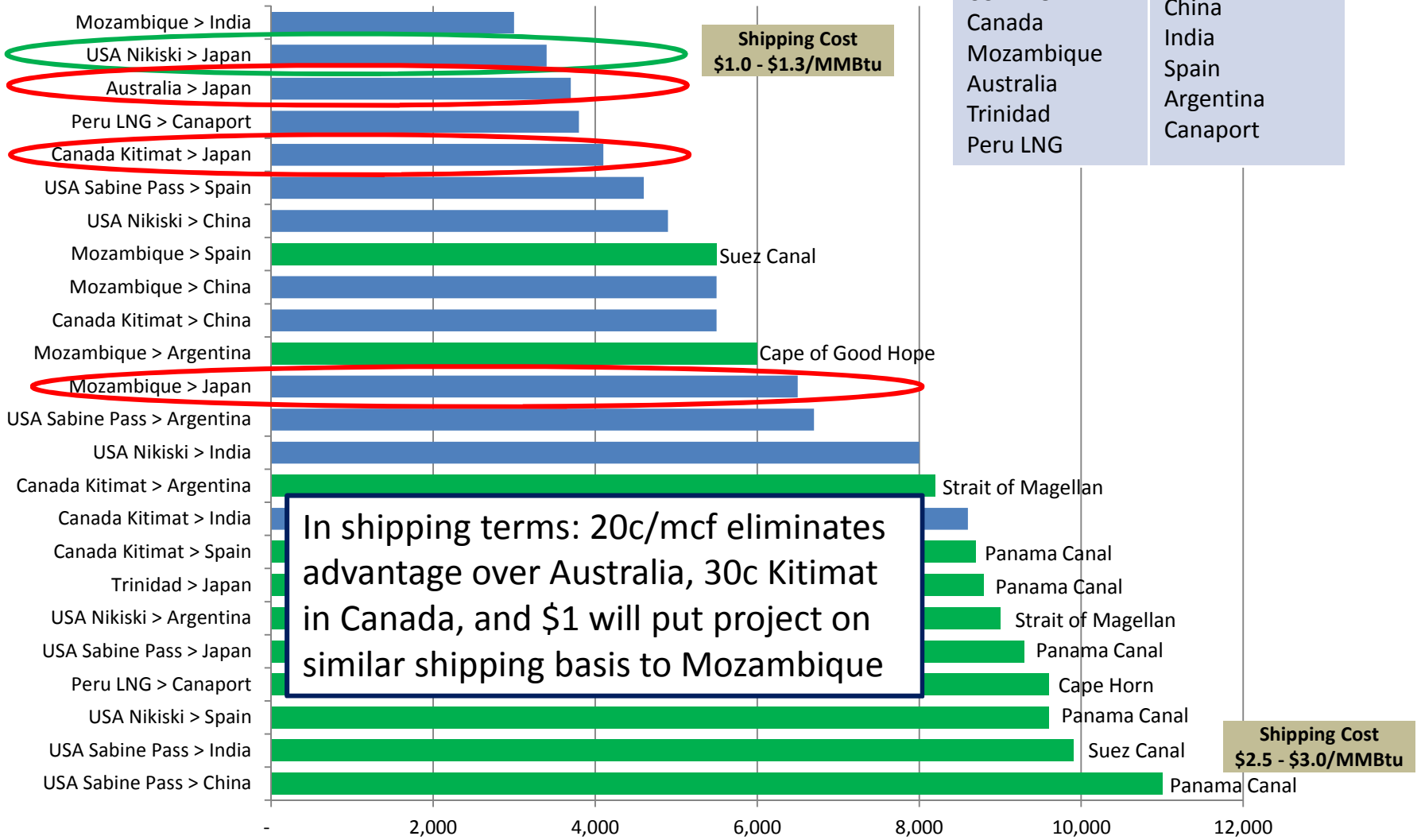
- LNG supply may exceed Asian demand in the next 5 years.
- Those projects with long term Take or Pay sales will be better insulated



Source: IGU, IEA and GCA Analysis

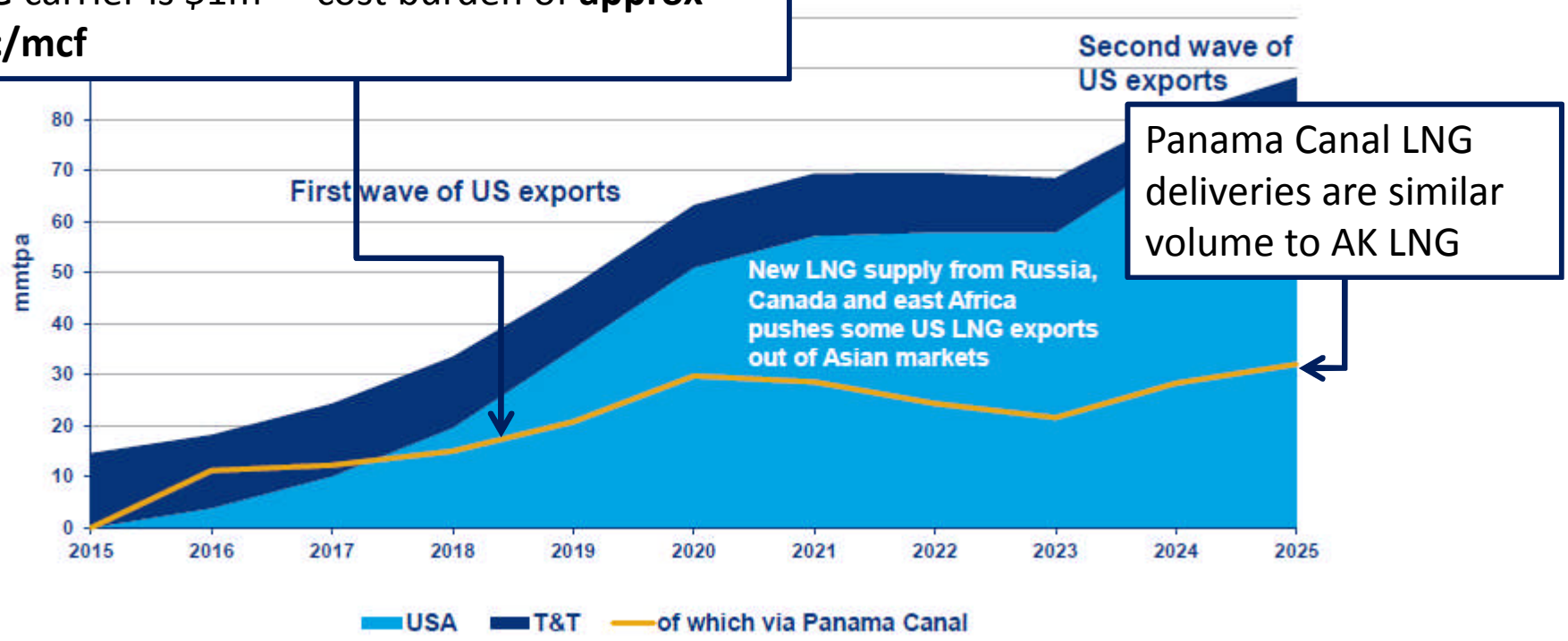
Alaska's Shipping Advantage

Seller	Buyer
USA Alaska USA L48 Canada Mozambique Australia Trinidad Peru LNG	Japan China India Spain Argentina Canaport



Alaska's Advantage – no Panama Canal

Panama Canal is a vital link providing US Gulf Coast and Trinidadian LNG access to Asian markets. Estimated round trip charge for an LNG carrier is $1m* - cost burden of **approx 25c/mcf**



Source: WoodMackenzie

* GCA Estimate, Shipping industry sources

Going Forward

- Defining principles for Production Tax
  - Confirm (adjust, or add to) principles identify and clarify as required

Defining principles for new LNG PT
• **Fair** o Must be fair and equitable to all stakeholders
• **Clarity** o Must be easy to be understood
• **Robust** o Should be able to cope with changing future needs
• **Unambiguous** o Should not be subject to judgement and interpretation
• **Commercially sound** o Must enable Alaskan LNG project to compete in global market

  - Identify any changes to be embedded in process and modeling approach

- Model
  - Feedback with respect to current basic version
  - Particular assumptions or features to be incorporated
  - Await further feedback post this meeting
  - Issue updated model version shortly thereafter

Gaffney, Cline & Associates