David Wood
24th February 2010

Gas Issues & Alaska's Fiscal Design

Presentation Structure

This presentation focuses the key issues pertaining to natural gas in Alaska in the context of establishing a long-term and enduring fiscal design.

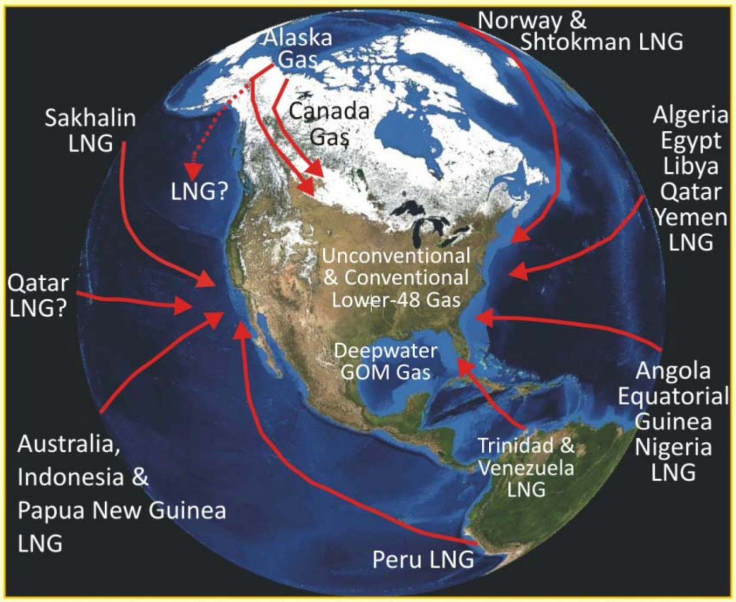
- What are the issues for Alaska's fiscal regime when applied to gas?
- What are the fiscal designs applied by other countries?
- What are the risks and opportunities for international gas suppliers?
- Alaska's Prevailing Fiscal design
- Complications of combined oil and gas progressivity tax (CPT)
- Multi-year and multi-scenario fiscal performance cash flow models
- Conclusions and recommendations

What are the issues for Alaska's fiscal

regime when applied to gas?

Alaska is One of Several Potential Long-term Suppliers of Natural Gas to Lower-48 U.S.

The Long-term Competition to Deliver Natural Gas to the Lower-48 US Markets is Intense



Differences between International fiscal terms and among U.S. state terms, will play a key role in that competition by influencing producers' costs of supply.

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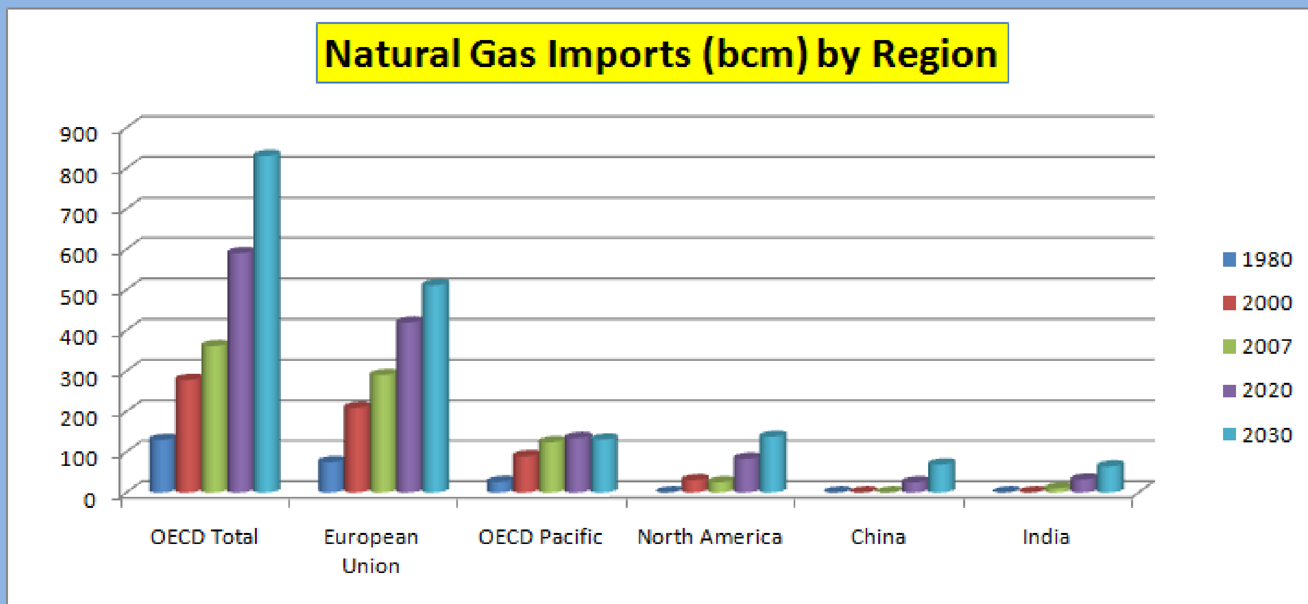
Fiscal terms are one of several factors that influence the delivered price of gas into a market and it is important to understand differences among competing sources.

The differences usually go far beyond a simple percentage sovereign take comparison.

International Gas Markets are Growing
- Competition for Gas is Increasing

How key global gas import markets compare and are forecast to grow in absolute terms (bcm = billions cubic metres; 35.3 bcf = 1 bcm).



1980 to 2007 data (BP June 2008) - Forecast 2020 and 2030 (authors)

Michael Economides & David Wood , Journal of Natural Gas Science & Engineering, May 2009

Major IOC's are Signing Long-term Binding International Gas Agreements

Some of the large LNG sale and purchase agreements struck in 2009

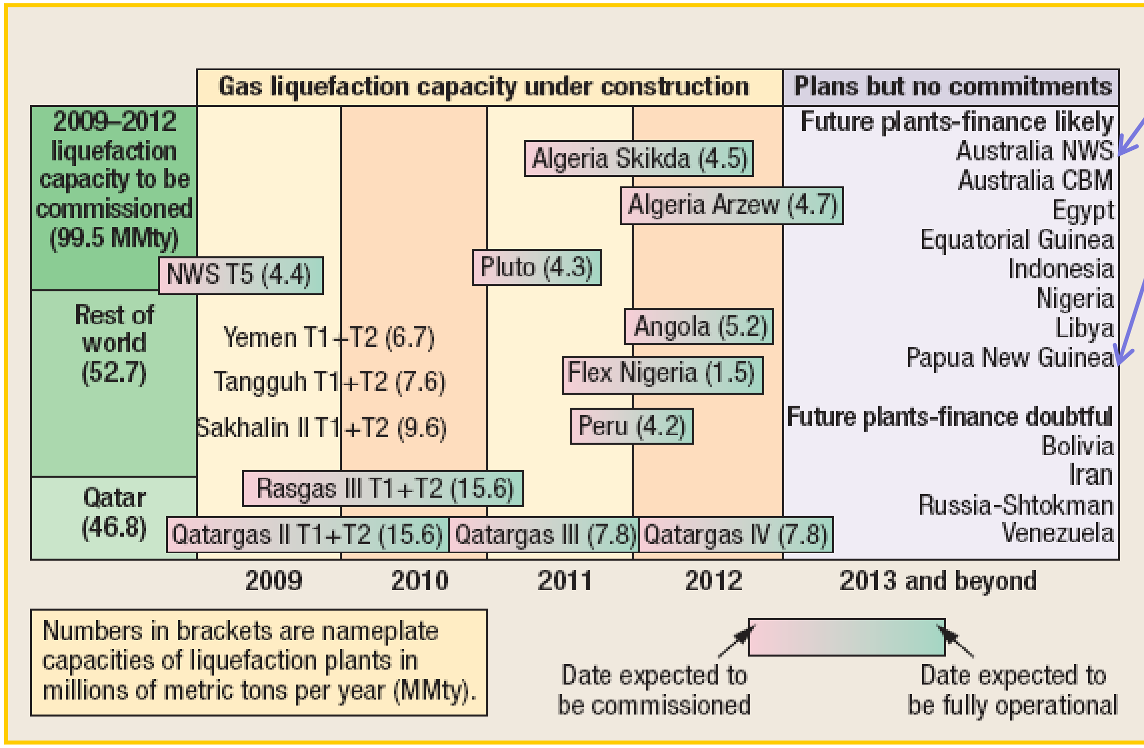
Liquefaction Project	Supplier	Offtaker	Duration, Years	Volume, mtpa	Status	Date Agreed	First Delivery Expected
Gorgon (Australia)	Chevron	Osaka Gas (Japan)	25	1.375	binding	Sept. 2009	2014
Gorgon (Australia)	Chevron	Tokyo Gas (Japan)	25	1.1	binding	Sept. 2009	2014
Gorgon (Australia)	Chevron	Kogas (S.Korea)	15	1.5	HOA	Sept. 2009	2014
Gorgon (Australia)	ExxonMobil	PetroChina (China)	20	2.25	binding	Feb. 2009	2014
Gorgon (Australia)	ExxonMobil	Petronet (India)	20	1.5	binding	May 2009	2014
Wheatstone (Australia)	Chevron	Tepco (Japan)	20	4.1	HOA	Dec. 2009	2016
PNG LNG (Papua New Guinea)	ExxonMobil	Tokyo Gas (Japan)	20	1.8	binding	Dec. 2009	2014
PNG LNG (Papua New Guinea)	ExxonMobil	Osaka Gas (Japan)	20	1.5	binding	Dec. 2009	2014
PNG LNG (Papua New Guinea)	ExxonMobil	Taiwan CPC (Taiwan)	20	.5	HOA	June 2009	2014
PNG LNG (Papua New Guinea)	ExxonMobil	Sinopec (China)	20	2	binding	Dec. 2009	2014
Gladstone (Queensland, Australia)	Santos	Petronas (Malaysia)	20	2	HOA	June 2009	2015
Curtis (Queensland, Australia)	BG	CNOOC (China)	20	3.6	HOA	May 2009	2015
Kitimat (Western Canada)	Kitimat LNG	Gas Natural (Spain)	20	1.6	MOU	July 2009	2013?
Kitimat (Western Canada)	Kitimat LNG	Kogas (S.Korea)	20	2	MOU	June 2009	2013?
Qatargas (Qatar)	Qatargas	CNOOC (China)	Long-term	3	MOU	Nov. 2009	2015?
Qatargas (Qatar)	Qatargas	PetroChina (China)	Long-term	2	MOU	Nov. 2009	2015?

Source: Various media reports

Published by David Wood, World Oil, Feb 2010

Worldwide New Gas Liquefaction Developments to 2013 and Beyond

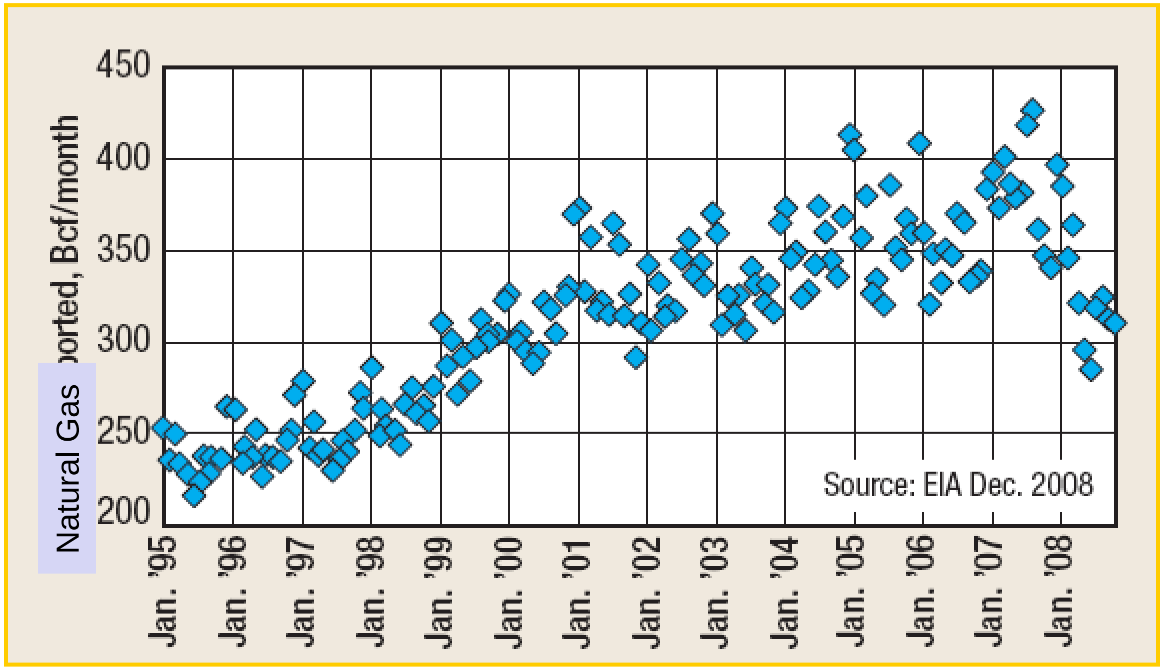
Large new capacity of LNG coming into the market with new plants under construction. Big commitments for new plants in Australasia made progress in 2009.



From David Wood *"Uncertain supply and demand outlook for LNG."* **World Oil** (February 2009)

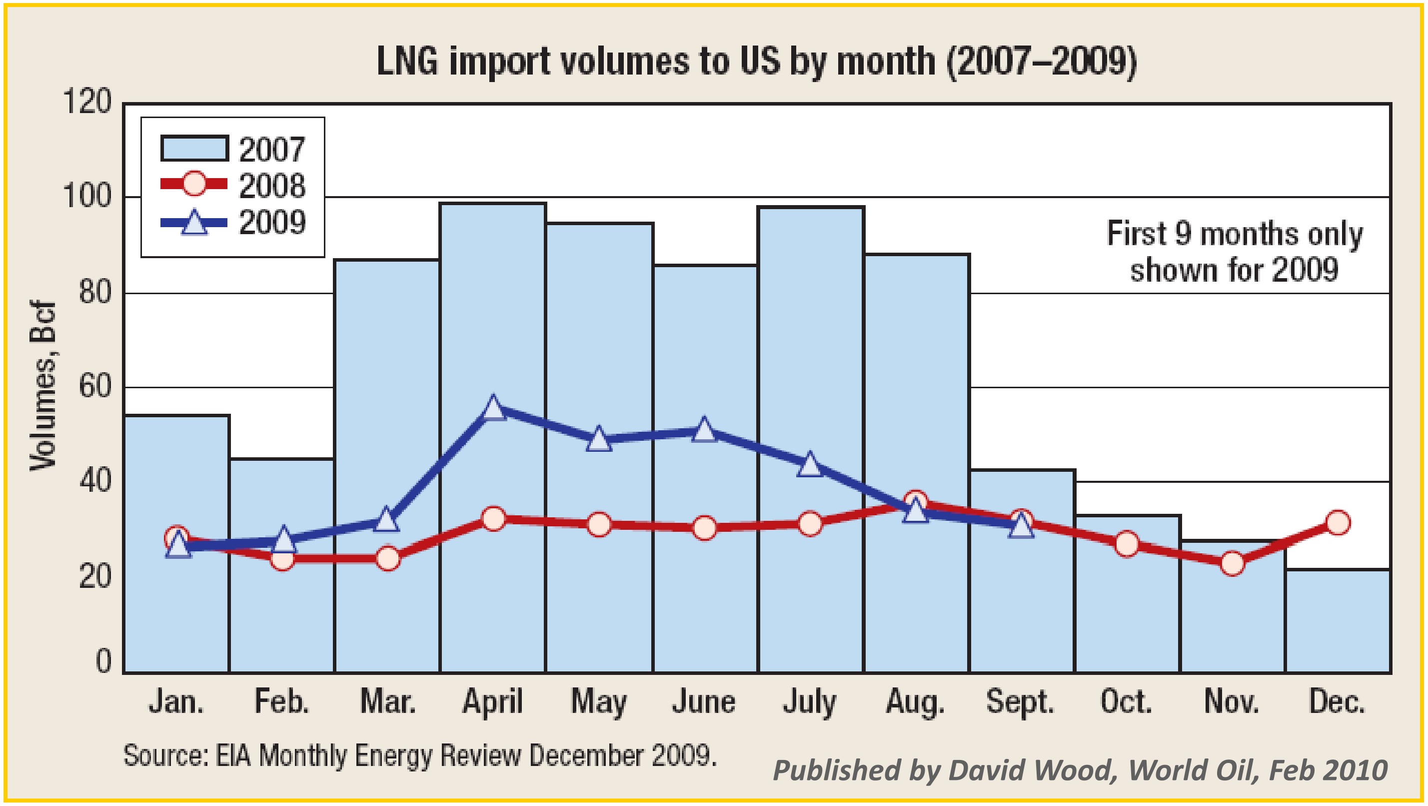
Gas Imports to U.S. Decline in 2008 For First Time in More than a Decade

Greater Lower-48 gas production in 2008, particularly shale gas, led to a reduction in US gas imports which has persisted. Alaska gas will be competing with shale gas for lower-48 which has a different resource and cost base and fiscal structure.

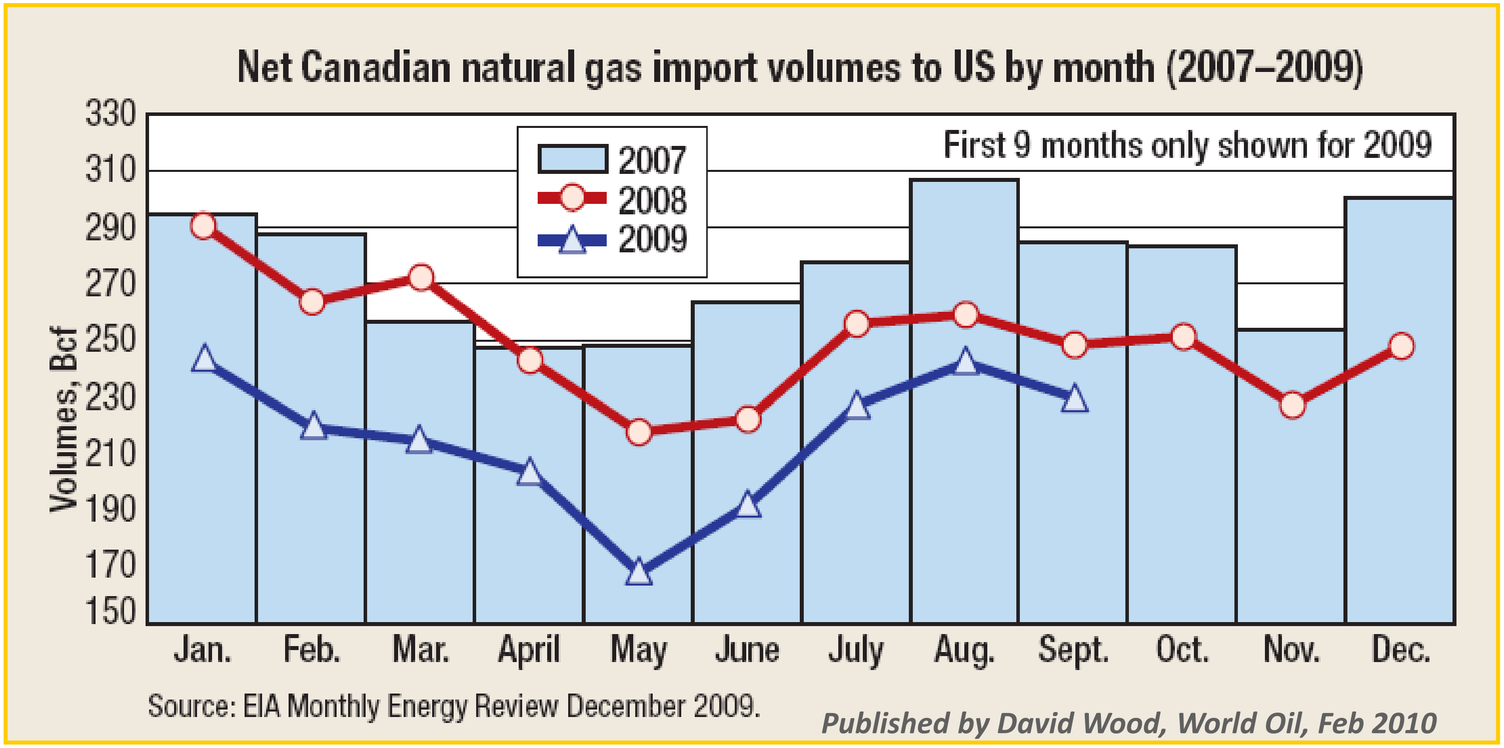


From David Wood *"Uncertain supply and demand outlook for LNG."* **World Oil** (February 2009)

LNG Imports to U.S. are Down
Is that Permanent? Shale Gas Effect?

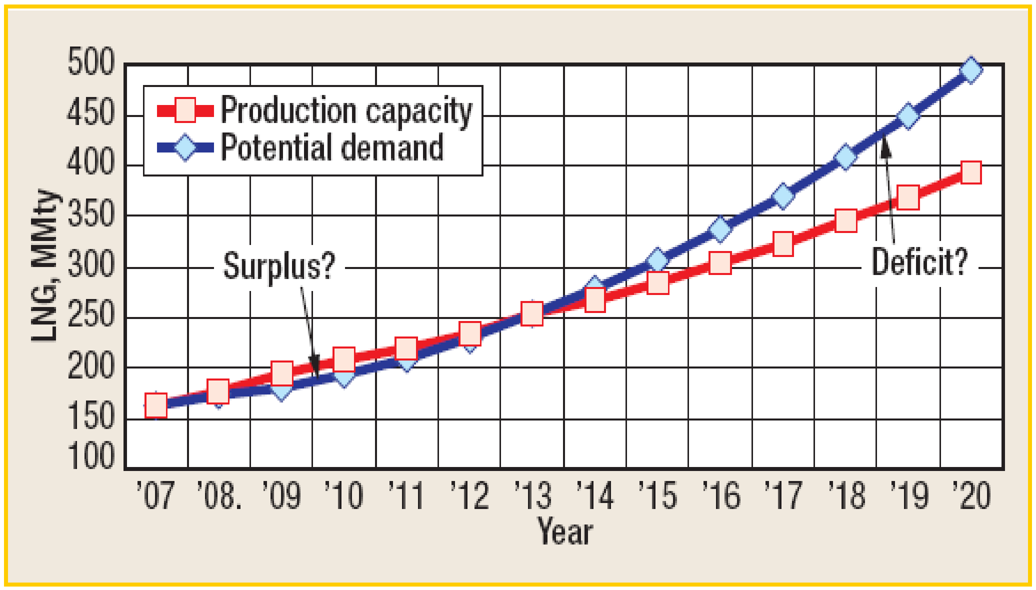


Canadian Gas Imports to U.S. are Down
Is that Permanent? Shale Gas Effect?



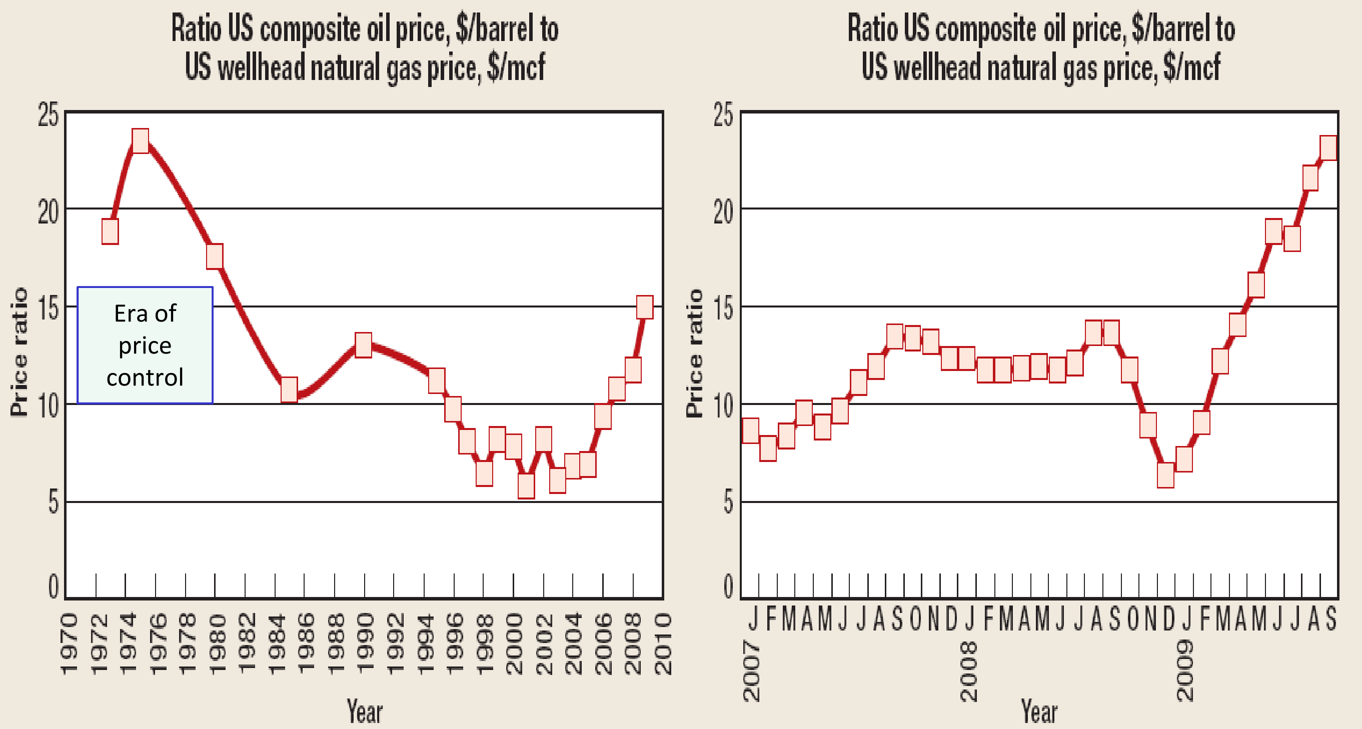
Global LNG Supply Demand Forecast to 2020

Natural gas surplus due to economic downturn and development of competing supplies is leading to over-supply and lower prices forecast to last perhaps to 2012 for internationally traded LNG. This surplus may itself fuel supply shortfalls globally beyond 2013 and higher prices 2015 to 2020.



From David Wood *"Uncertain supply and demand outlook for LNG."* **World Oil** (February 2009).

U.S. Oil to Gas Price Ratio
What Range Should Fiscal Designs Consider?

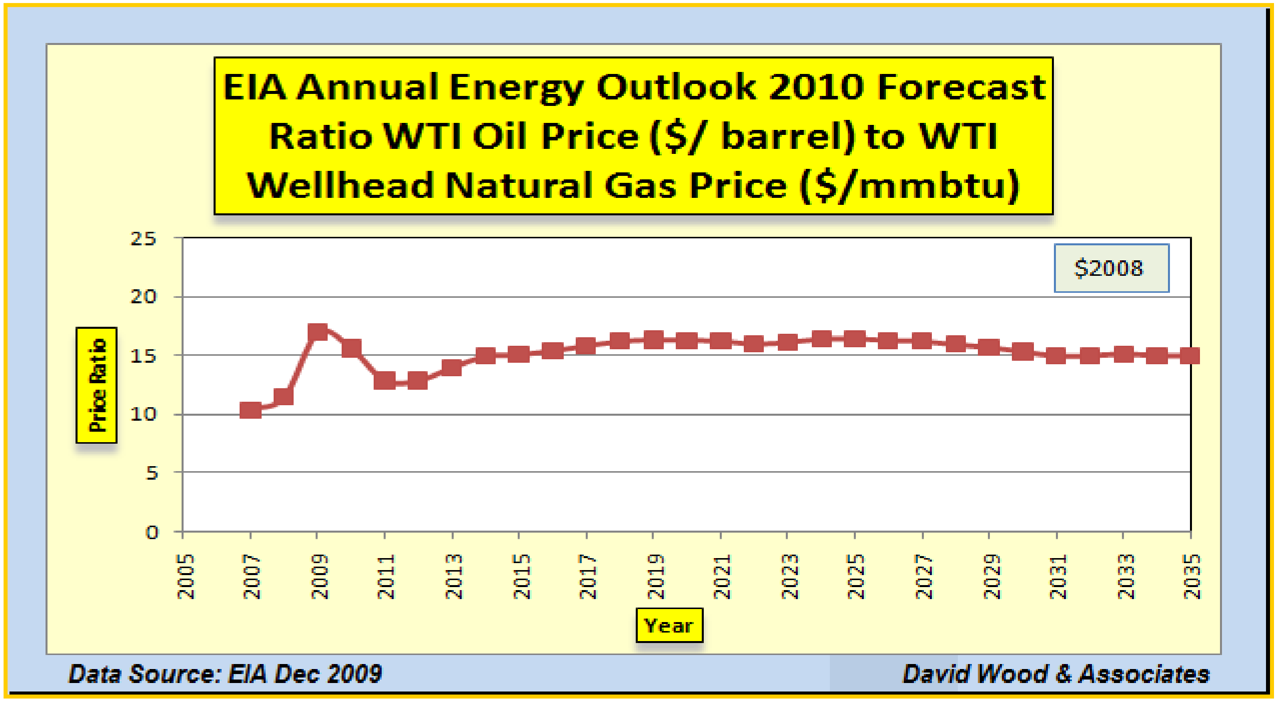


Source: EIA Monthly Energy Review December 2009.

Published by David Wood, World Oil, Feb 2010

Latest U.S. Government Forecast Shows High Oil to Gas Price Ratios Through to 2035

Fiscal designs should be stable under a wide range of oil: gas price ratios (e.g. stress test them with ratios of 2 to 30).

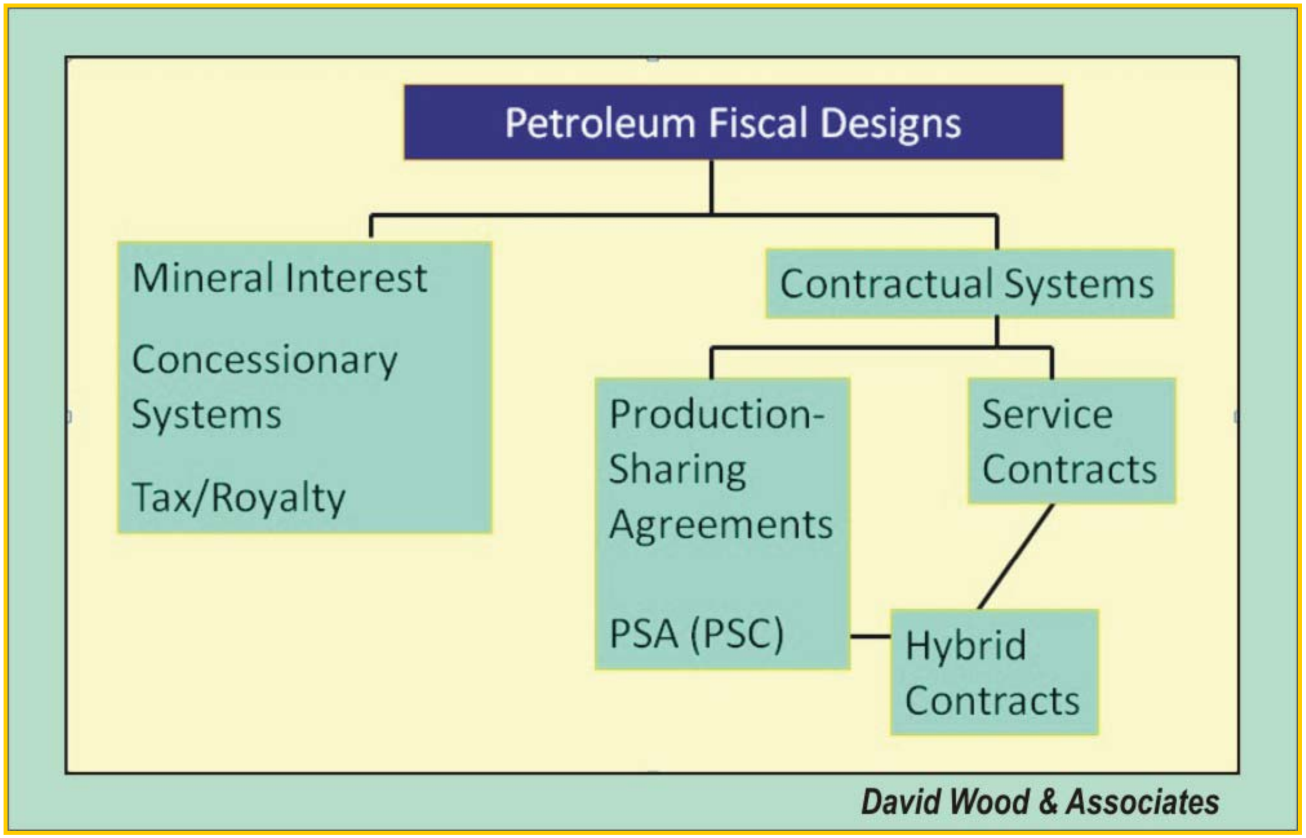


What are the fiscal designs applied by

other countries? and what are the

risks and opportunities?

Summary of International Upstream Oil & Gas Fiscal Designs



Norway:
Fiscal Terms Summary

Norway operates a mineral interest system. There are no bonuses or royalties and the fiscal take comes from *progressive* instruments.

- Royalty 0% and no bonuses but marginal tax burden is some 78%
- Corporate Tax (CT) 28% of taxable income
- No ring fences with CT base established at the company Level.
- Special tax rate 50% with investment uplift of 7.5% for 4 years deducted from CT base. Uplift shelters marginal fields.
- Tax of CO_2 emissions at 0.79 NOK (~10 US cents)/ m^3 CO_2
- Gas taxed on bases of actual realised prices.
- Strict rules applied concerning prices of gas transfer between affiliates.
- Stated fiscal strategy is *that the tax system should act as a sleeping partner providing producers with technical control and ensuring that any investment decision that is commercially viable before tax should remain viable after tax.*
- This system secures high fiscal takes for the government (close to 80%), but has still attracted large and small international investors.
- State is actively involved as an equity participant through its NOC (Statoil).

Papua New Guinea (PNG): Fiscal Terms Summary

Papua New Guinea (PNG) operates a mineral interest system. It has relaxed fiscal terms since 1990's as fields under development have declined. Upsurge in interest in large LNG projects led to legislative changes offering progressivity and stability.

- Royalty 2%
- Income tax (IT) 30% for gas (50% for oil)
- Additional Profits Tax (APT) 7.5% after 17.5% post-IT IRR reached for project and 10% after 20% post-IT IRR reached for project.
- State equity participation 22.5% (2% of which goes to landowners)
- Partial carry for the state
- Past exploration costs recoverable through 20-year carry-forwards
- Marginal field incentives: e.g. accelerated depreciation
- ExxonMobil (41.6%) and partners completing FEED studies and a final investment decision for PNG LNG is expected in 2010
- Long-term gas buyers in China and Japan now secured.

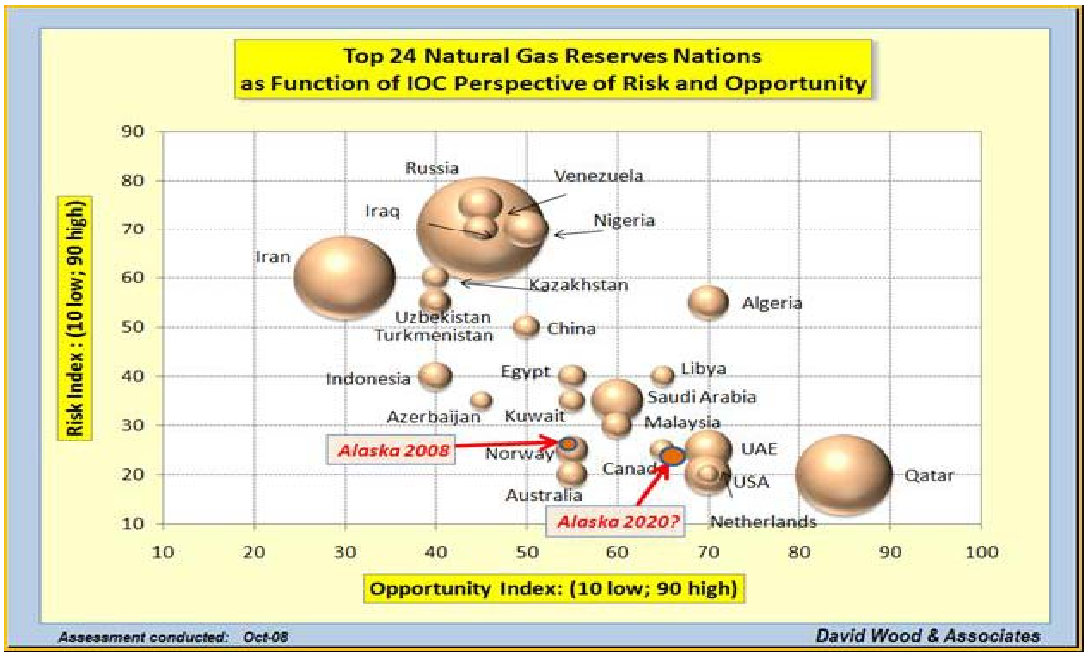
Australia:
Gas Fiscal Terms Summary

Australia operates a mineral interest system. Its fiscal take is above 70% and comparable to that of Alaska, but it is much more successful at securing investment and buyers for its high cost isolated gas resources.

- Australia has progressively shifted from traditional volume based royalty arrangements to the more progressive petroleum resource rent tax (PRRT)
- PRRT is levied at a rate of 40% of a project's taxable profit.
- PRRT payments are deductible for company income tax rate of 30%.
- PRRT is only payable once project cash flow basis achieves a rate of return of 5% over the long term bond rate on the development investments and 15% rate of return over the long term bond rate on exploration or risk capital investment. [This limit and cost uplift prevent PRRT becoming regressive]
- Explorations costs are uplifted at 15% (other costs uplifted at 5%) above long-term bond rate to partially compensate for time-value issues as there is a long lead time from discovery to positive cash flow.
- IOC majors committed in excess of $20 bn investment in LNG projects in 2009.
- Long-term gas buyers in China and Japan now secured.

Alaska Gas Compared on International Scale of Risk versus Opportunity

The diameters of the bubbles are proportional to proved natural gas reserve holdings as reported by BP Statistical Review (June 2008).

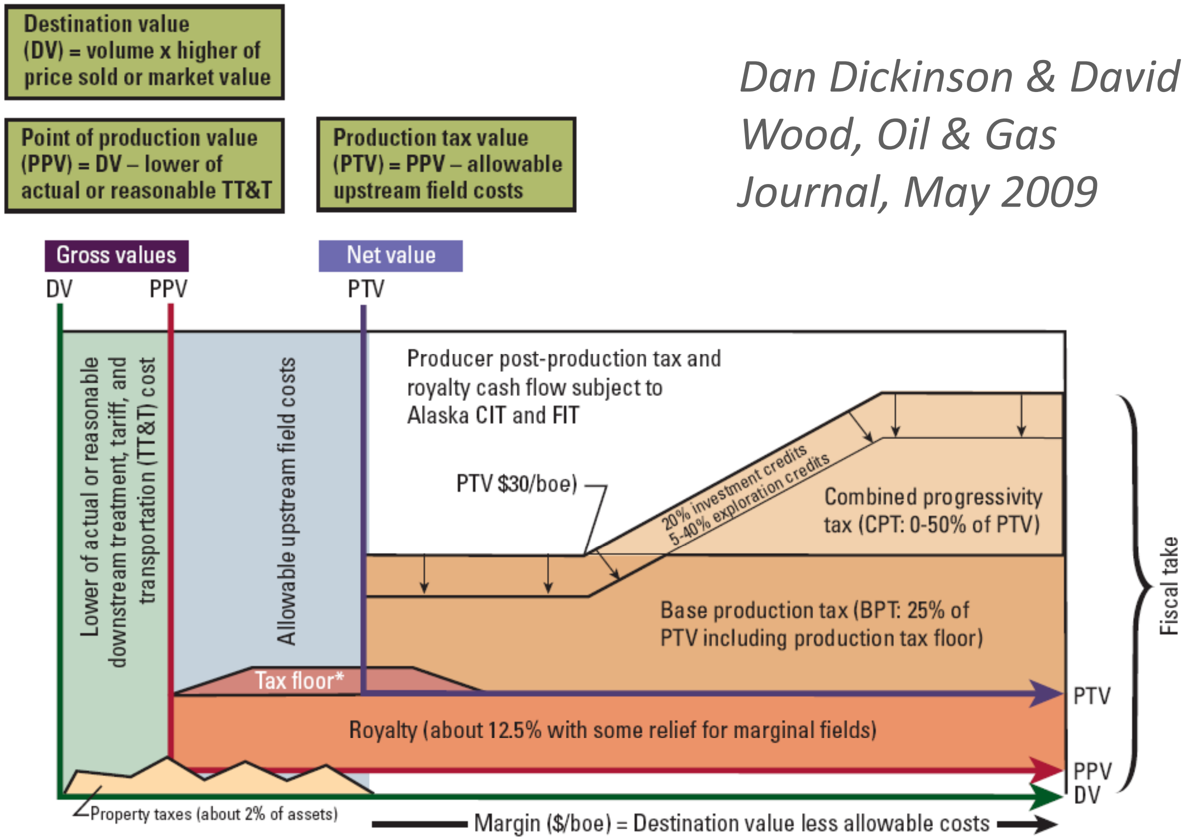


Alaska marked on the framework from David Wood *"Global perspectives required for risk, opportunity analyses."* **Oil & Gas Journal** (9Feb, 2009).

Alaska's Prevailing Fiscal design

Schematic of Alaska's Prevailing Oil & Gas Fiscal Design

Dan Dickinson & David Wood, Oil & Gas Journal, May 2009



Regressive & Progressive Elements of Alaska's Prevailing Oil & Gas Fiscal Design

Regressive fiscal elements	Progressive fiscal elements
• Property taxes are levied on assets in theupstream or TT&T services and shared between the state and local governments • Royalty is levied at point of production value (PPV) • *Tax floor refers to a production floor levied at 0-4% of PPV in place of BPT when that floor value is higher than the BPT value	• Production taxes (BPT and CPT) are taxes paid on net value or margin • Progressivity component of production tax (CPT) commences at PTV of $30/boe • Alaska corporate income tax (CIT) of 9.4% is levied on producer's worldwide income apportioned to Alaska. CIT is deductible from federal income tax (FIT)

Dan Dickinson & David Wood, Oil & Gas Journal, May 2009

Key Regressive Elements in Alaska's Prevailing Fiscal Design

There are three elements that make Alaska's prevailing fiscal design regressive.

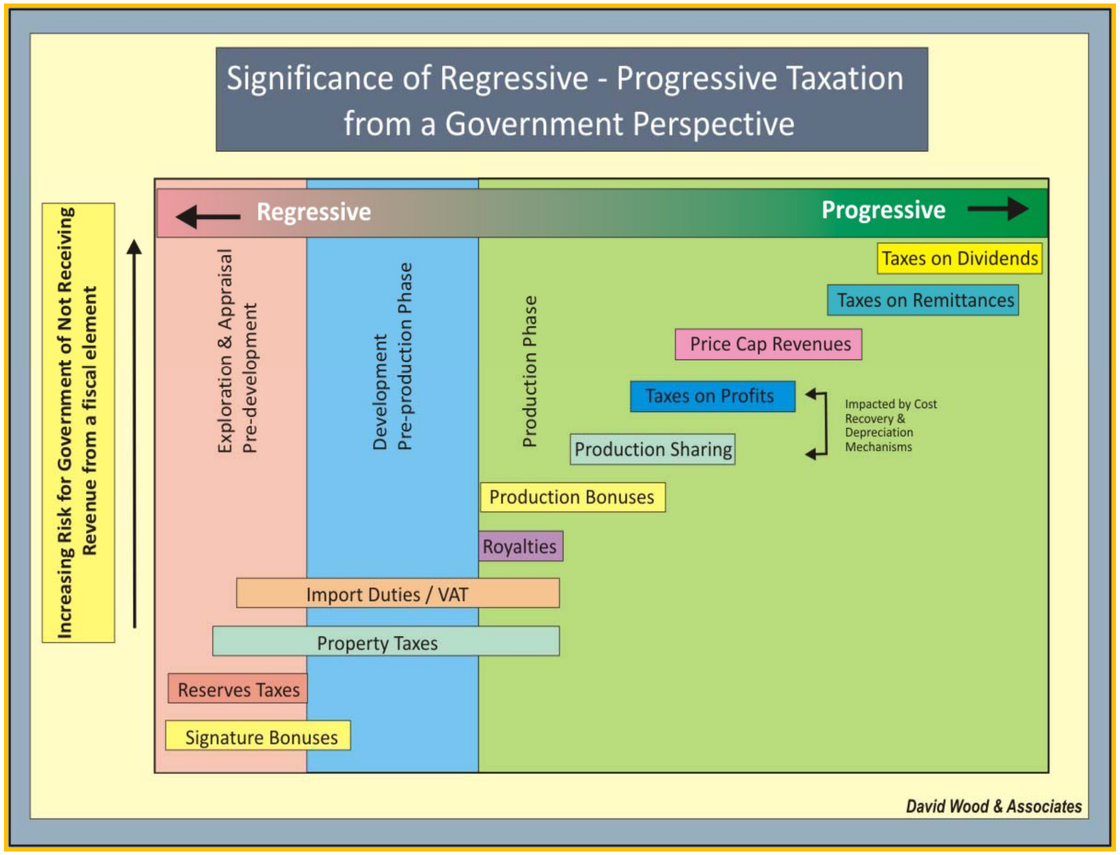
- Royalty
- Property Taxes
- Production Tax Floor

These regressive elements are partially offset by:

- Investment credits (exploration and development)
- Production taxes (levied after deduction of all allowable costs)
- Progressivity tax (only levied on high value streams)

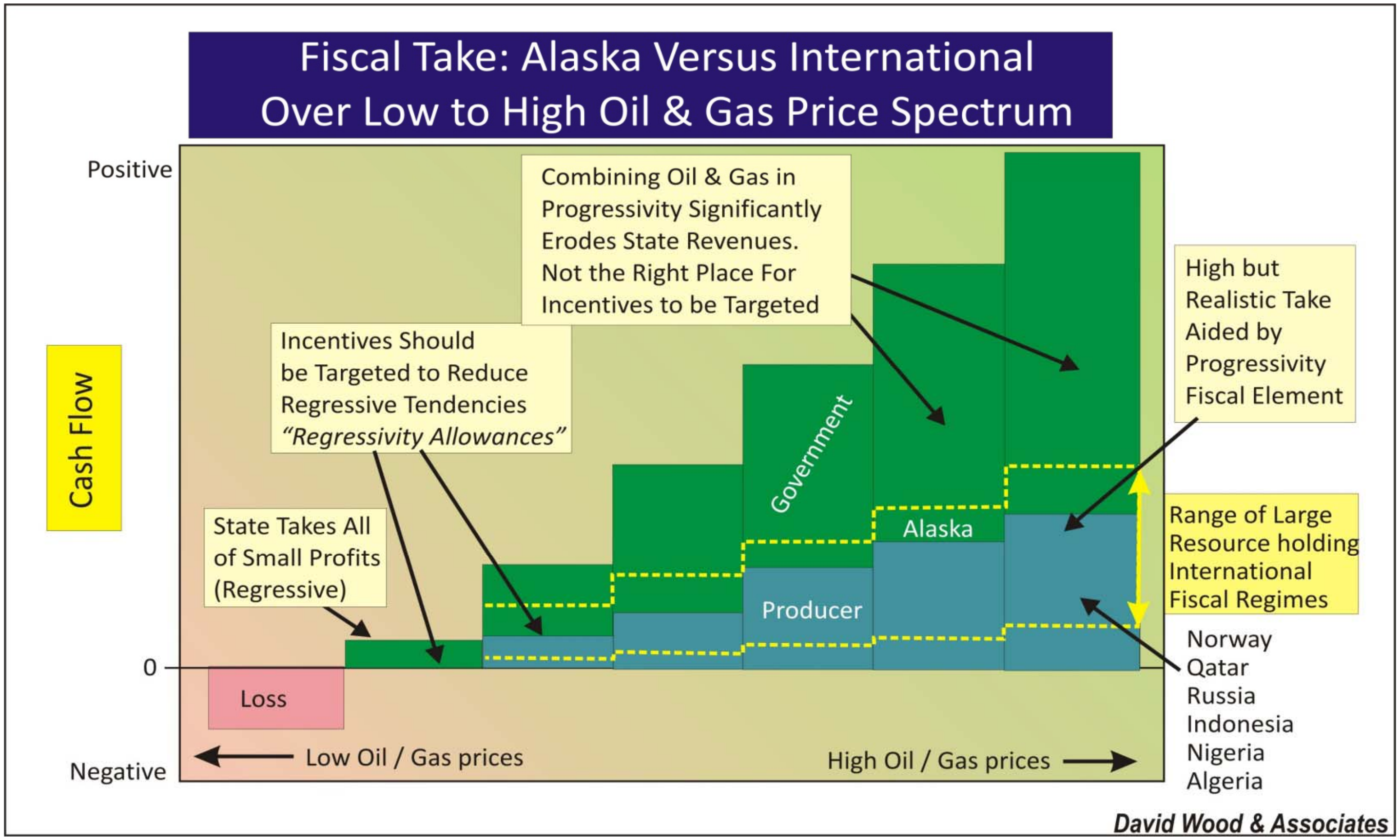
Other allowances / credits for producers should be considered to offset impacts of regressive elements coupled with tougher progressivity terms.

Progressive & Flexible Fiscal Designs Help to Promote Investment



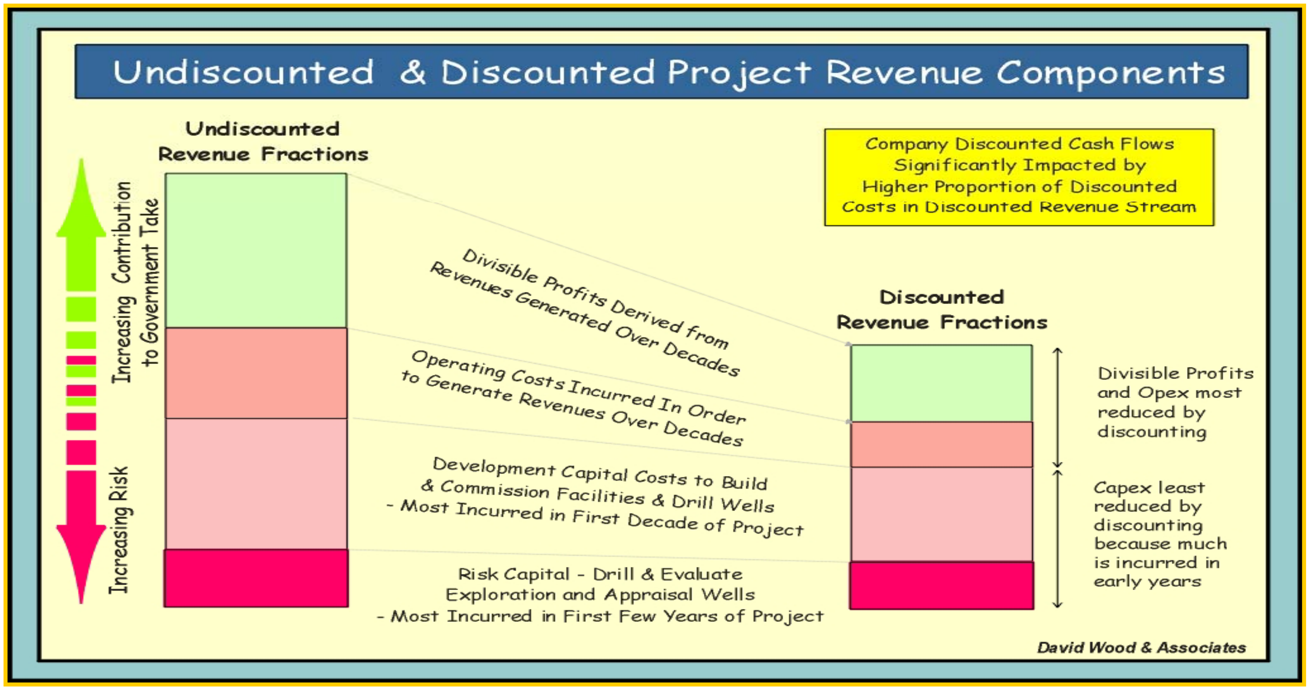
The stronger the commitment made by governments to promote a commercially attractive environment, the more likely investors are to commit investments without guarantees of fiscal stability.

Progressivity Should Work Well For Alaska: It's the Regressive Elements that Need Relief



High Discount Rates Suggest Higher Government Take of Revenues

It is appropriate for governments to use lower discount rates than producers. However, high discount rates impact *long-term* divisible profits and operating costs more than upfront capital costs so diminish producer take.



Complications of combined oil and gas progressivity tax (CPT)

Problems with Alaska's Current Progressivity Tax from the Natural Gas Perspective

The models of a wide range of gas field sizes suggest three issues associated with calculating production tax values using a combined oil and gas (boe) revenue stream.

- Large gas production volumes contributing low value to high value oil production can dilute the PTV/boe and progressivity of the combined stream.
- The PTV / boe threshold (i.e., trigger point) at which progressivity tax becomes initially payable are set too high for natural gas.
- Tying the production tax floor to PPV can lead to regressive consequences for gas producers in high cost / low value conditions.

Impact of Natural Gas on Combined Oil & Gas Production Tax

Analysis has identified that three factors are relevant to the dilution effects under prevailing production tax paid by an existing oil- only case with the addition of gas production (and vice versa – i.e. oil added to a gas-only case). These factors are:

1. Magnitude of value differential between oil and gas streams (high oil value minus low gas value, or high gas value minus low oil value);

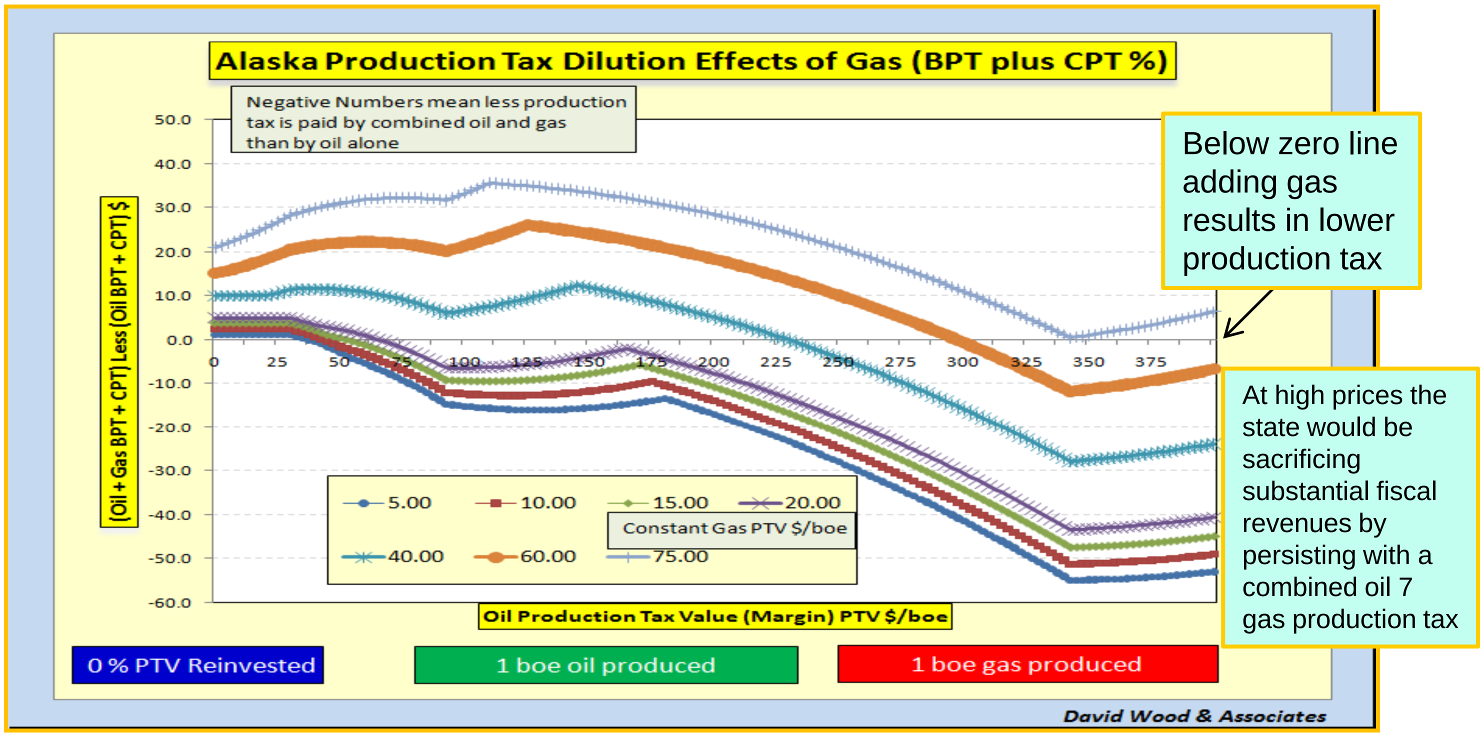
2. Relative volumes of oil and gas produced contributing to combined production tax boe stream.

3. Amount of PTV reinvested, which depending on the PTVs of each stream can have a significant impact

An Excel computer model has been developed to test these three factors.

Natural Gas Dilution Effects on Combined Oil & Gas Production Tax

The trends are non-linear with slope changes because of the changing gradients of the production tax progressivity mechanism (i.e. 0.4/boe to 0.1/boe) and the threshold values at which those changes occur.



DOR High-level Model Adjusted
To Calculate Oil & Gas Combined as BOE

The Department of Revenue (DOR) model presented on 22 Feb 2010 has been reviewed and tested for functionality . With a few minor corrections and modifications to this model can be made to calculate 1 boe rather than 1 barrel by adding inputs for:

	One BOE Comparison of Current to Modified				
14.17	Natural Gas Destination Price $/mmbtu	6	Oil:Gas Price (Parity X:1)		
	Modifications - $ Per Barrel				Oil:Gas Parity Fraction Macro DW
0.5	Fraction of Natural Gas to Oil in boe production			generic mmbtu/boe:	6
24.0	Gas Transport Cost $/boe	**Current**	**Modified**	**Difference**	
	Item	**$/boe**	**$/boe**	**$/boe**	
85	**Base Case Oil Price**				
	Determining the per barrel taxable value at the point of production				
85	Boe Destination Price (Oil:Gas Mix)	$85.00	$85.00	$0.00	Destination prices for crude and gas
7	Less Transportation Cost (oil:gas mix)	$15.50	$15.50	$0.00	For oil = TAPS tariff plus shipping
	Gross Value at Point of Production	$69.50	$69.50	$0.00	
0.125	Royalty	$8.69	$8.69	$0.00	By lease with 12.5% most common
16.26	Less Upstream Costs	$16.26	$16.26	$0.00	Opex plus Capex
	Production Tax Value (PTV)	$44.55	$44.55	$0.00	
	Taxable Barrels (1-royalty %)	0.875	0.875	$0.00	
	PTV / taxable bbl	**$50.92**	**$50.92**	$0.00	Gross Up Production

Modifications Made to DOR Model to Calculate BOE

- (A) Oil: Gas Price Parity (Cell C3) and used that to calculate a gas price ($ mmbtu) (cell A3)
- (B) Gas: Oil fraction per boe of production (cell A5)
- (C) Gas transportation cost (Cell A6)
- (D) The defined 6 mmbtu per boe from ACES (Cell F5)

These inputs are then used to recalculate:

- A boe destination price in cells C10 and D10 (rather than just oil price in DOR version)
- A boe transportation cost in cells C11 and D11 (rather than just oil price in DOR version)

Note: By setting A = 6 and B=0 the rest of the workbook calculates as it was presented by DOR (with corrections mentioned above). I have not reformatted the sheet but left it as per DOR's layout.

Case Combinations Evaluated with Modified DOR High-level Model

Variables		
Oil Price $/barrel	Oil: Gas Price Parity (X:1)	Fraction Gas: Oil (0 to 1)
20	2	0.0
40	4	0.1
60	6	0.2
80	8	0.3
100	10	0.4
120	12	0.5
140	14	0.6
160	16	0.7
180	18	0.8
200	20	0.9
300	30	1.0
Base Case		
85	6	0.5

In this modified form the workbook can be used to model the impacts of oil and gas streams of various proportions and price parities using DOR's high-level Alaska tax methodology.

The input data for the three key variables used can be varied by changing the values in the new table located in cell range C46:E60, which can be set to a user's preference.

A macro then evaluates and records selected outputs for all oil and gas scenarios.

Macro Calculates Large Number of Price Parity and Gas Fraction Cases Rapidly

For the 12 X 12 X 12 input matrix the macro calculates 1728 values for each output variable recorded (more than 20000 values for 12 variables recorded). The macro places the recorded data into a table for analysis.

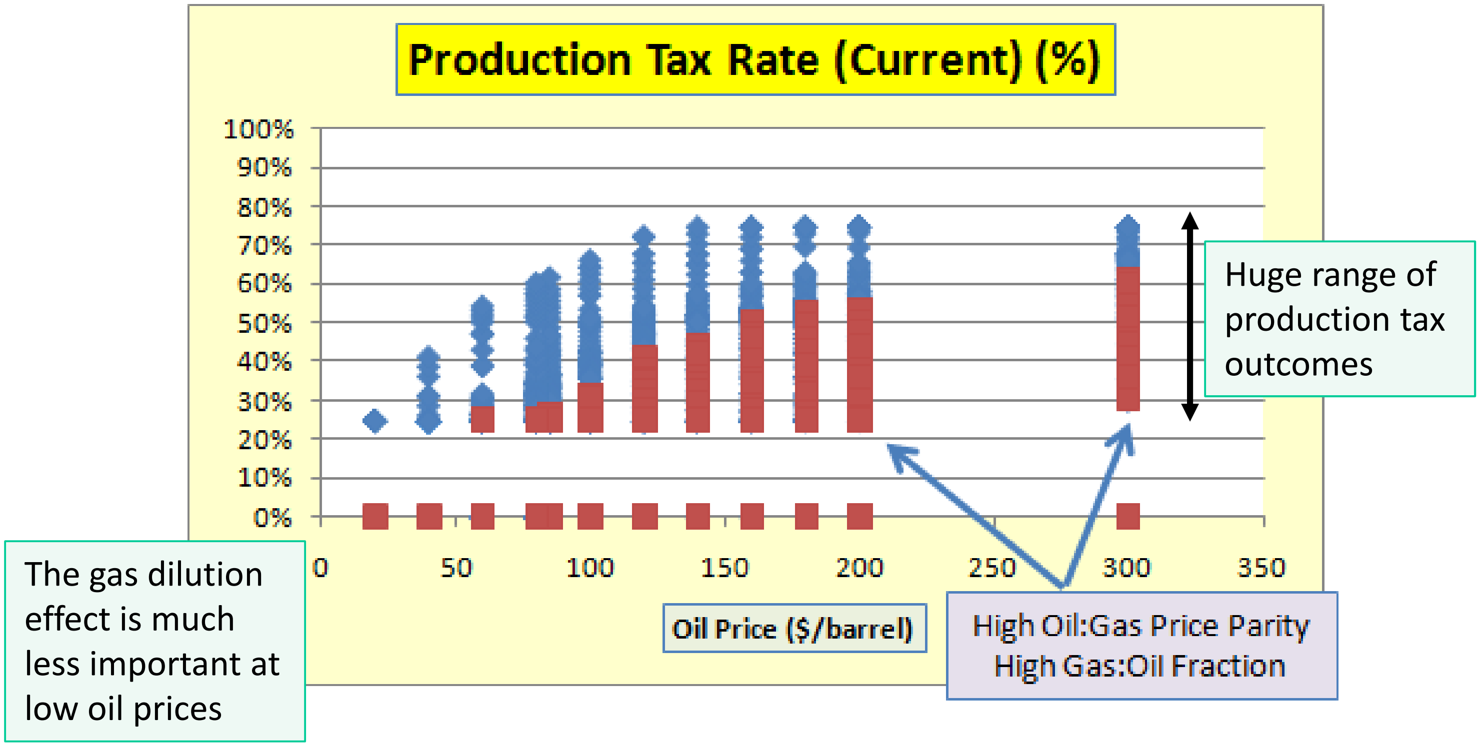
- For current and modified terms the macro records:
  - Production Tax Rate % from cell C25 on sheet Calc
  - Production Tax Value $/boe from cell C29 on sheet Calc

  - Producer's Take Rate from cell C42 on sheet Calc
  - Producer's Total Value $/boe from cell C37 on sheet Calc

  - State Take Rate % from cell C39 on sheet Calc
  - State Total Value $/boe from cell C33 on sheet Calc

Production Tax Rate Analysis for 1728 Macro Scenarios for Combining Oil and Gas

The red squares are the cases in which oil:gas price parity is >10 and gas:oil fraction of production mix is >0.5 on a boe basis.



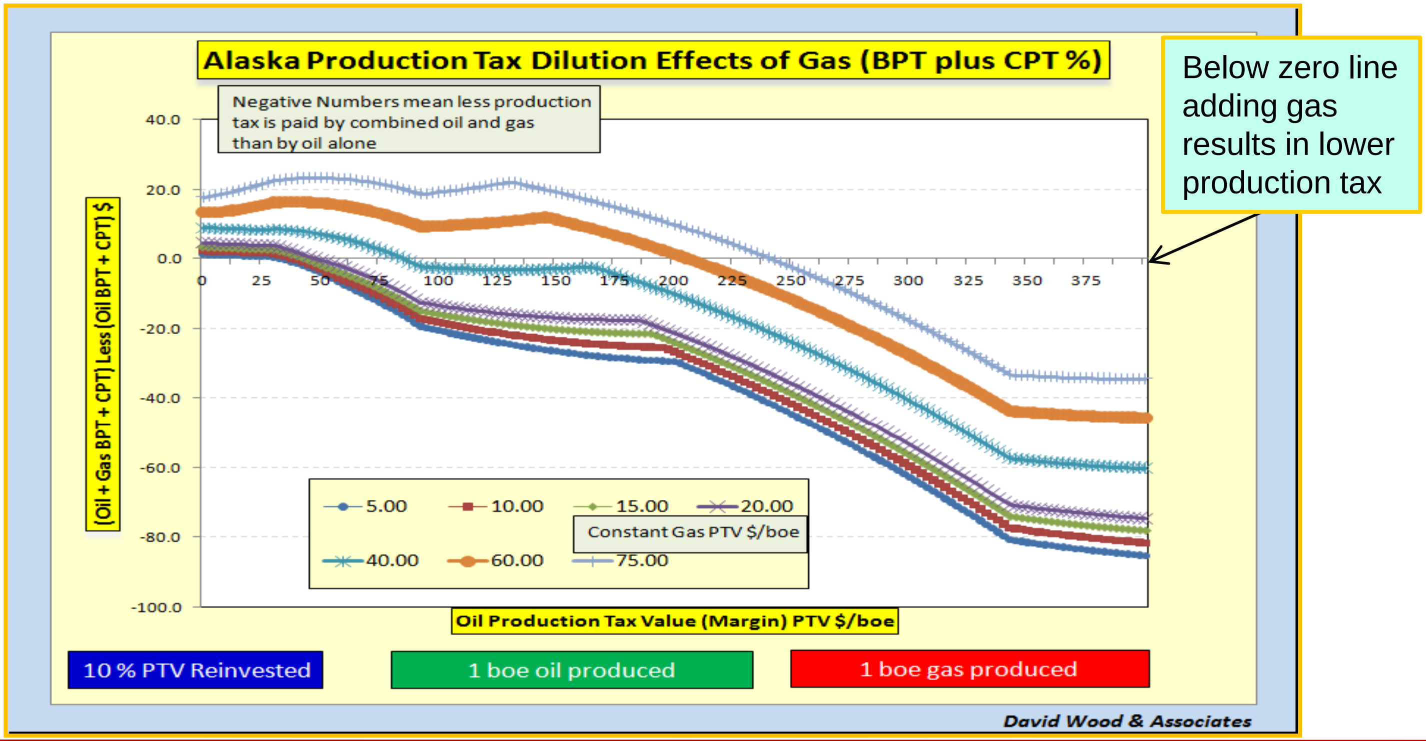
Conclusions from Combined Oil & Gas Production Tax Model

For the 12 X 12 X 12 input matrix the macro calculates 1728 values for each output variable recorded (more than 20000 values for 12 variables recorded). The macro places the recorded data into a table for analysis.

- It would be more stable to calculate Alaska's oil and gas production taxes separately and avoid boe complications particularly as oil : gas price ratio is unpredictable
- The dilution effect of gas should not be treated as a fiscal incentive as it is unpredictable in its impact
- Significant fiscal benefits of occasional price spikes on high production tax for gas or oil could be lost by persisting with a boe basis or combined calculation of the production tax value.

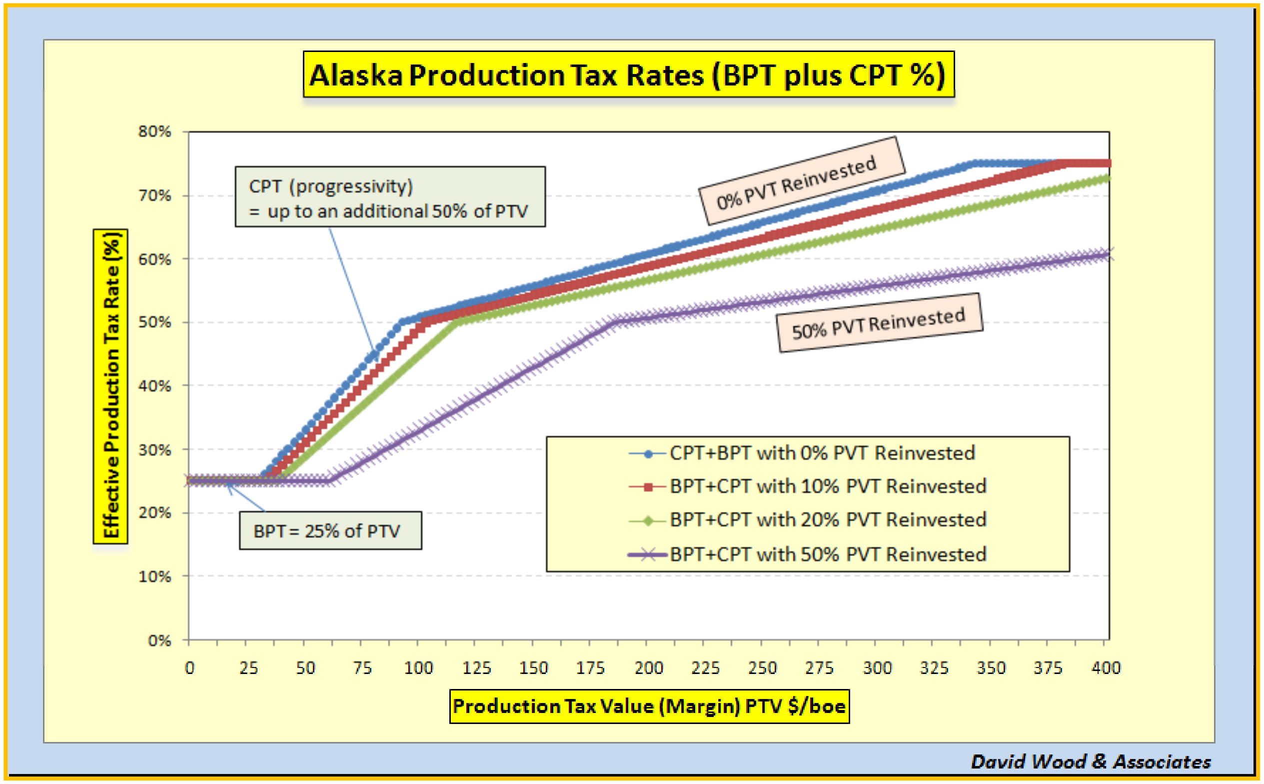
Natural Gas Production Tax Dilution Effects Impacted by Reinvestment

If some of the PTV is reinvested the reduction in production tax paid is significantly greater. This graph shows the impact of 10% reinvestment. [Model results presented in January 2009].



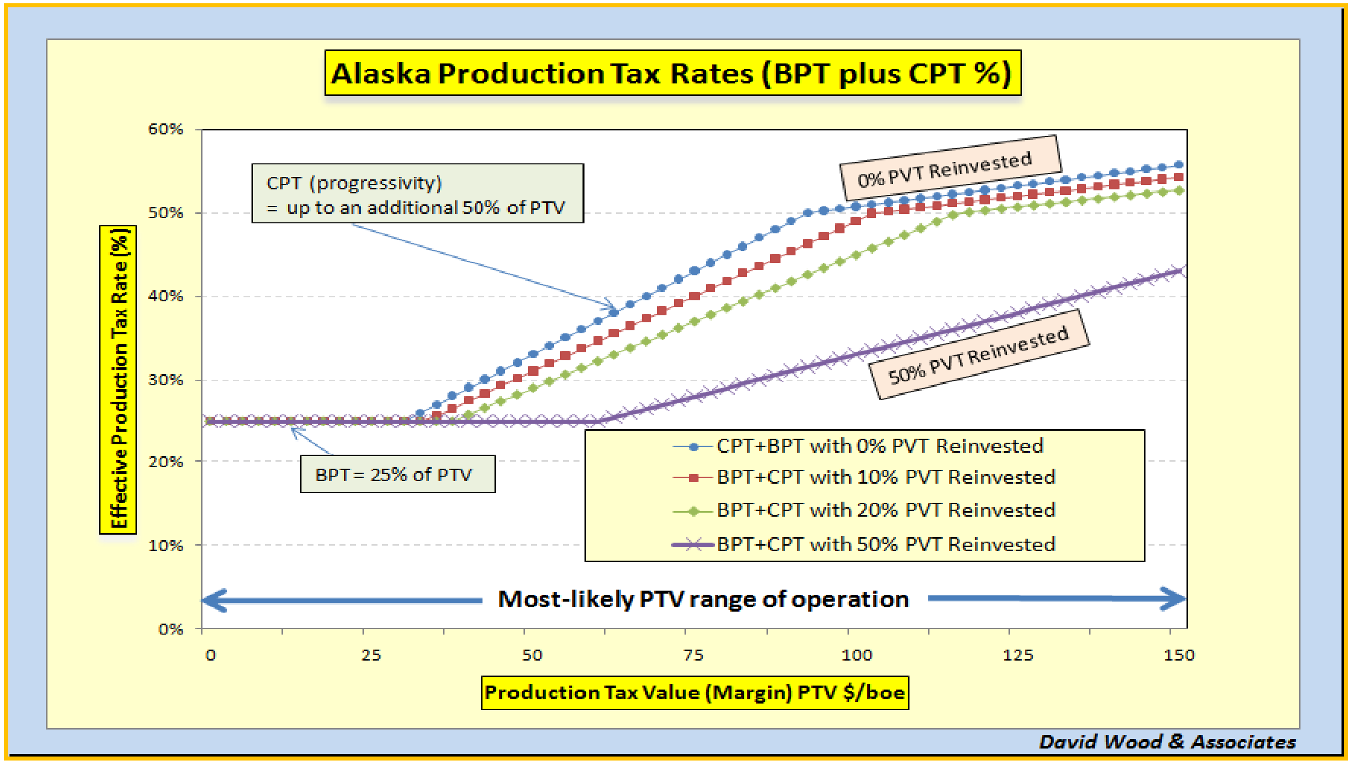
Natural Gas Production Tax Dilution Different Reinvestment Scenarios

The impact of several reinvestment scenarios – 0% , 10%, 20% and 50% of PTV - on production tax rates are illustrated in this graphic.



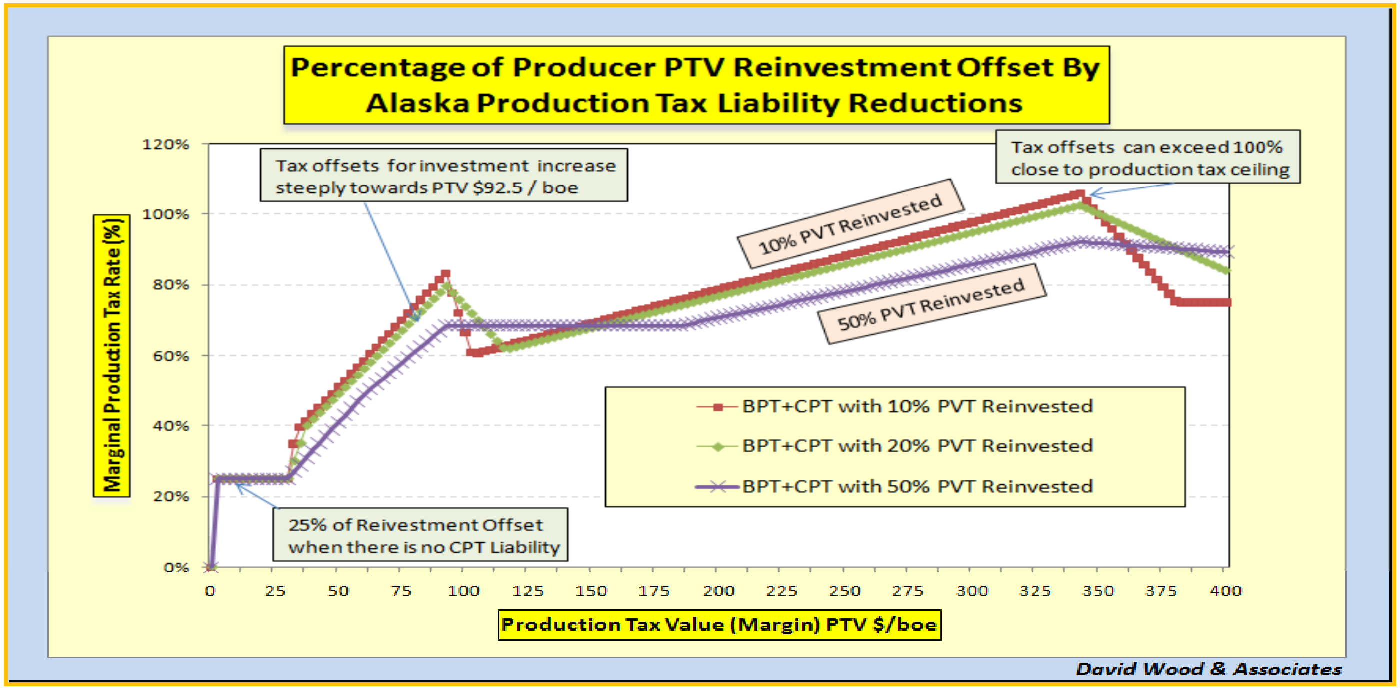
Reinvestment Scenarios For PTV Range $30/boe to $150/boe

For example production tax rate can be reduced from 49% to 42% at PTV $90/boe by reinvesting 20% of the PTV.



Marginal Production Tax Rates Seen by a Producer for Reinvestment Dollars

The vertical axis shows the percentage tax reduction associated with the incremental re-investment (or the marginal tax rate offset by the producer by its reinvestment). Note the peak around PTV$90/boe and values above 100% at PTV $350/boe plus multiple crossover points.



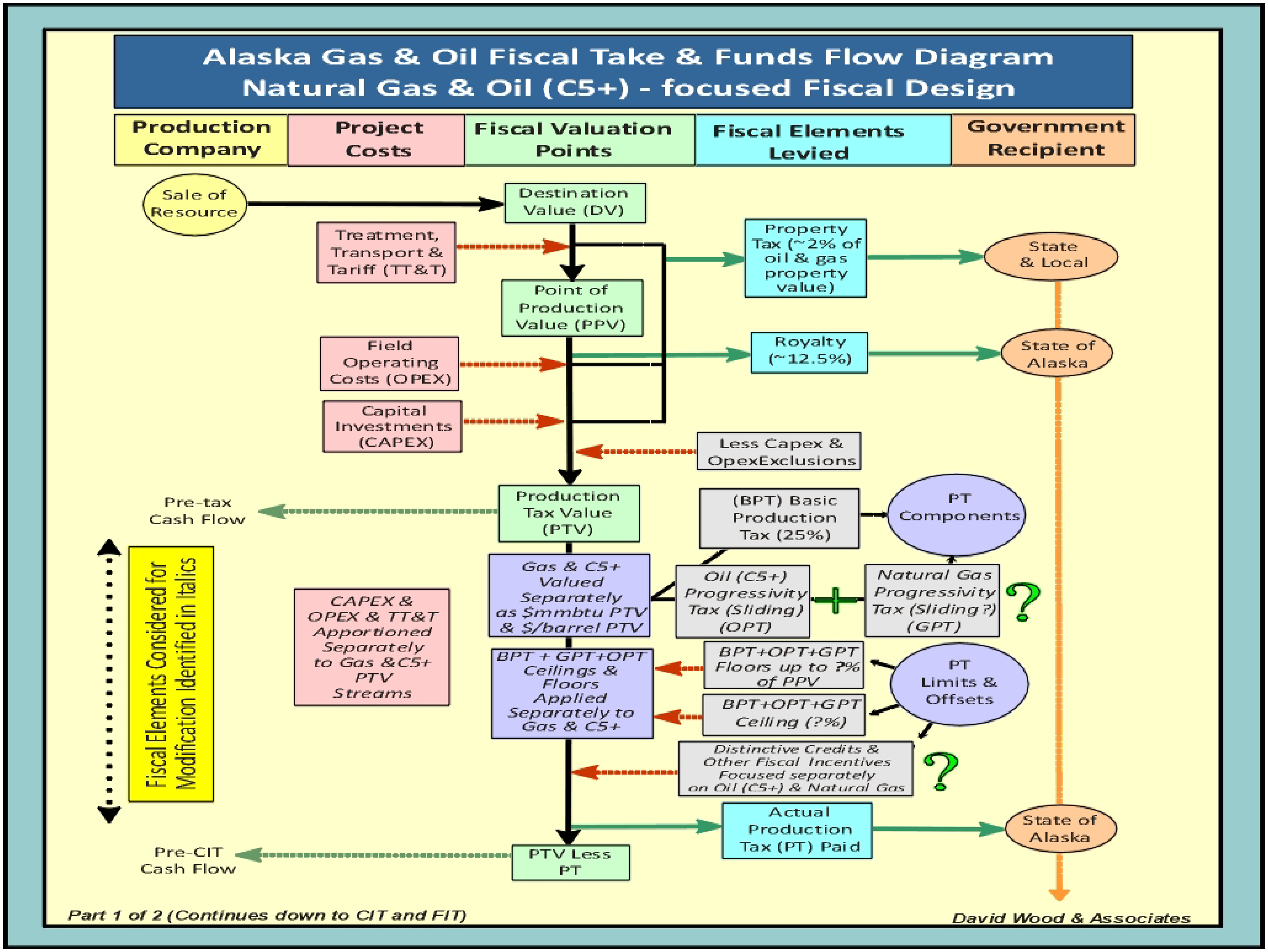
Implications of Combined Oil & Gas Production Tax Analysis

The analysis suggests that the prevailing production tax system has the following complications to address:

1. It is difficult to predict (from tax authority & producer perspectives) and relationships between oil and gas tax liabilities are non-linear;

2. The magnitude of the combined production tax impact caused by adding a gas production stream varies with relative oil and gas PTVs, oil and gas volumes and percentage of PTV re-invested;

3. Without detailed analysis (and speculative forecasting of oil and gas prices and boe contributions) Alaska's production tax outcomes can be counterintuitive (e.g. higher prices can lead to lower tax revenues collected by the State in some scenarios).


Alaska Gas & Oil Fiscal Take & Funds Flow Diagram
Natural Gas & Oil (C5+) - focused Fiscal Design
Production Company
Project Costs
Fiscal Valuation Points
Fiscal Elements Levied
Government Recipient
Sale of Resource
Destination Value (DV)
Treatment, Transport & Tariff (TT&T)
Property Tax (~2% of oil & gas property value)
State & Local
Point of Production Value (PPV)
Field Operating Costs (OPEX)
Royalty (~12.5%)
State of Alaska
Capital Investments (CAPEX)
Less Capex & OpexExclusions
Pre-tax Cash Flow
Production Tax Value (PTV)
(BPT) Basic Production Tax (25%)
PT Components
Fiscal Elements Considered for Modification Identified in Italics
Gas & C5+ Valued Separately as $mmbtu PTV & $/barrel PTV
Oil (C5+) Progressivity Tax (Sliding) (OPT)
Natural Gas Progressivity Tax (Sliding?) (GPT)
CAPEX & OPEX & TT&T Apportioned Separately to Gas & C5+ PTV Streams
BPT + GPT+OPT Ceilings & Floors Applied Separately to Gas & C5+
BPT+OPT+GPT Floors up to ?% of PPV
PT Limits & Offsets
BPT+OPT+GPT Ceiling (?%)
Distinctive Credits & Other Fiscal Incentives Focused separately on Oil (C5+) & Natural Gas
Actual Production Tax (PT) Paid
State of Alaska
Pre-CIT Cash Flow
PTV Less PT
Part 1 of 2 (Continues down to CIT and FIT)
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Alternative Drivers of Gas Progressivity Tax Evaluated by Fiscal Model

Ten different mechanisms are evaluated. No.1 represents the status quo evaluating gas progressivity as a combined revenue stream with oil (boe) were reviewed in December 2008 report to legislature.

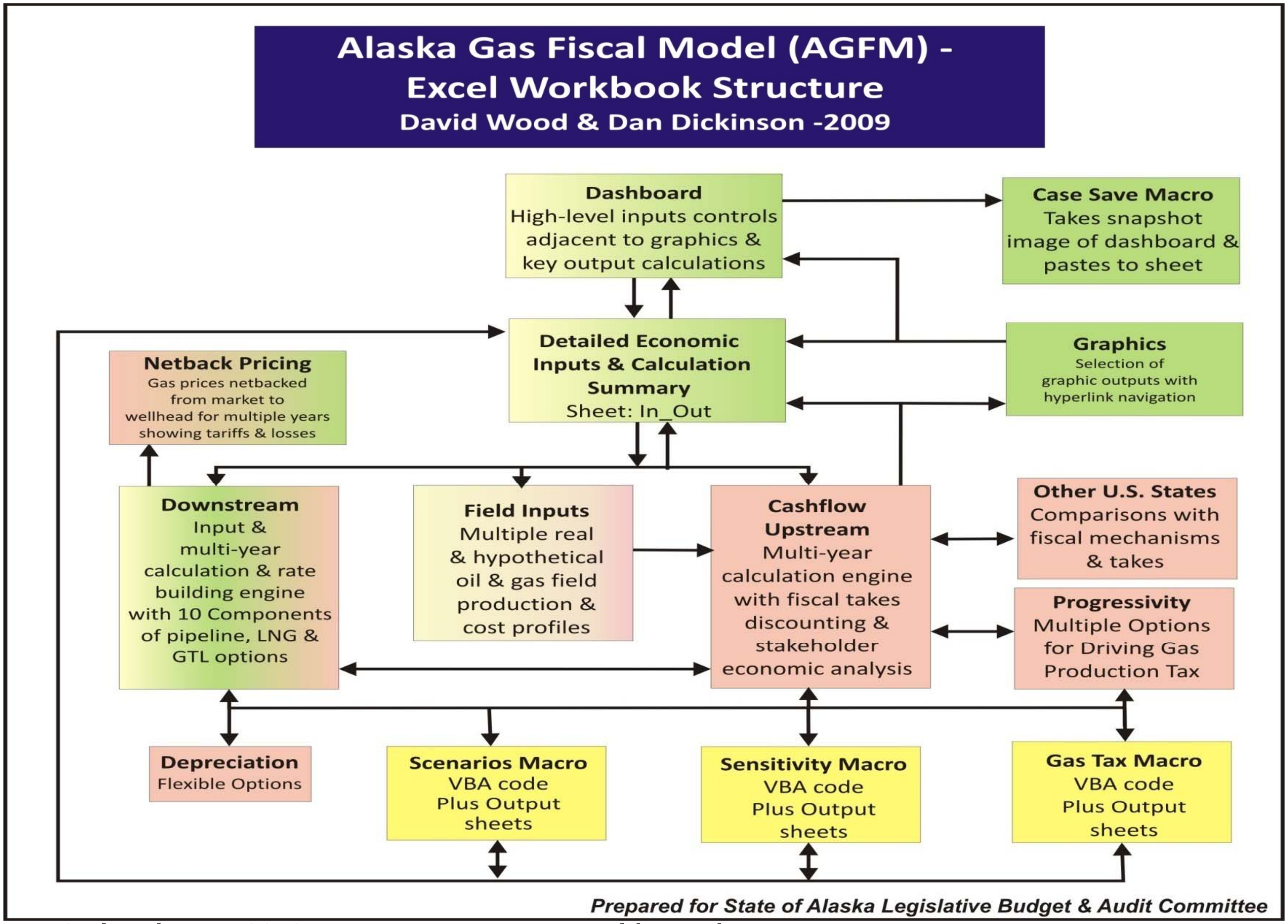
1. CPT: 2008 Rules (combined PTV/boe)
2. GPT / OPT: separates gas and oil on PTV/boe scale ← The easiest first step
3. GPT /OPT: progressivity applied to only 33% of gas PTV
4. GPT: Gas PTV (based on Gas PTV / mmbtu)
5. GPT: R-Factor (cumulative PPV less royalty/cumulative gas costs)
6. GPT: IRR (Investor's Rate of Return of cumulative PTV)
7. GPT: Cumulative gas reserves produced
8. GPT: Annual gas production volumes
9. GPT: Cumulative gas PTV
10. GPT: Mechanism #9 plus allowances to counter regressive elements

Multi-year and multi-scenario fiscal

Integrated upstream & downstream

performance cash flow model

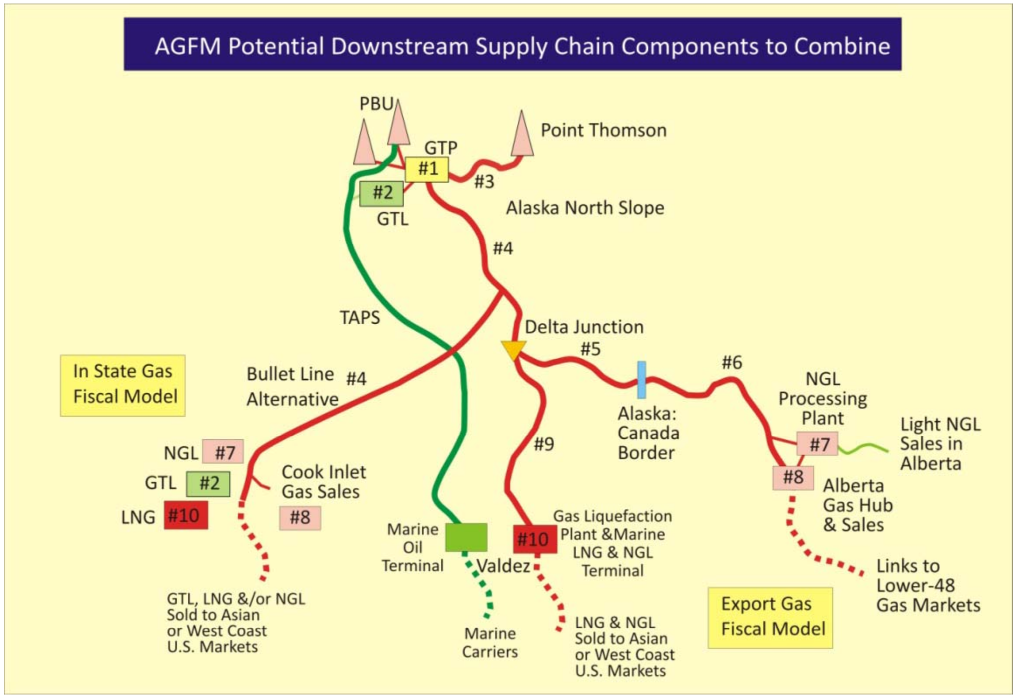
AGFM – Alaska Gas Fiscal Model



Alaska Gas Fiscal Model (AGFM) -
Excel Workbook Structure
David Wood & Dan Dickinson -2009
Dashboard
High-level inputs controls adjacent to graphics & key output calculations
Case Save Macro
Takes snapshot image of dashboard & pastes to sheet
Detailed Economic Inputs & Calculation Summary
Sheet: In_Out
Graphics
Selection of graphic outputs with hyperlink navigation
Netback Pricing
Gas prices netbacked from market to wellhead for multiple years showing tariffs & losses
Downstream
Input & multi-year calculation & rate building engine with 10 Components of pipeline, LNG & GTL options
Field Inputs
Multiple real & hypothetical oil & gas field production & cost profiles
Cashflow Upstream
Multi-year calculation engine with fiscal takes discounting & stakeholder economic analysis
Other U.S. States
Comparisons with fiscal mechanisms & takes
Progressivity
Multiple Options for Driving Gas Production Tax
Depreciation
Flexible Options
Scenarios Macro
VBA code Plus Output sheets
Sensitivity Macro
VBA code Plus Output sheets
Gas Tax Macro
VBA code Plus Output sheets
Prepared for State of Alaska Legislative Budget & Audit Committee

AGFM Now Extended to Evaluate In-state Gas Scenarios

The ten components are selected by entering “1” and de-selected by entering “0” on AGFMs dashboard.



Components “1”, “2”, “4”, “7”, “8” and “10” can be reconfigured to model gas export routes or to model In-State “Bullet Line” gas supply to Cook Inlet with optional NGL, GTL and / or LNG plants placed there for exports.

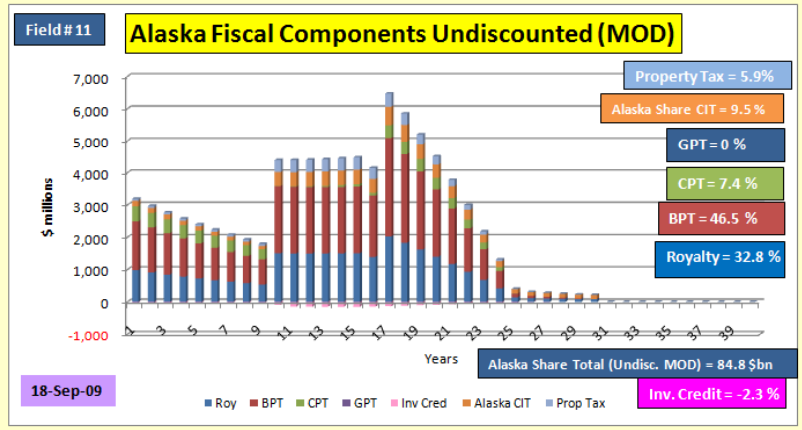
Dashboard Control Sheet:
High-level Controls: Spinners & Graphics

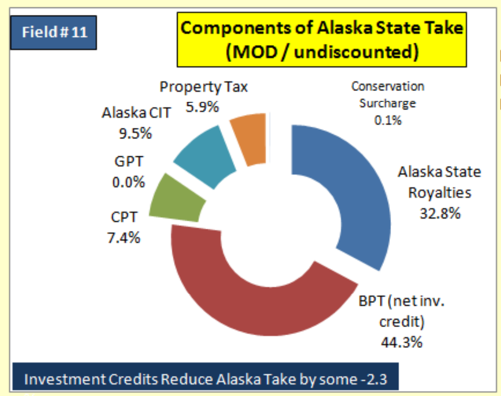
Save Dashboard Image — Ctrl+y

The model calculates money of day and real values

Key Assumptions

	Analyse Field # (1 to 20)	**11**
	Input Option 1=A, 2=B or 3=C (see Fields B6) 1 =A is default for selecting individual fields	1
AECO	Gas Destination Price, Year 0 ($/mmbtu)	6.00
	Gas Price Nominal Escalator (%/yr)	2.00%
ANSWC	Oil (C5+) Destination Price, Year 0 ($/barrel)	60.0
	Oil (C5+) Price Nominal Escalator (%/yr)	2.00%
	Cost Nominal Escalator (%/yr)	2.00%
	Buying Power Inflator / Deflator	1.00%
	Capital Costs Sensitivity Adjuster (%)	100.0%
	TT&T Costs Sensitivity Adjuster (%)	100.0%
	Operating Costs Sensitivity Adjuster (%)	100.0%
	Government Nominal Discount Rate (%)	5.00%
	Producer Nominal Discount Rate (%)	10.00%
	Royalty (%)	12.50%
	Base Production Tax (%)	25.00%
	investment credits (%)	20.00%
	CPT or Separate Mechanism used (0=CPT)	0
	GPT & OPT Mechanisms (0 = CPT rates)	0
	Alternative Progressivity Mechanism (3 to 10)	8
	Entry Tariff to Alberta gas hub $CAD/btu (Year 0):	0.175
	AECO to Henry Hub Differential (US$/mmbtu)	-0.900
	CAD per USD exchange rate	0.862
	Price Premium to Rich Gas (US$/mmbtu)	0.086
	Rich gas has energy content > btu/cf	1100
	Alternative AECO Gas Pricing (1 to 4; 2=base)	2
	ANSWC to WTI Oil Price Differential (US$ / barrel)	-2.000





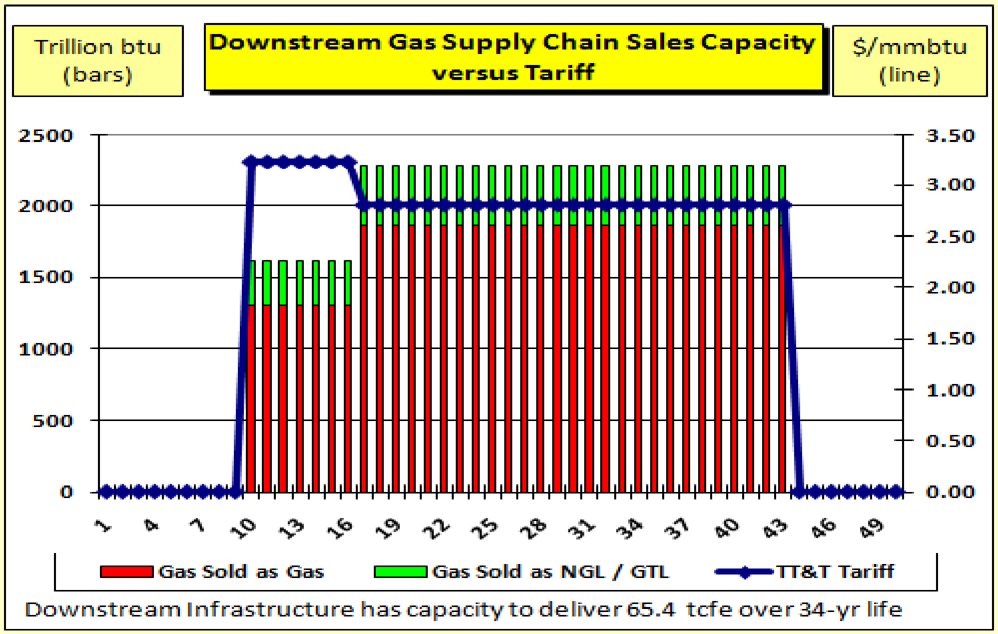
		Gov't Take	Producer
MOD	Cashflow:	64.9%	35.1%
MOD	NPV @ 5 %:	64.8%	35.2%
MOD	NPV @ 10 %:	64.9%	35.1%

Fiscal Elements	**$ millions**
Royalties	27,822
BPT (net inv. credit)	37,546
CPT	6,299
GPT	0
Alaska CIT	8,070
Property Tax	5,028
Conservation Surcharge	61
AlaskaTotals	**84,826**
Max Oil/Gas Price Ratio	10.0

Undiscounted and MOD

Dashboard Control Sheet:
Dynamic Graphics & Summary Results

Avg. MOD Revenue / unit gas & NGL ($/millions btu sold)	12.08
Avg. Tariff for T & T / unit gas & NGL ($/millions btu sold)	2.87
Alaska Downstream Property Tax ($/btu sold at capacity)	0.14
Alaska Income Tax Downstream ($/btu sold at capacity)	0.07
Federal Income Tax Downstream($/btu sold at capacity)	0.25

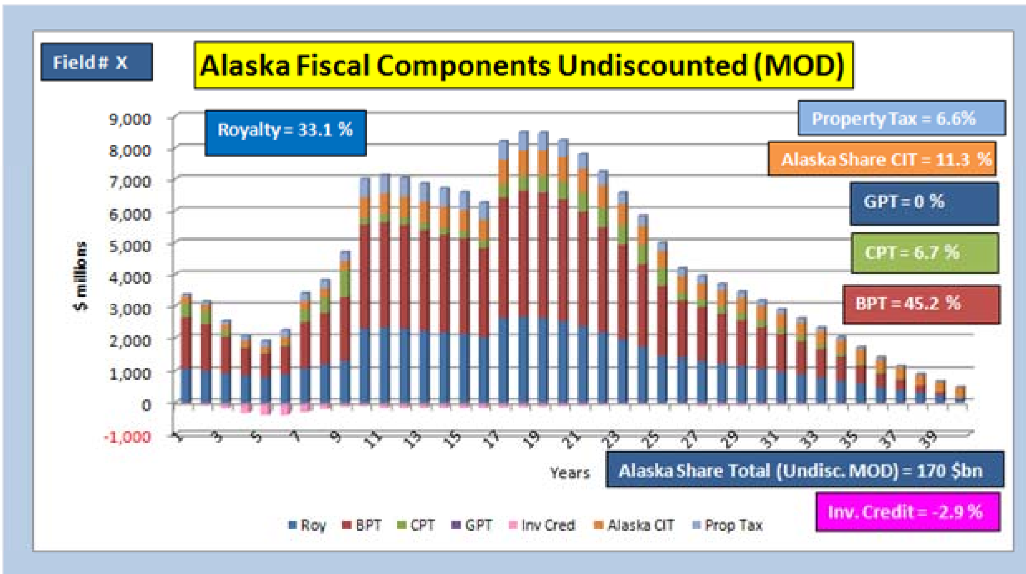


This graphic sits adjacent to the supply chain selection and definition table and responds immediately to changes.

Note the graph shown highlights the start of supply chain, its expansion, gas plus NGL capacities and the multi-year tariff calculated.

Contributions of Each Fiscal Element to Alaska's Take for Total North Slope (#11 -#14)

The relative contributions to Alaska's fiscal take for price scenario 1 and an ***Pipeline*** supply chain for the ***proved gas reserves*** combination of ***North Slope fields*** shows that gas production would ramp-up in stages, but proven reserves would not fill expanded capacity for more than 3 years.



There are many factors that can be varied in such combination scenarios. For example timing of each field coming on stream and capacity and timing of the gas supply chain infrastructure.

Alaska North Slope Production & Reserves are Dominated by Three Corporations

For fiscal analysis it is important to be able to model the expected fiscal returns from specific corporations. AGFM facilitates this by enabling percentage fractions of individual fields to be combined in a user definition area on sheet Fields.

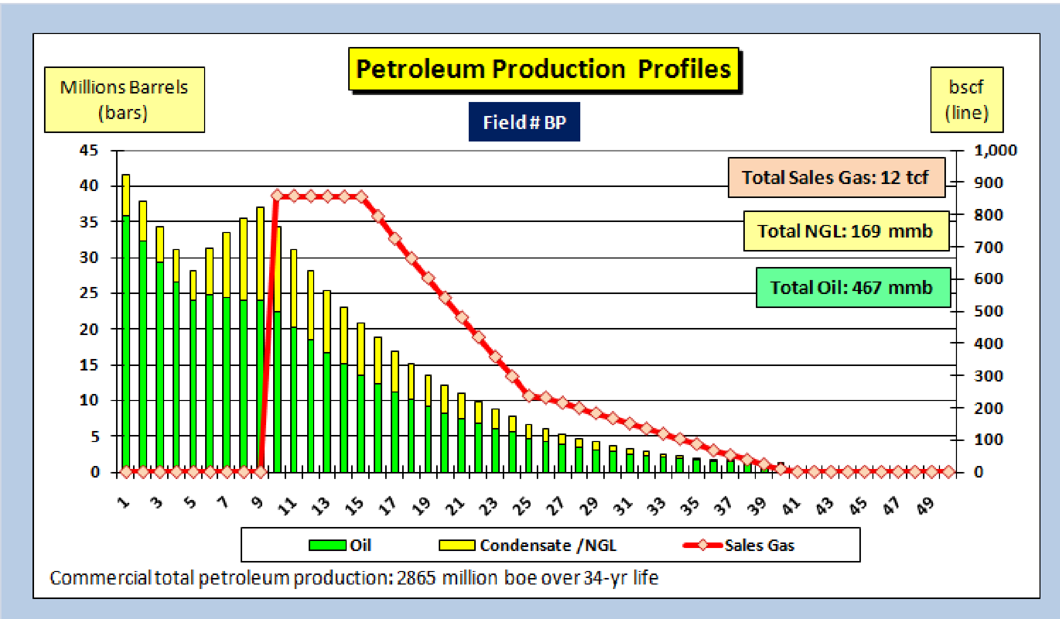
Company Holdings of Major North Slope Fields				
1	2	3	Field	
36.40%	26.36%	36.08%	Prudhoe Bay	Field#11
52.88%	29.19%	2.82%	Point Thomson	Field#12
0.98%	39.03%	55.04%	Kuparuk	Field#13
Exxon Mobil	BP	ConocoPhillips		

Three North Slope fields contain most of North Slope proved gas reserves.

By applying the corporate working interests to those fields a profile for each company can be approximated.

Alaska North Slope Production Profiles Forecast by AGFM for BP

AGFM can be set up to apply corporate interests to the field data to approximate the position of a specific corporation. In this case combining "BP's interests" in Fields #11, #12 and #13 the major North Slope Analogues. [Note input assumptions are based on public domain data. In evaluating appropriate fiscal designs in the absence of data assumptions will be necessary]



These corporate profiles can be analysed in a similar way by AGFM to individual fields.

These forecasts are dependent on the assumptions and input made for the individual fields and supply chains, but are useful for indicative fiscal design evaluations.

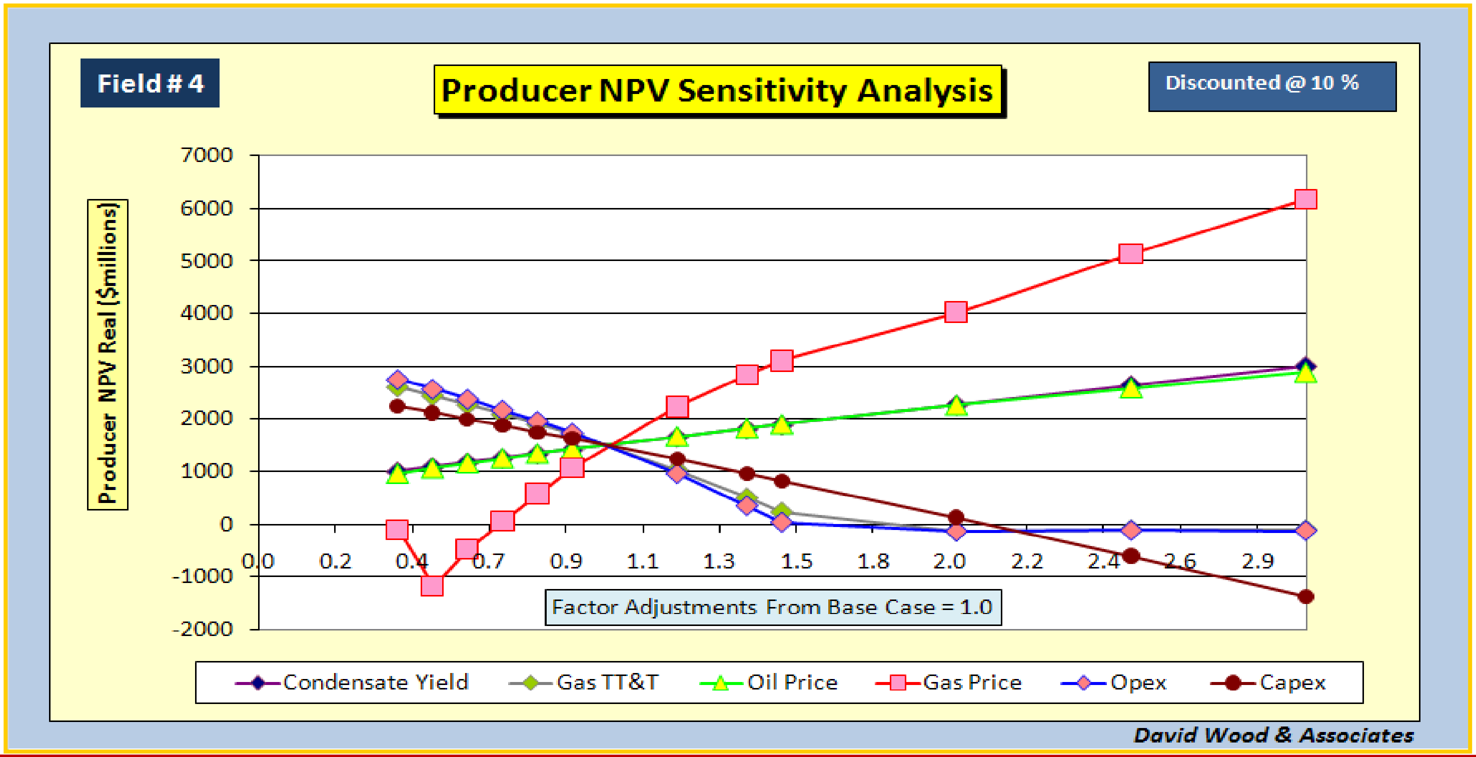
Hypothetical Field Cases Evaluated

Five non-associated natural gas fields and five oil fields with associated gas were constructed to use with a multi-year fiscal model built in Excel.

- The natural gas fields (#1 to #5) range in reserve size from 500 bcf to 10tcf.
- The oil fields (#6 to #10) vary in reserve size from 28 mmb (with 20 bcf of associated gas) to 500 mmb (with 690 bcf of associated gas).
- The fields display a wide range of production and cost profiles.
- Base cases for each model field tested with wide ranging sensitivity cases.
- Base case assumptions applied: Year 0 gas price: $7.5 / mmbtu; Year 0 oil price: $80 / barrel; nominal inflation 2% / year. The model allows these and the sensitivities to be changed easily and quickly.

Sensitivity of Alaska Gas Field to Project & Market Variables

Economic performance of a gas field development from a producer's perspective for a large gas field under the prevailing Alaska fiscal system.



Base Case Hypothetical Field Models Reveal High-level Implications for Government Take

Government take includes Alaska state take and federal government take. The models apply the prevailing Alaska fiscal design and some base case assumptions.

- For stand-alone oil fields (with associated gas):
  - Government take of destination value (gross) is about 60%
  - Government take of destination value less costs (net) is about 75%

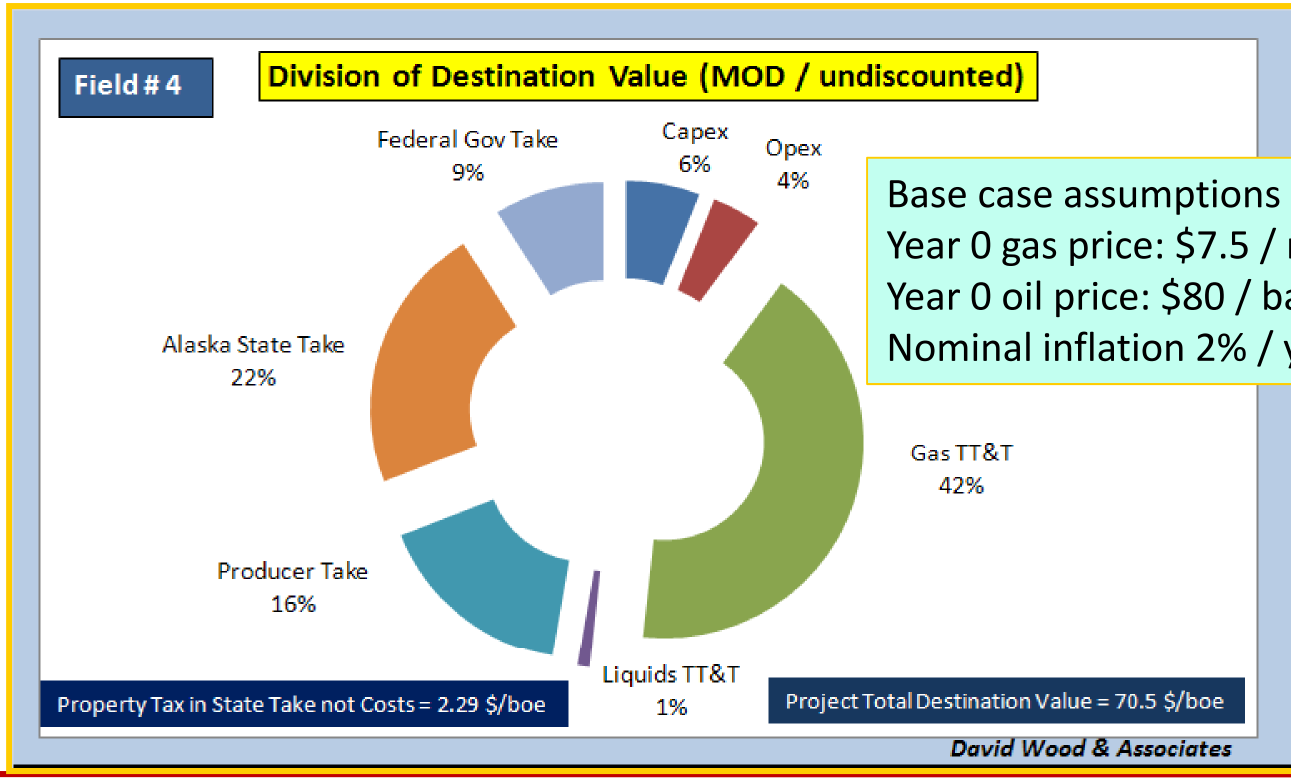
- For stand-alone natural gas fields (non-associated gas with NGLs):
  - Government take of destination value (gross) is about 30%
  - Government take of destination value less costs (net) is about 67%

- Exact percentages vary with field sizes, prices and costs.

- Large producers with portfolios of legacy fields under the current system aggregate oil and gas and can see reduced government take.

Large Gas Field:
Division of Destination Value

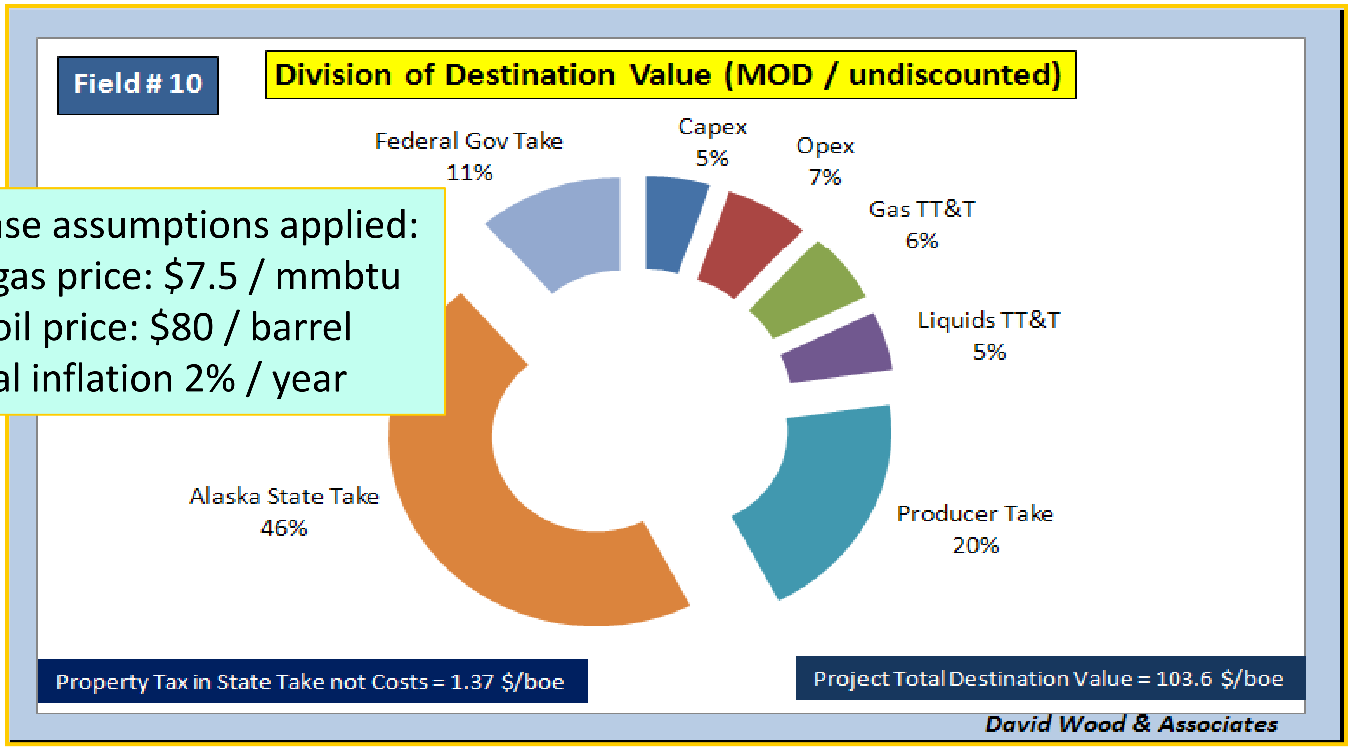
For gas fields of various size (5 tcf shown here) gas TT&T takes the largest share of destination value. Alaska takes some 22% of destination value.



Base case assumptions applied:
Year 0 gas price: $7.5 / mmbtu
Year 0 oil price: $80 / barrel
Nominal inflation 2% / year

Large Oil Field: Division of Destination Value

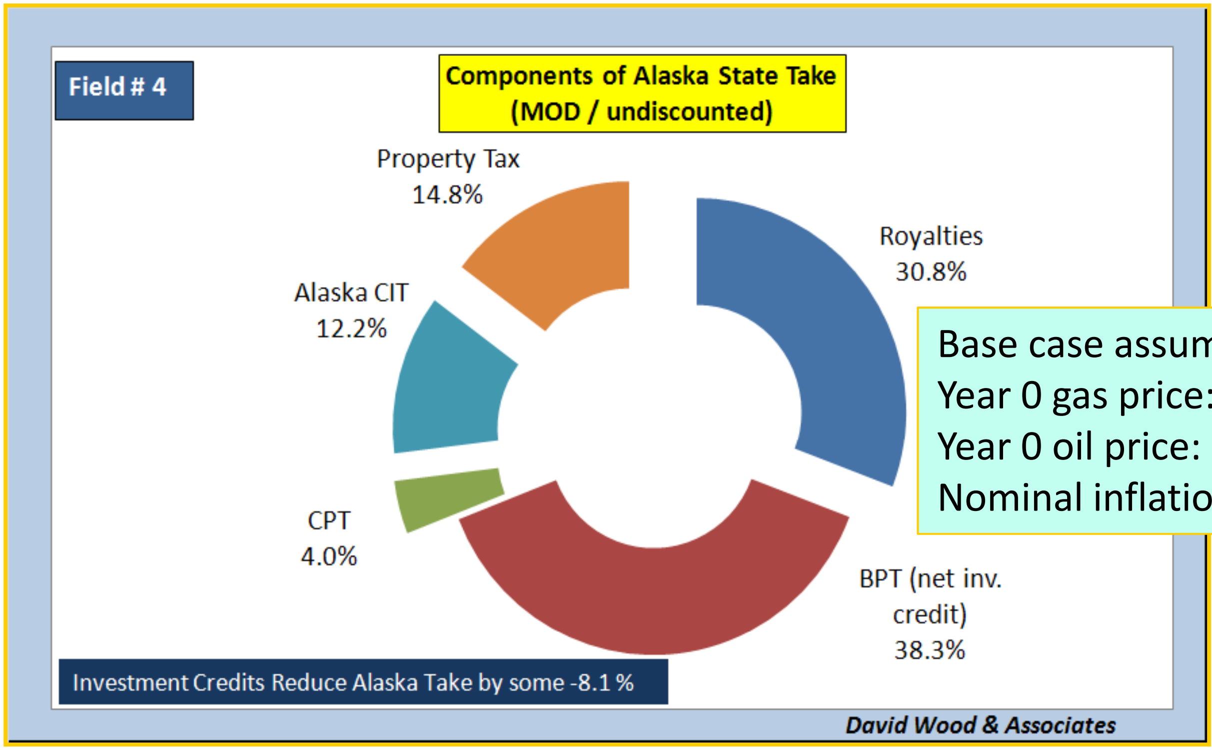
For oil fields of various size (500 mmb shown here) costs are less significant than for gas. Alaska takes some 46% of destination value.



Base case assumptions applied:
Year 0 gas price: $7.5 / mmbtu
Year 0 oil price: $80 / barrel
Nominal inflation 2% / year

Components of Alaska State Take for Large Gas Field

Royalties and basic production tax account for two-thirds of Alaska state take for this 5 tcf field. Base case price and cost assumptions applied.

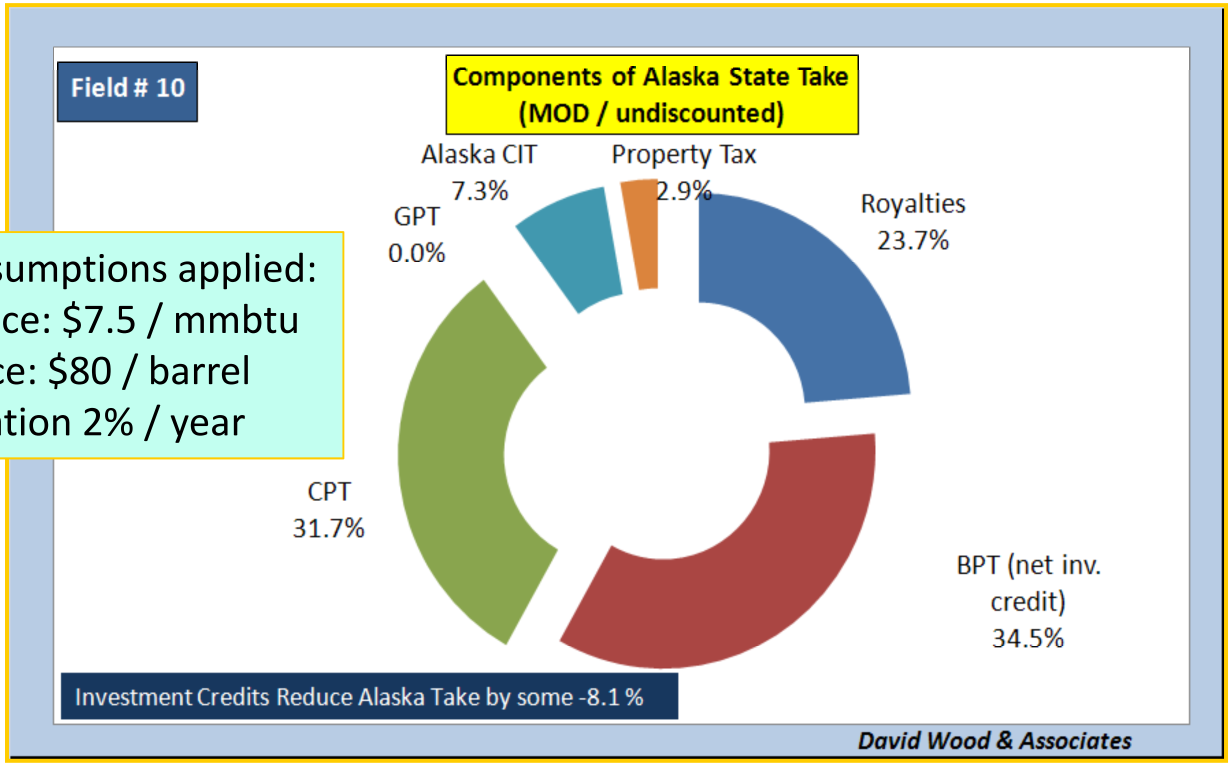


Base case assumptions applied:
Year 0 gas price: $7.5 / mmbtu
Year 0 oil price: $80 / barrel
Nominal inflation 2% / year

Components of Alaska State Take for Large Oil Field

Basic production tax and combined progressivity tax account for two-thirds of Alaska state take for this 500 mmb oil field.

Base case assumptions applied:
Year 0 gas price: $7.5 / mmbtu
Year 0 oil price: $80 / barrel
Nominal inflation 2% / year



Conclusions & Recommendations

Approaches to Fiscal Design that Can Improve Performance & Credibility

The following are selected recommendations for Alaska from my December 2008 report for the Legislature:

- Develop a clear statement of fiscal strategy and objectives
- Focus on a simple, flexible and progressive fiscal design
- Some level of fiscal stability important to secure investment
- Such designs could be more effective than contractual guarantees
- *Drive progressivity fiscal elements for gas with gas PTV (not boe)*
- Consider return on investment drivers for progressivity taxes
- Combine progressivity tax with allowances to offset regressive elements
- Aim to clarify and optimize fiscal revenue streams from NGLs
- Consider state equity involvement in strategic infrastructure projects
- Promote cost disclosure and control with some fiscal incentives
- Apply time constraints to new leases to develop resources