

Preliminary Report on a Fiscal Design for the Development of Alaska's Natural Gas



David Wood
December 2008

*Presentation of Fiscal Design
Report's Key Findings*

Presentation Structure



This presentation focuses on the key findings of the report: *“Preliminary Report on a Fiscal Design for the Development of Alaska’s Natural Gas.”*

- Why we are here? – background to the report
- What are the issues for Alaska's fiscal regime when applied to gas?
- What are the fiscal designs applied by other countries?
- Why regressive elements and fears of instability can limit investment?
- What are the fiscal options worthy of consideration by Alaska?
- How can the performance of fiscal instruments be measured?
- Recommendations of preliminary study



Why we are here?

Background to the report

Purpose of Report & Presentation



Review findings of 8 months of study into Alaska's fiscal design for natural gas in the context of the international natural gas industry.

- Commissioned by the ***State of Alaska Legislative Budget & Audit (LB&A) Committee*** in April 2008.
- The focus of the study is on Alaska's ***upstream fiscal design***
- David Wood has:
 - Analytical experience of international fiscal terms;
 - Evaluation experience of large natural gas development projects from government and IOC perspectives;
 - No previous involvement in the Alaska oil and gas industry.

Evolution of Report



David Wood has conducted this work remotely (i.e. based in U.K.) but with frequent consultation with the Alaska Legislature's Legislative Budget and Audit (LB&A) team.

- The report has evolved through several drafts since July 2008 improved by the review of the LB&A team:
 - Dan Dickinson
 - Larry Persily
 - Steven Porter
 - Cheryl Sutton
- The LB&A team has provided David Wood with much insight concerning the prevailing Alaska fiscal design.
- Report remains the responsibility of David Wood.
- The opinions and judgments expressed in it may not reflect those of other members of the LB&A team.

David Wood – Alaska's Upstream Fiscal Design – Dec. 2008

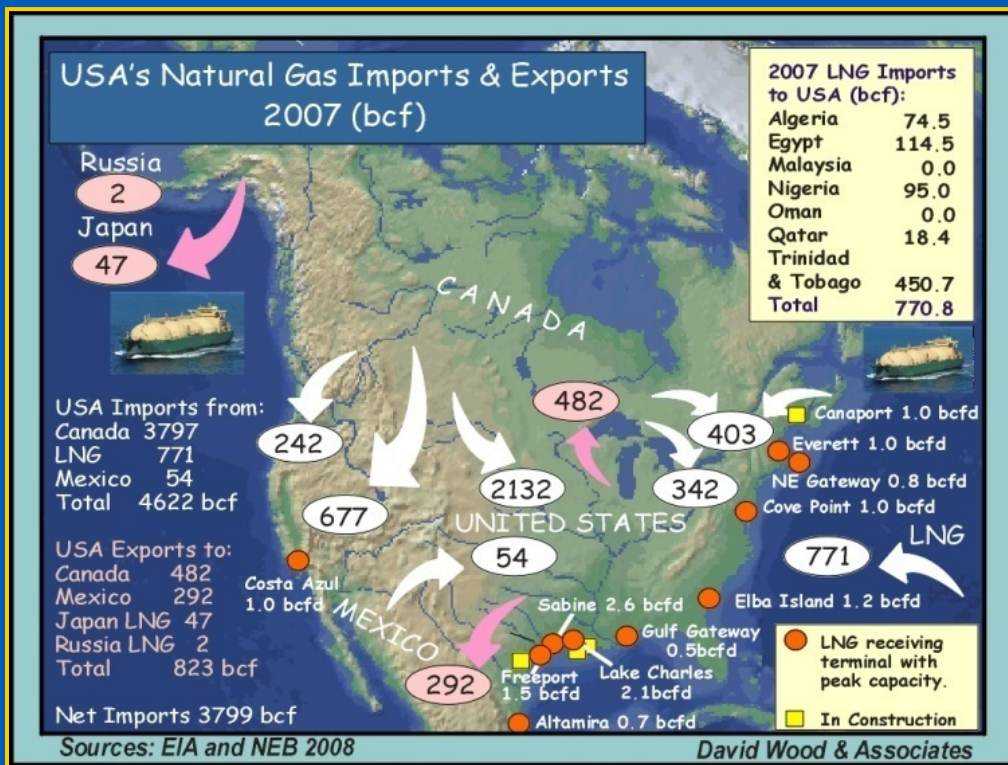


What are the issues for Alaska's fiscal
regime when applied to gas?

Providing a Fiscal Regime that Accelerates Monetization of Gas



Alaska has substantial natural gas reserves that have remained stranded for decades. Lower 48 states have a thirsty and growing market for gas.

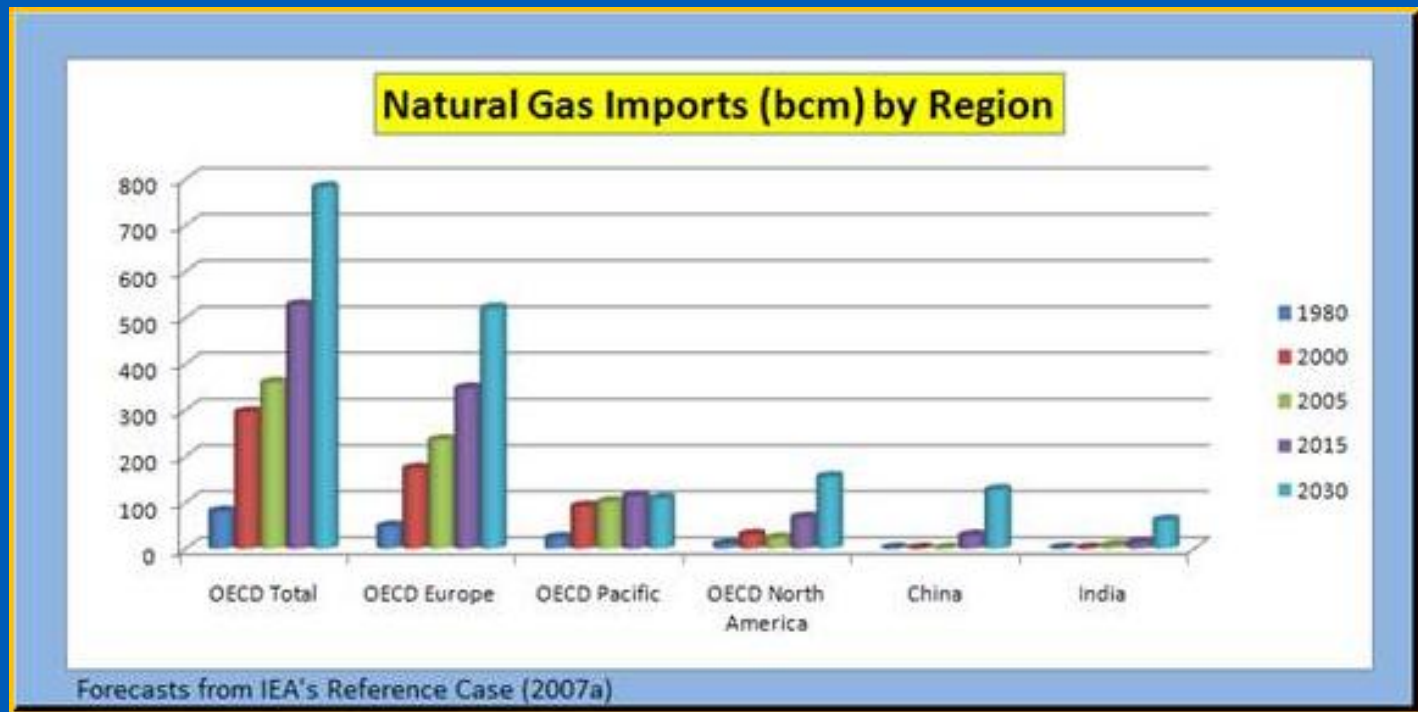


International Gas Markets are Growing

- Competition for Gas is Increasing



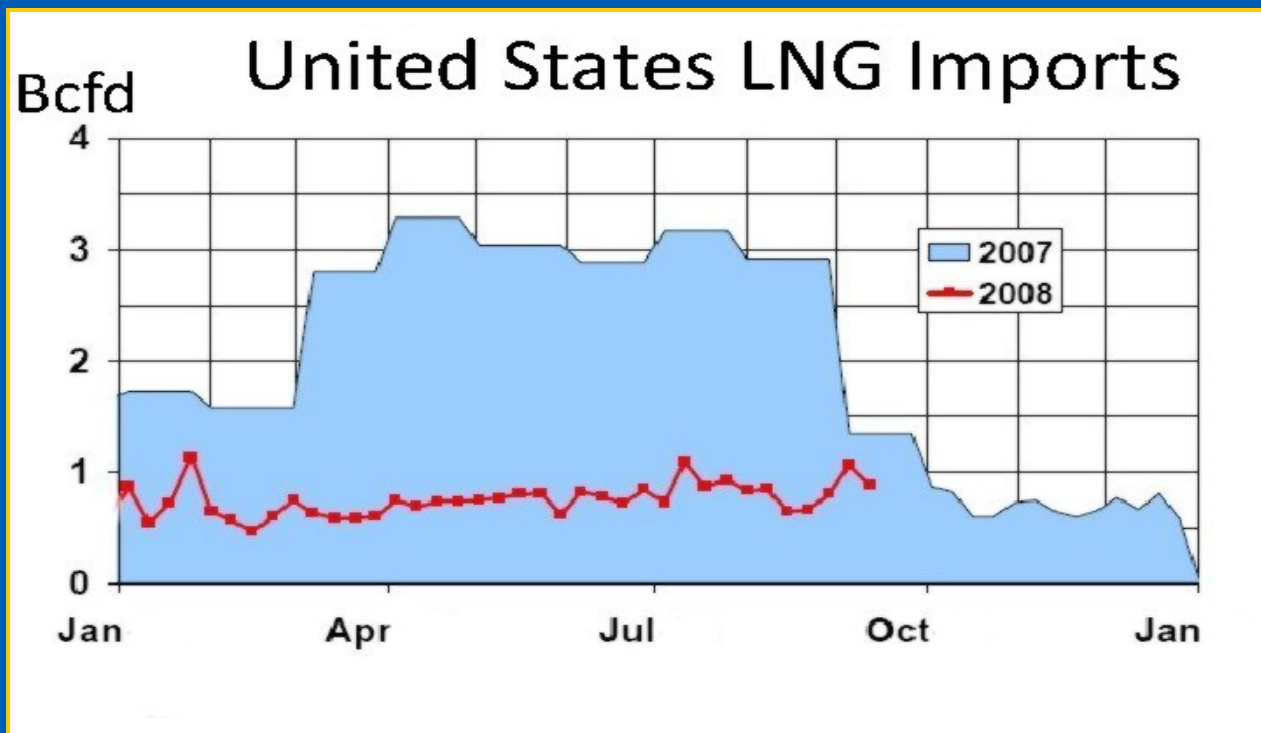
How key gas import markets compare and are forecast to grow in absolute terms (bcm = billions cubic metres; 35.3 bcf = 1 bcm).



Lower LNG Imports to U.S. in 2008



Market demand for LNG imports to U.S. is volatile and depends on U.S. prices relative to international gas prices.



Problems with Alaska's Current Progressivity Tax from 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 is set too high for natural gas.
- Tying the production tax floor to PPV/boe can lead to regressive consequences for gas producers in high cost/low value conditions.

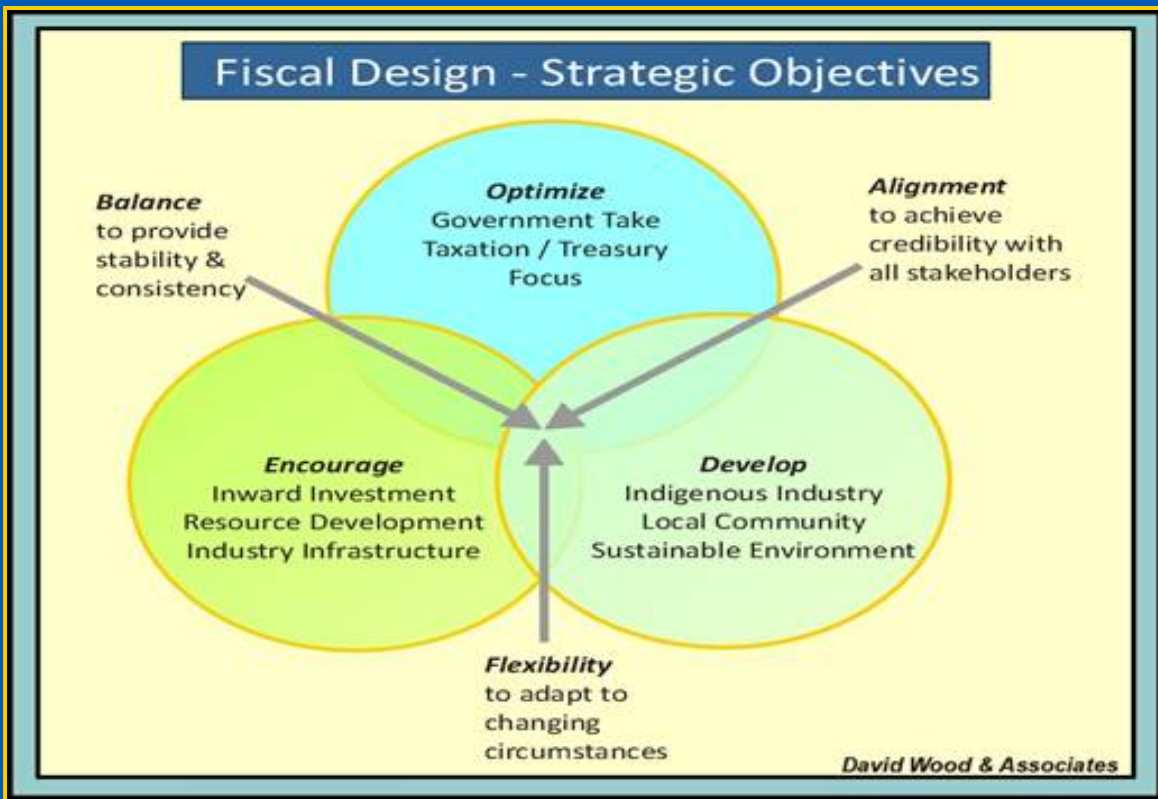


What are the fiscal designs applied by
other countries?

Fiscal Designs are Best Driven by Clear Fiscal Objectives & Strategies



Most countries are trying to balance all three objectives.

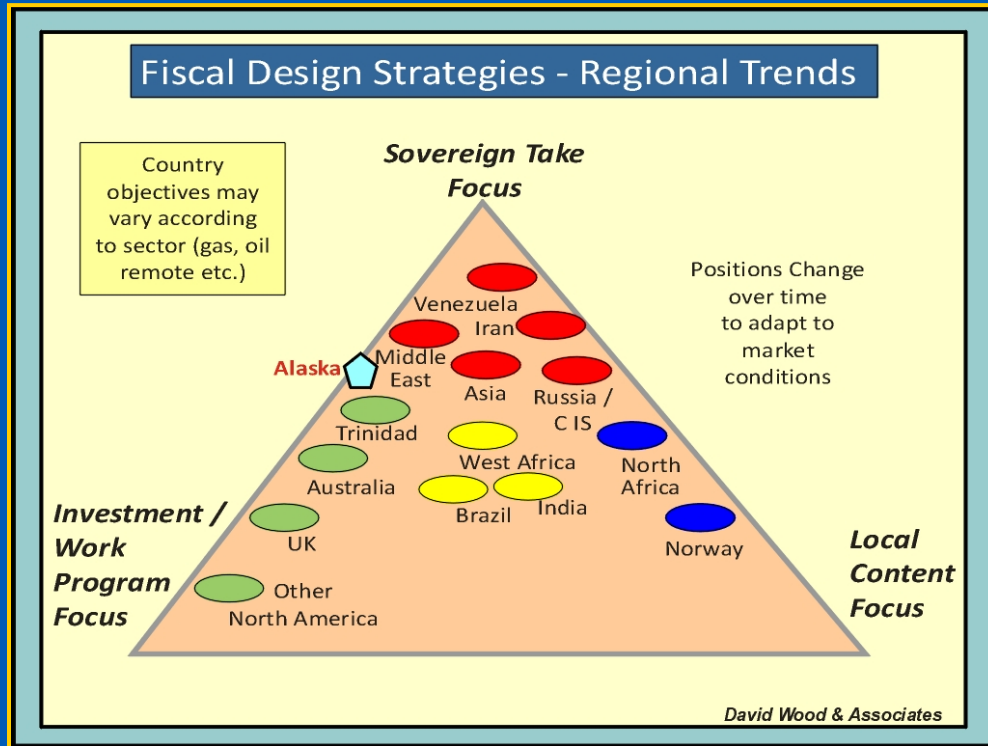


Fiscal Design Strategies

Regional Trends



Upstream fiscal designs should reflect the broader strategies and objectives that governments are striving to achieve.

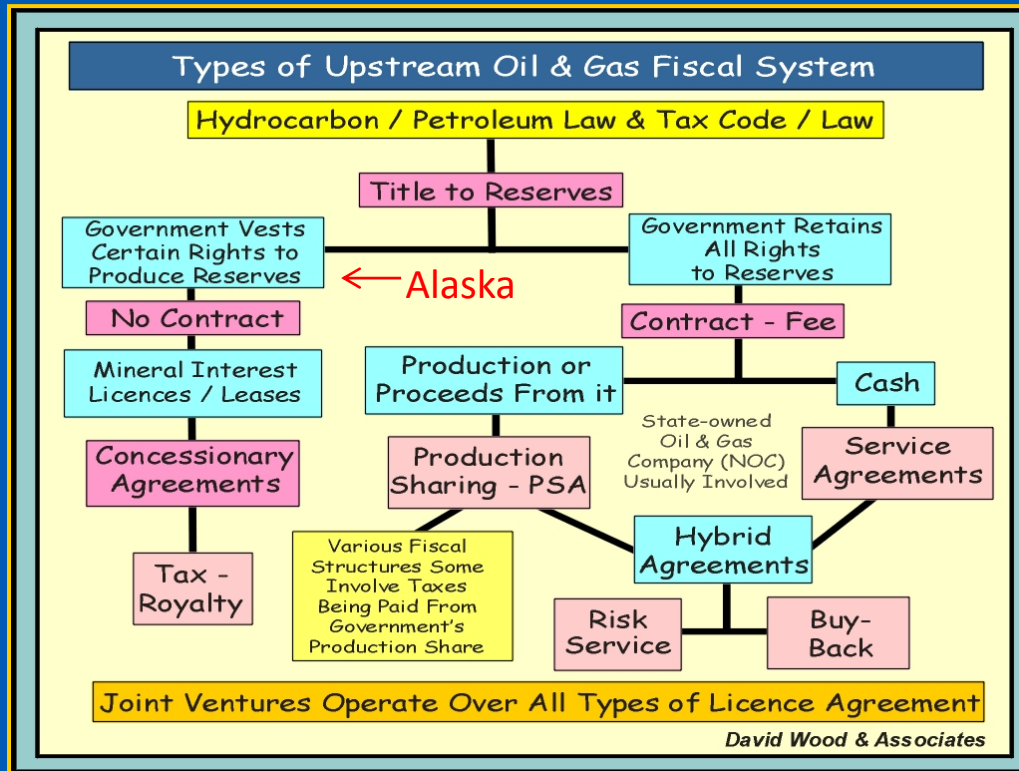


A clear statement of fiscal design strategy by a government can help to enhance its fiscal credibility.

Fiscal Mechanisms Commonly Applied in International Oil & Gas Industry



Mineral-interest (mainly OECD) and production-sharing mechanisms dominate international fiscal designs.

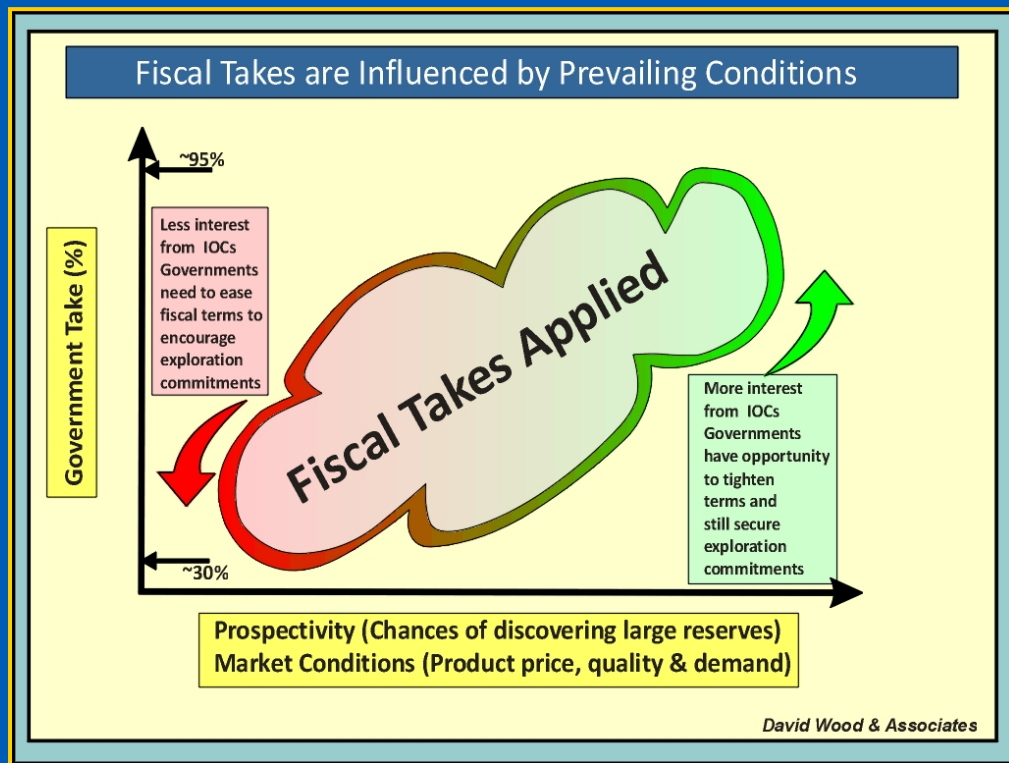


Mineral-interest systems transfer the rights to production of oil and gas reserves discovered to the licensees/lessees in return for the payment of a royalty (and other taxes in most cases).

Overall Government Takes from Gas Production Varies Substantially



Governments need to retain the ability to adjust fiscal designs to meet changing conditions.



Most governments open new areas for licensing, re-licensing, or for contract by IOCs in stages over time.

Often such activity is linked to bidding rounds. It is useful for the governments to retain rights to adjust fiscal terms associated with new licensing.

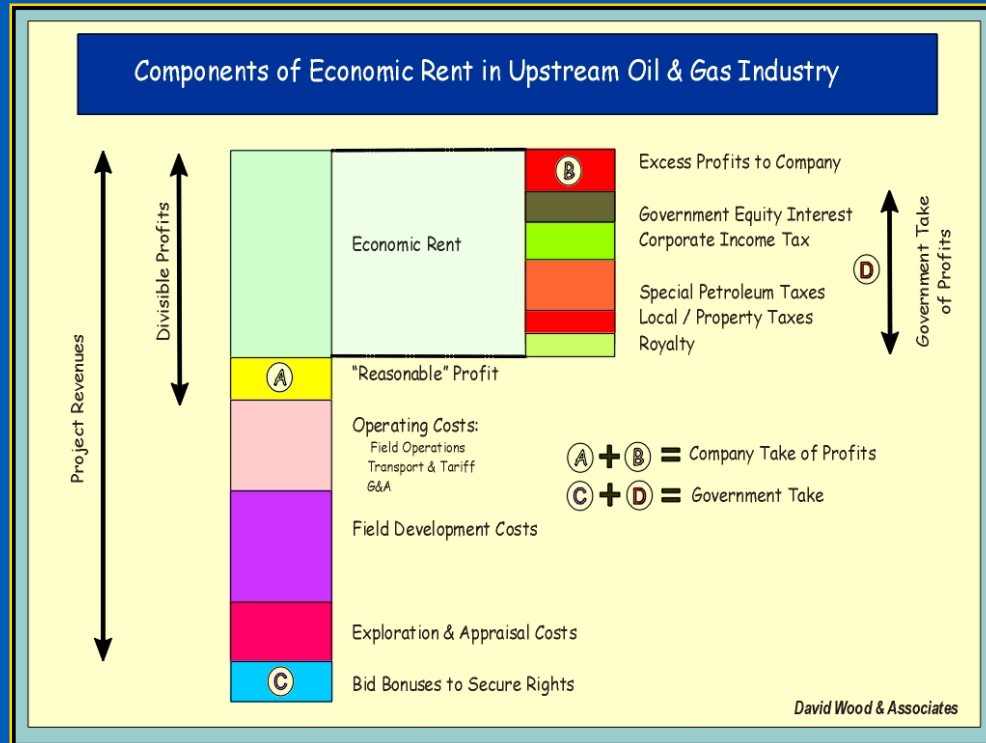


Why regressive elements and fears of
instability can limit investment?

Fiscal Designs Focus on the Division of Economic Rent



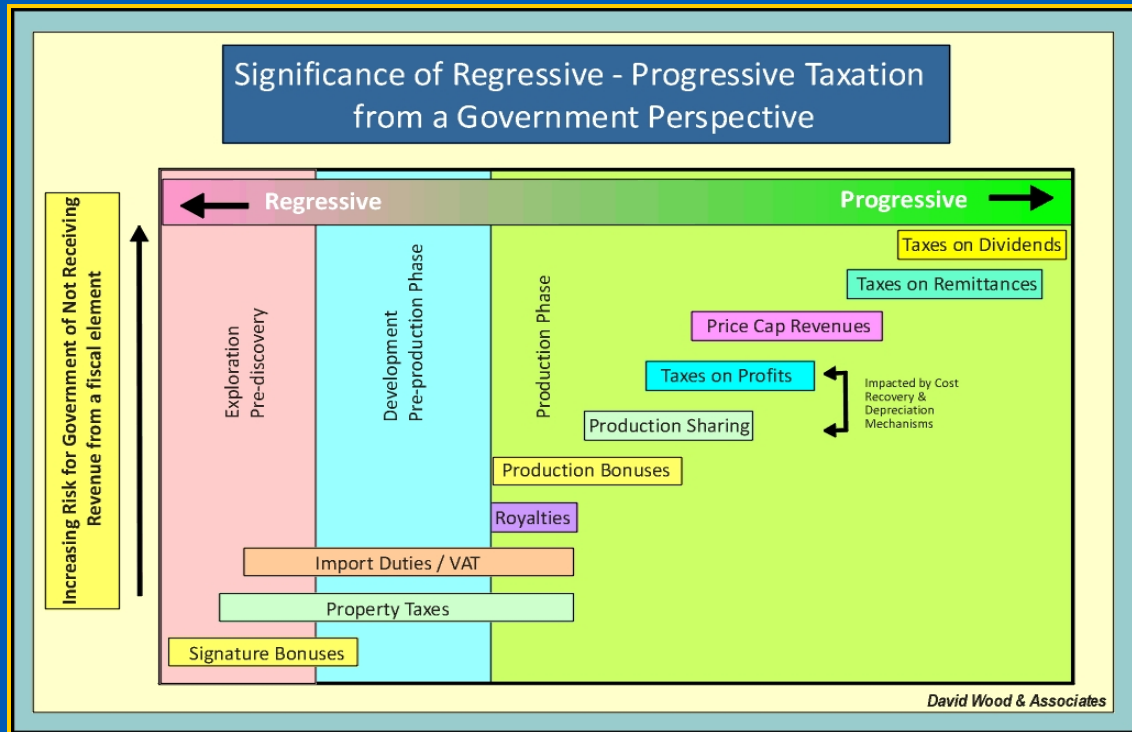
Government take comes mainly from the revenue stream but bonuses and pre-production taxes also contribute.



Progressive & Flexible Fiscal Designs Help to Promote Investment



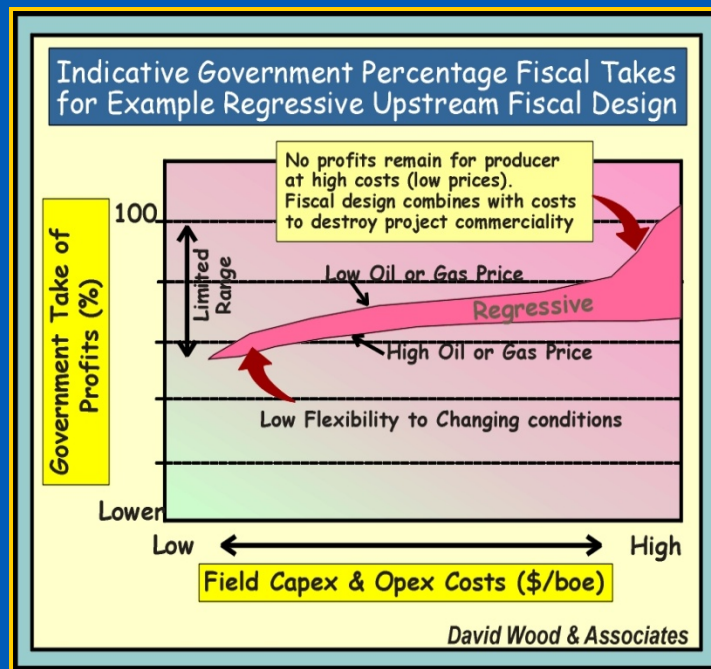
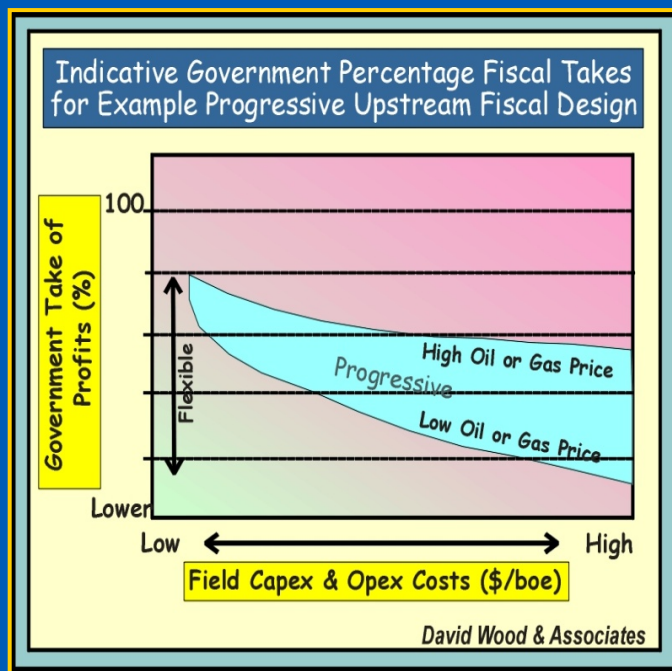
The stronger the commitment made by governments to promote a commercially attractive environment, the more likely investors are to commit investments without guarantees of fiscal stability.



Fiscal Element Combinations Can Lead to Progressive or Regressive Extremes



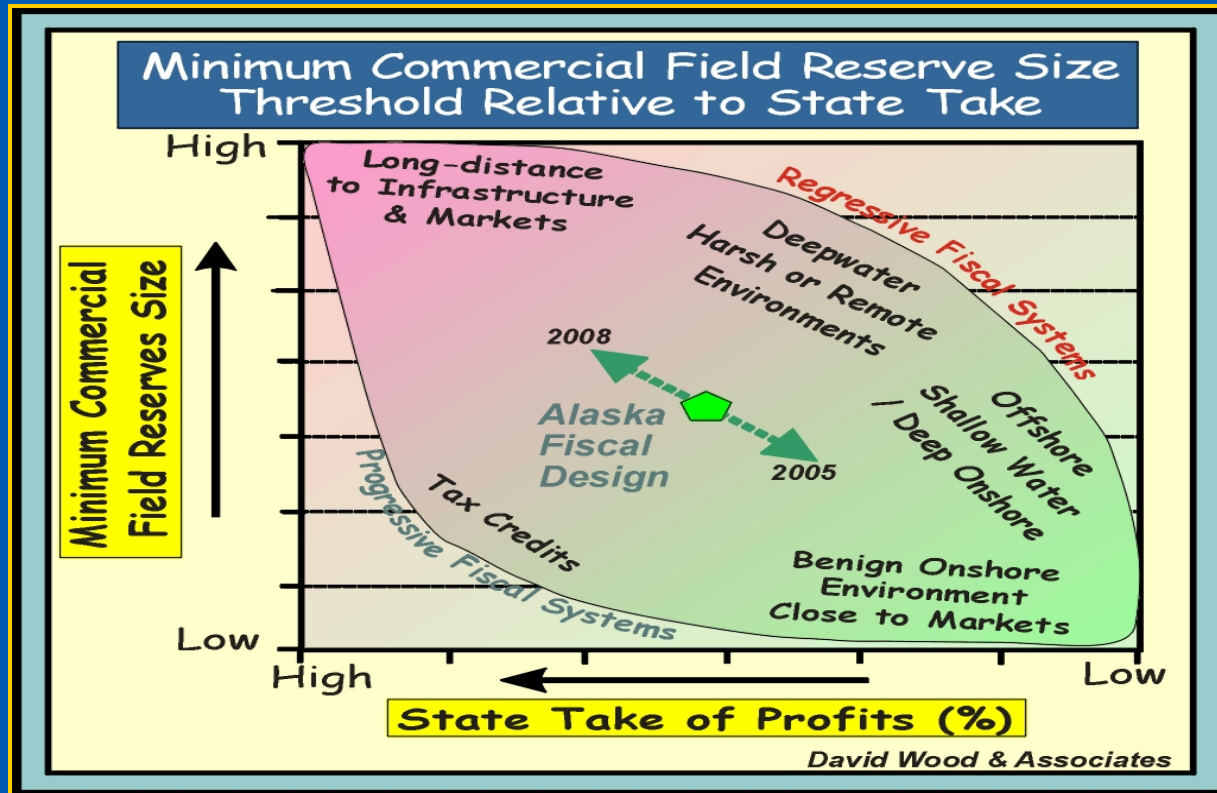
As project profitability decreases under a regressive fiscal system, either due to higher costs or lower revenues derived from lower product prices, a government's fiscal take in percentage terms increases.



Regressive Fiscal Designs Increase Minimum Commercial Field Sizes



Tax credits can help offset some regressive fiscal elements.



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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:

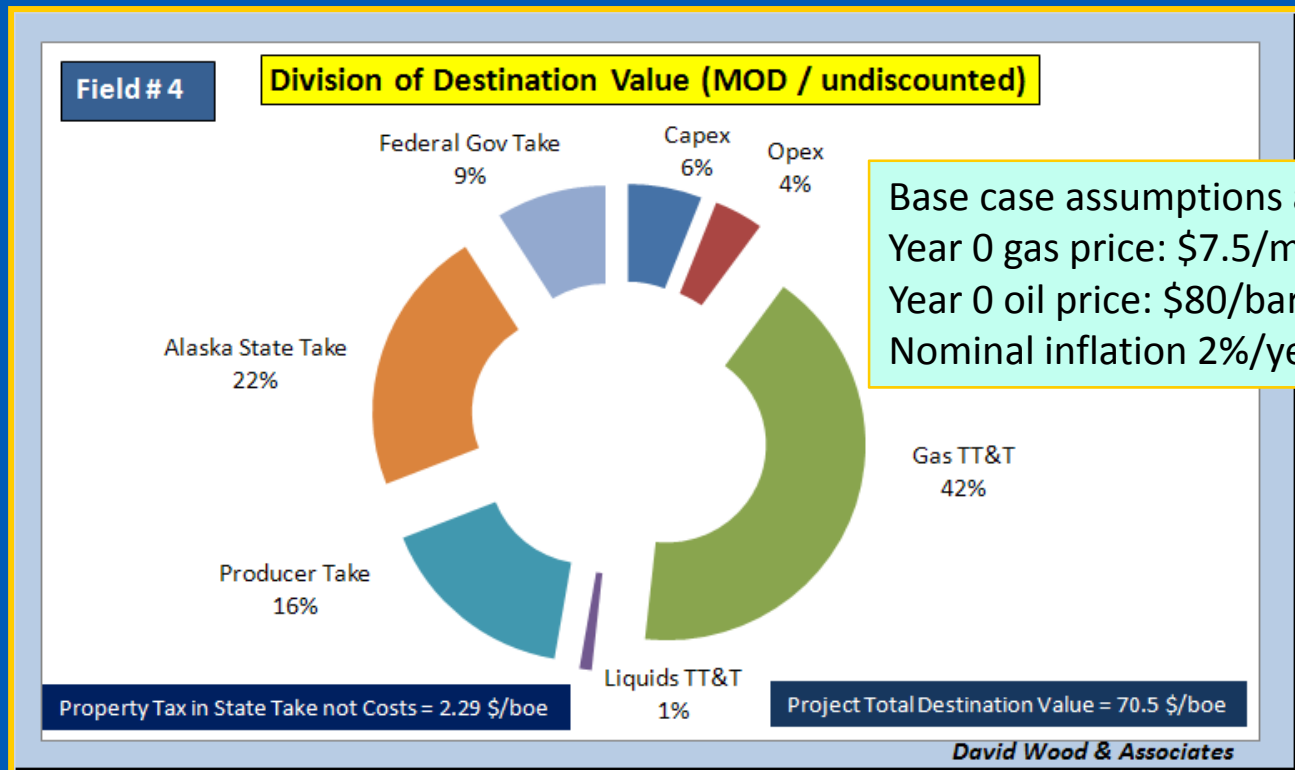
- Investment credits (exploration and development)
- Production taxes (levied after deduction of all allowable costs)
- Progressivity tax (only levied on high value streams)

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

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.



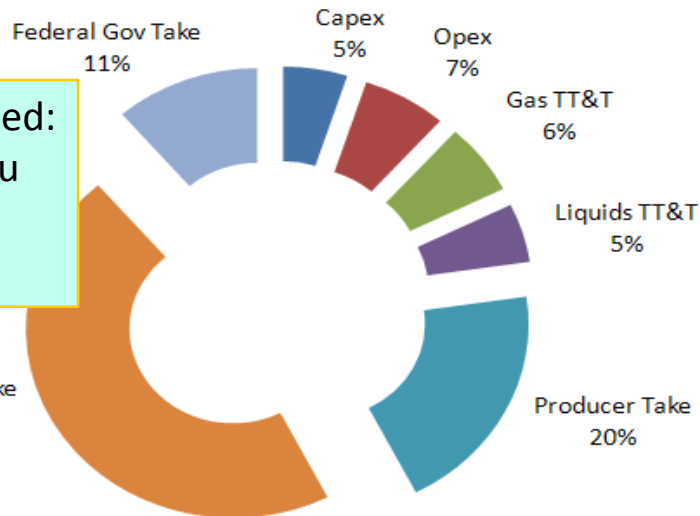
Large Oil Field: Division of Destination Value



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

Field # 10

Division of Destination Value (MOD / undiscounted)



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

Property Tax in State Take not Costs = 1.37 \$/boe

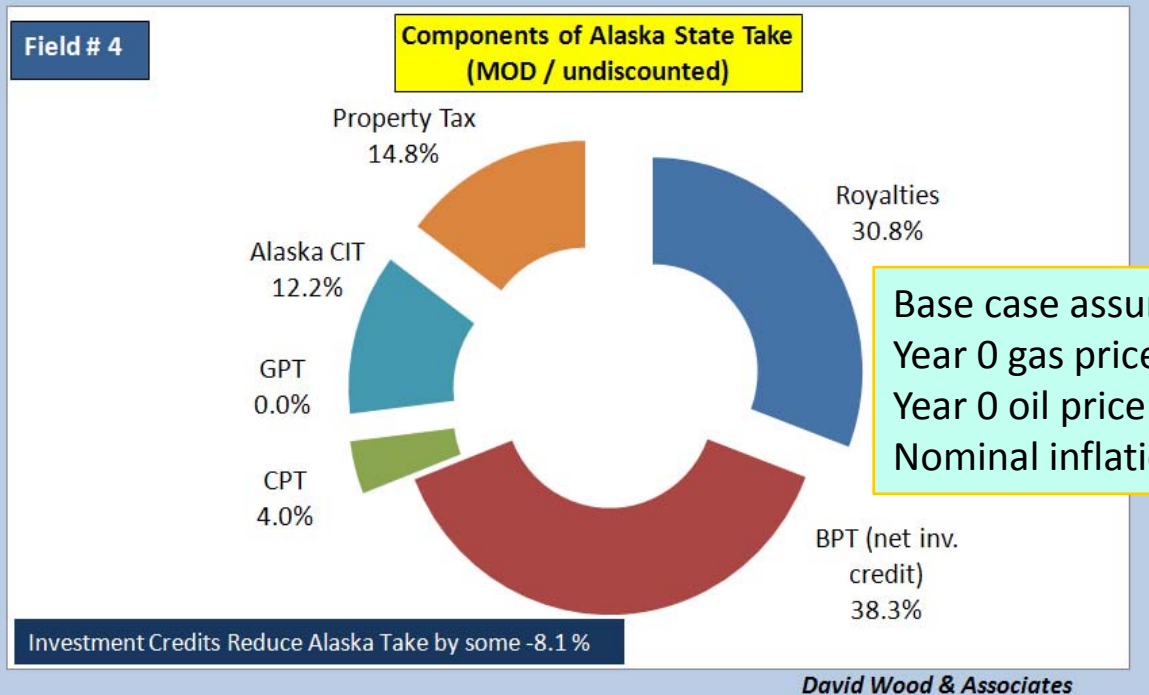
Project Total Destination Value = 103.6 \$/boe

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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.



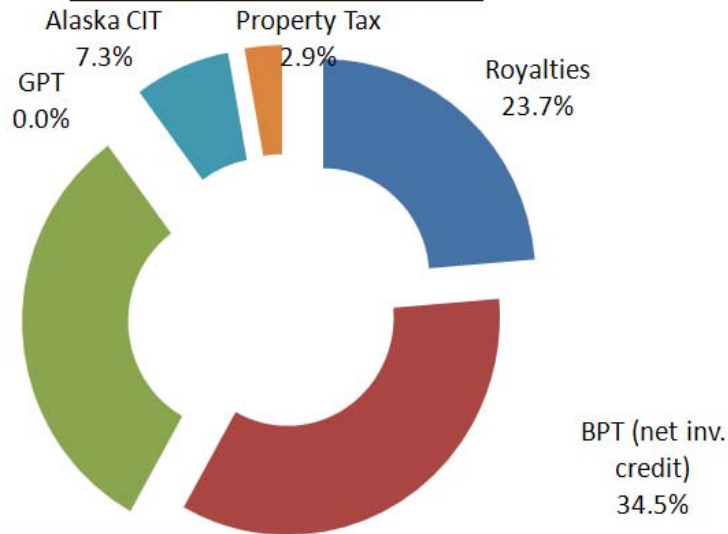
Components of Alaska State Take for Large Oil Field



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

Field # 10

Components of Alaska State Take
(MOD / undiscounted)



Investment Credits Reduce Alaska Take by some -8.1 %

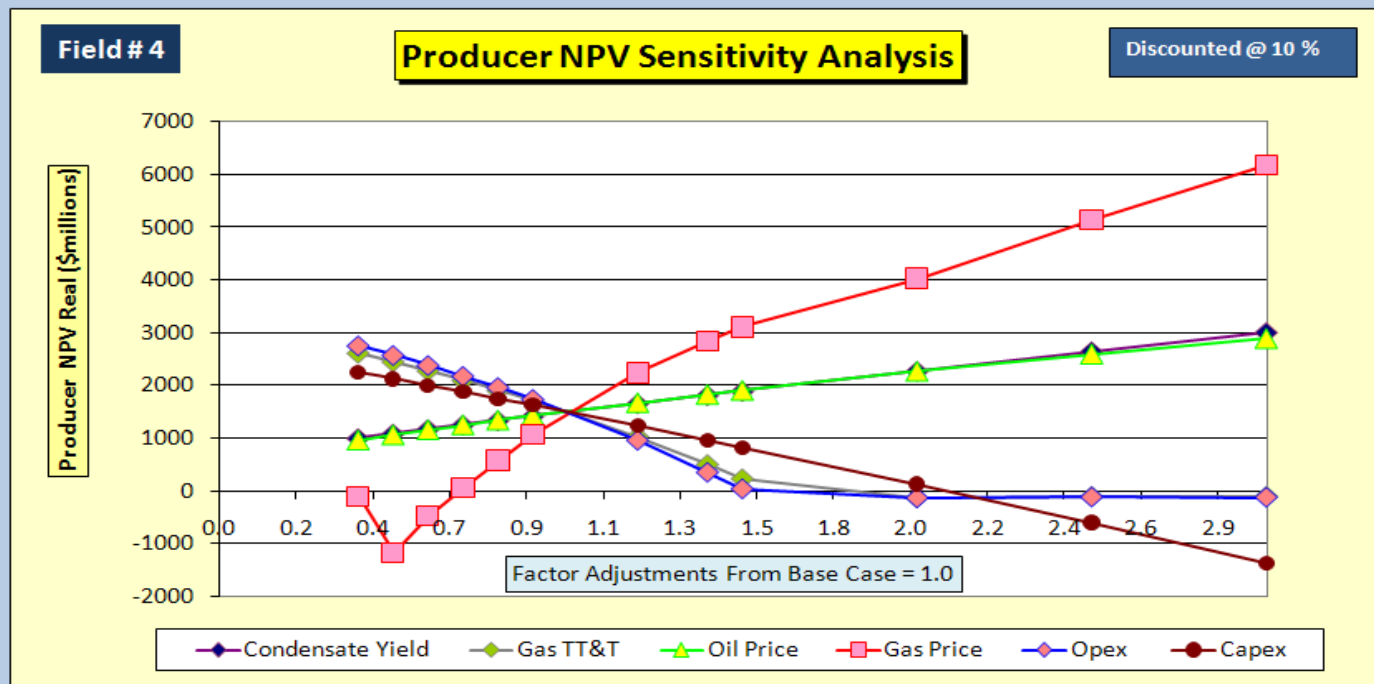
Base case assumptions applied:
Year 0 gas price: \$7.5/mmbtu
Year 0 oil price: \$80/barrel
Nominal inflation 2%/year

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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.



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Fiscal Instability and Fiscal Credibility



The IOCs have experienced unprecedented fiscal instability around the world in recent years coupled with greater political uncertainty.

- There are different degrees of fiscal instability culminating in the extreme in expropriation of assets.
- Milder forms of instability involve changing fiscal terms with various degrees of retrospective impacts on existing leases and contracts.
- IOCs are facing more competition from NOCs to access large oil and gas reserves and political manipulation by governments.
- Such factors make the U.S. (and other OECD countries) more attractive regions for risk investment where large reserves exist.
- Although issues of fiscal stability and credibility remain important and take time to establish they are only one of several factors that will influence IOC investment decisions in upstream developments.

Guarantees of Fiscal Certainty



IOCs often seek fiscal certainty in exchange for committing to very large investments in strategic infrastructure and reserves development.

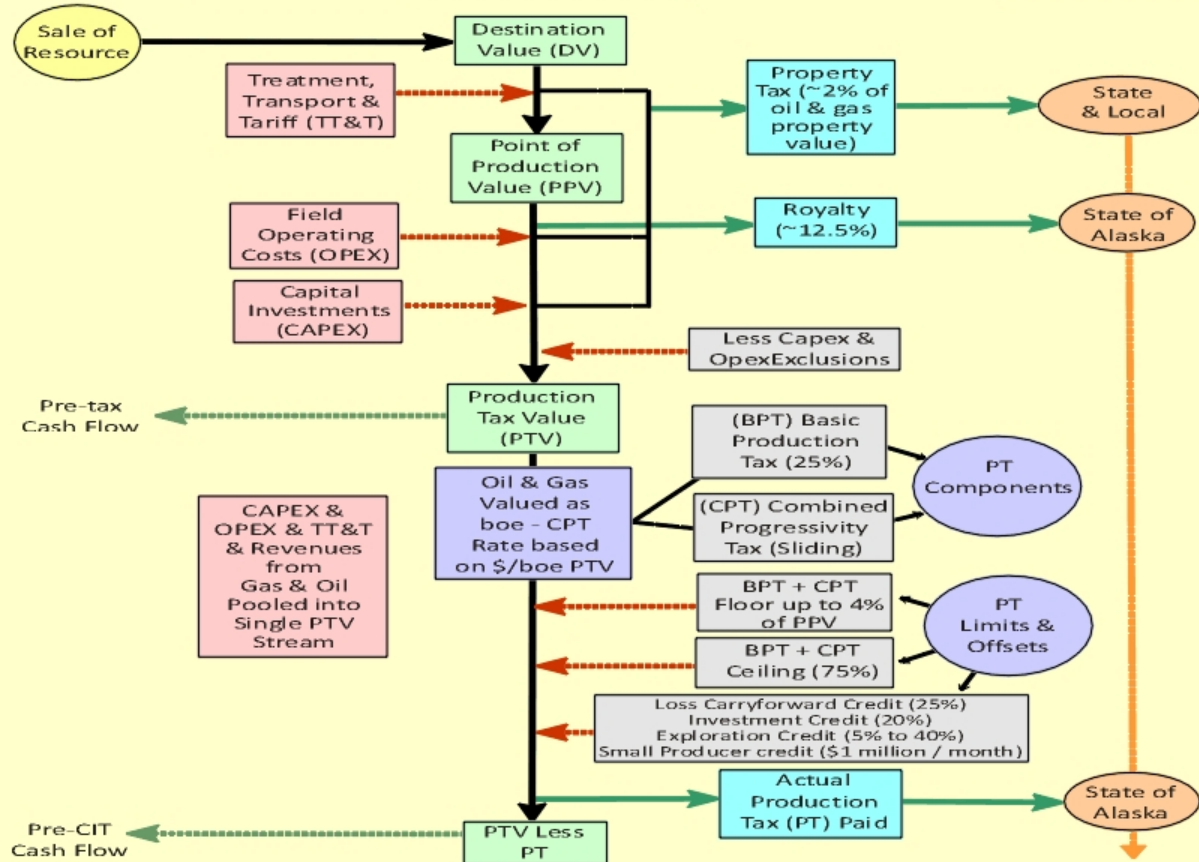
- Issuing such guarantees is risky for governments.
- Implementing a flexible and progressive fiscal design is a better approach
- Clear, pro-commercial fiscal strategy statements improve confidence
- If guarantees are offered they should involve:
 - limited time periods
 - reciprocal commitments from IOCs to place ceilings on costs
 - more regressive fiscal elements than if no guarantees given
- Retaining the right to adjust fiscal terms enables governments to periodically change the fiscal design to respond to market conditions.



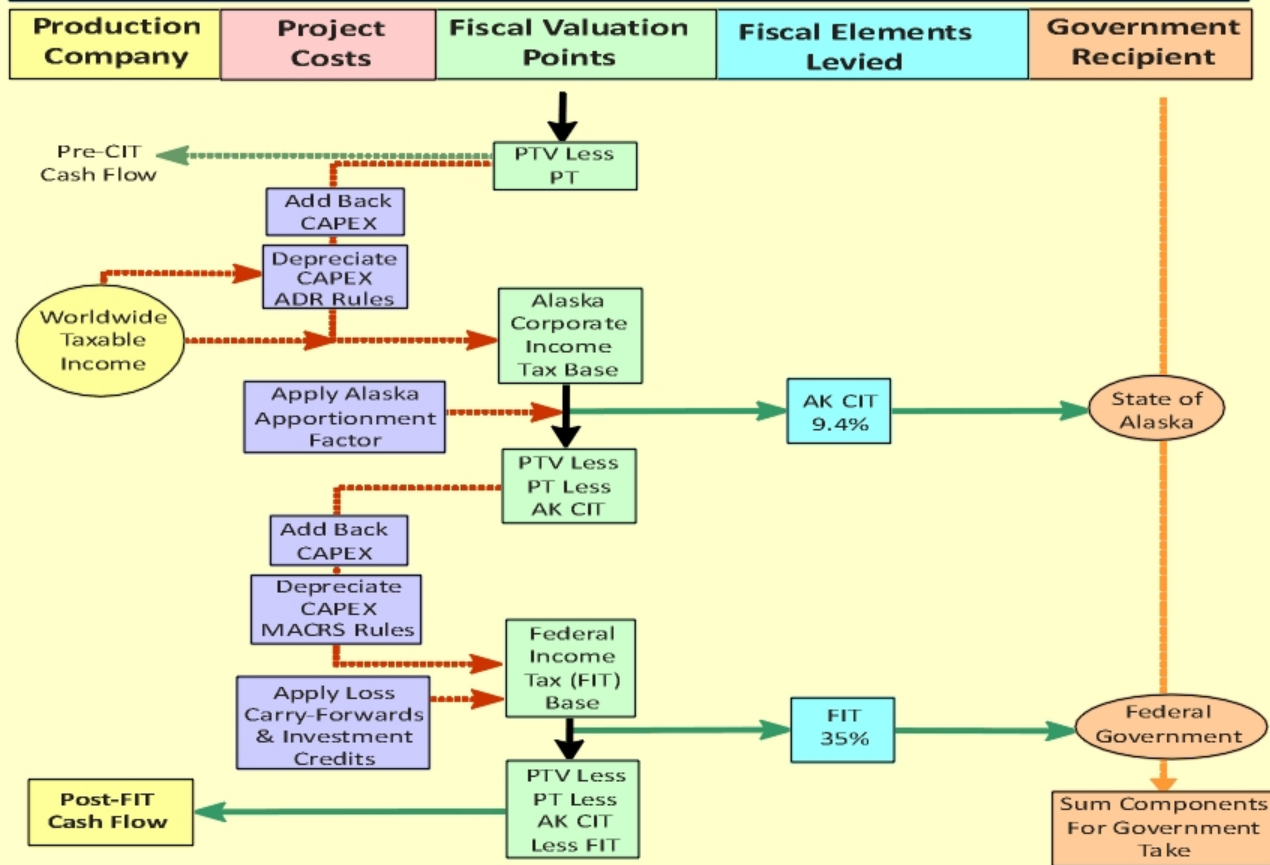
What are the fiscal options worthy of
consideration by Alaska?

Alaska Oil & Gas Fiscal Take & Funds Flow Diagram 2008 - Status Quo (Oil-focused Fiscal Design)

Production Company	Project Costs	Fiscal Valuation Points	Fiscal Elements Levied	Government Recipient
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Alaska Oil & Gas Fiscal Take & Funds Flow Diagram 2008 - Status Quo (Oil-focused Fiscal Design)

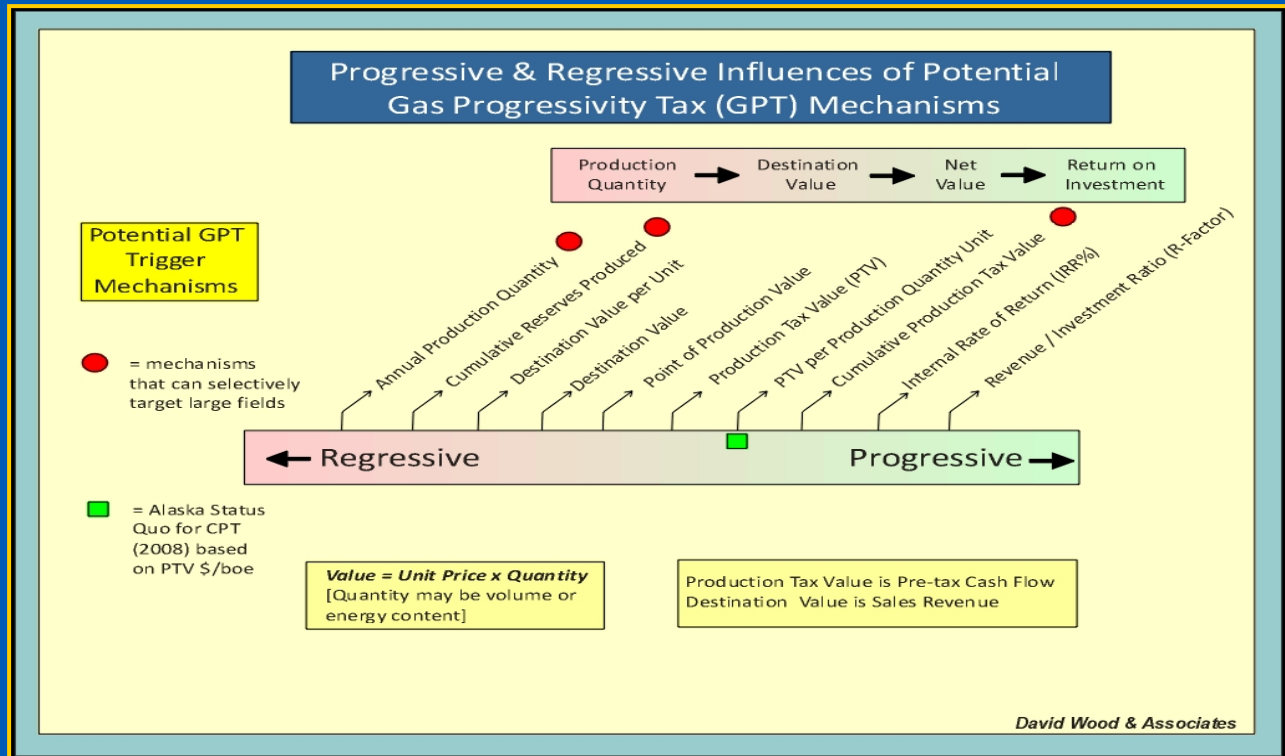


Post FIT Cash Flow plus CAPEX plus OPEX plus TT&T plus Government Take = Destination Value

Alternative Trigger Mechanisms For Gas Progressivity Tax



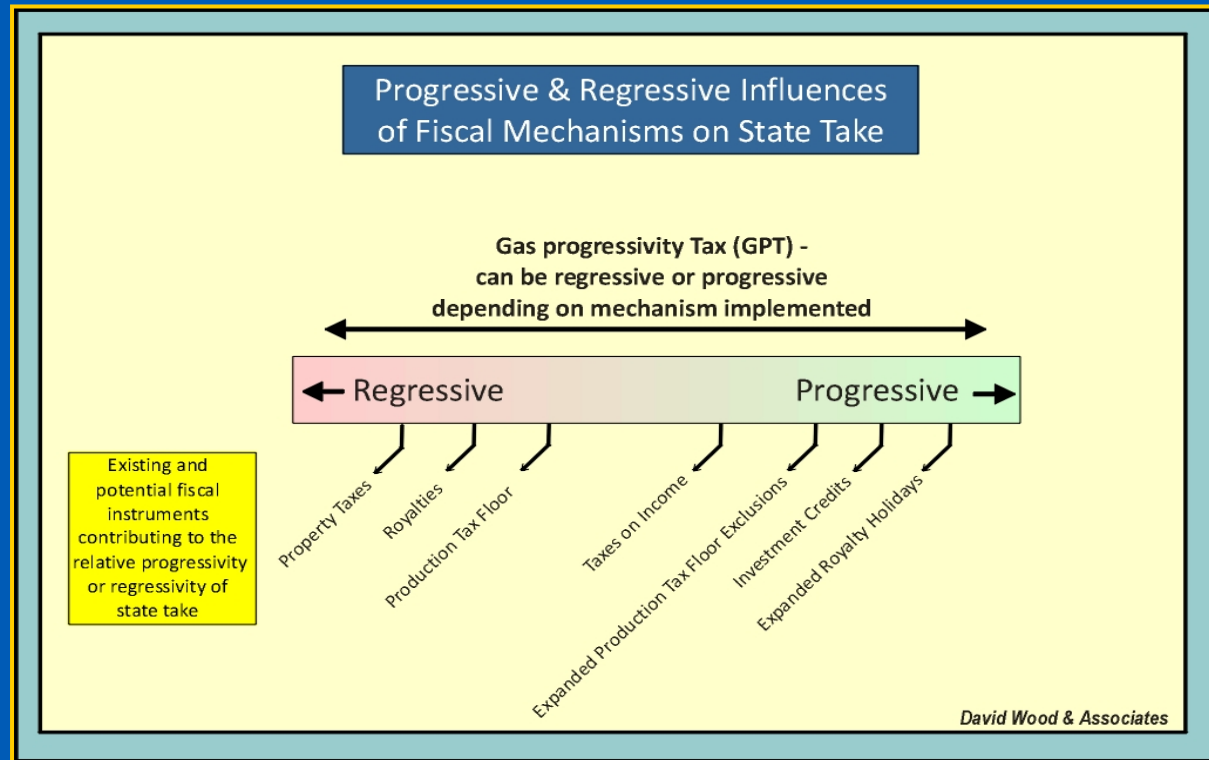
Net and return on investment mechanisms are more progressive. Current Alaska mechanism would work if triggered by gas units rather than boe.



Progressivity Tax Can be Either Progressive or Regressive



Net impact of progressivity tax on the overall fiscal design will depend upon how its effects are moderated by other fiscal elements.



Integrated Upstream & Downstream Fiscal Designs



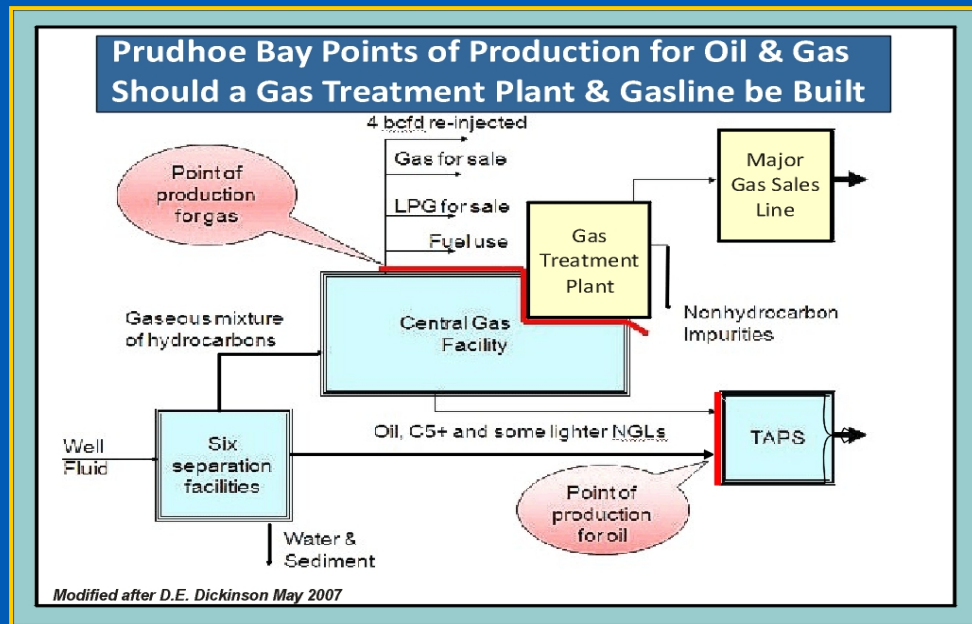
IOCs have demonstrated more enthusiasm around the world for downstream infrastructure project investments that are integrated with development of upstream resources (e.g. Algeria, Nigeria, Russia, Qatar etc.).

- IOCs have signed up around the world to progressive systems with high marginal government takes (with significant government equity shares) when gas values are high and with limited access to reserves.
- They have been more likely to do so when:
 - there are incentives and/or allowances available to compensate for regressive elements when gas values are low or during field development phases.
 - integrated upstream and downstream projects granting them exclusive access rights to those resources (limited TPA).
 - terms are controlled by contracts.

Defining the Point of Production – Upstream versus Downstream Costs



Upstream and downstream fiscal designs are separated in Alaska by the point of production. Definition of the point of production may require careful consideration in the case of some complex projects such as gas gathering and re-injection or carbon dioxide capture and sequestration.





How can the performance of fiscal
instruments be measured?

Alaska Oil & Gas Production Tax Funds Flow Diagram 2008 - Status Quo (Oil-focused Fiscal Design)

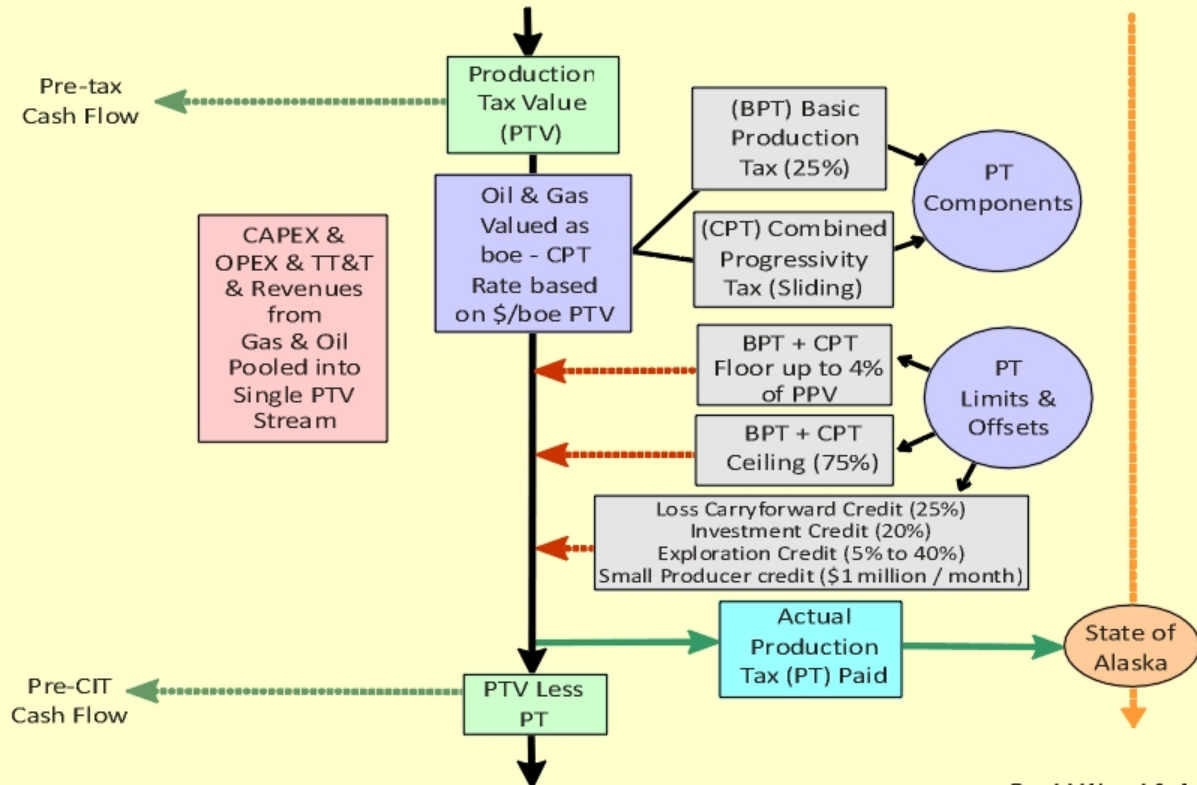
**Production
Company**

**Project
Costs**

**Fiscal Valuation
Points**

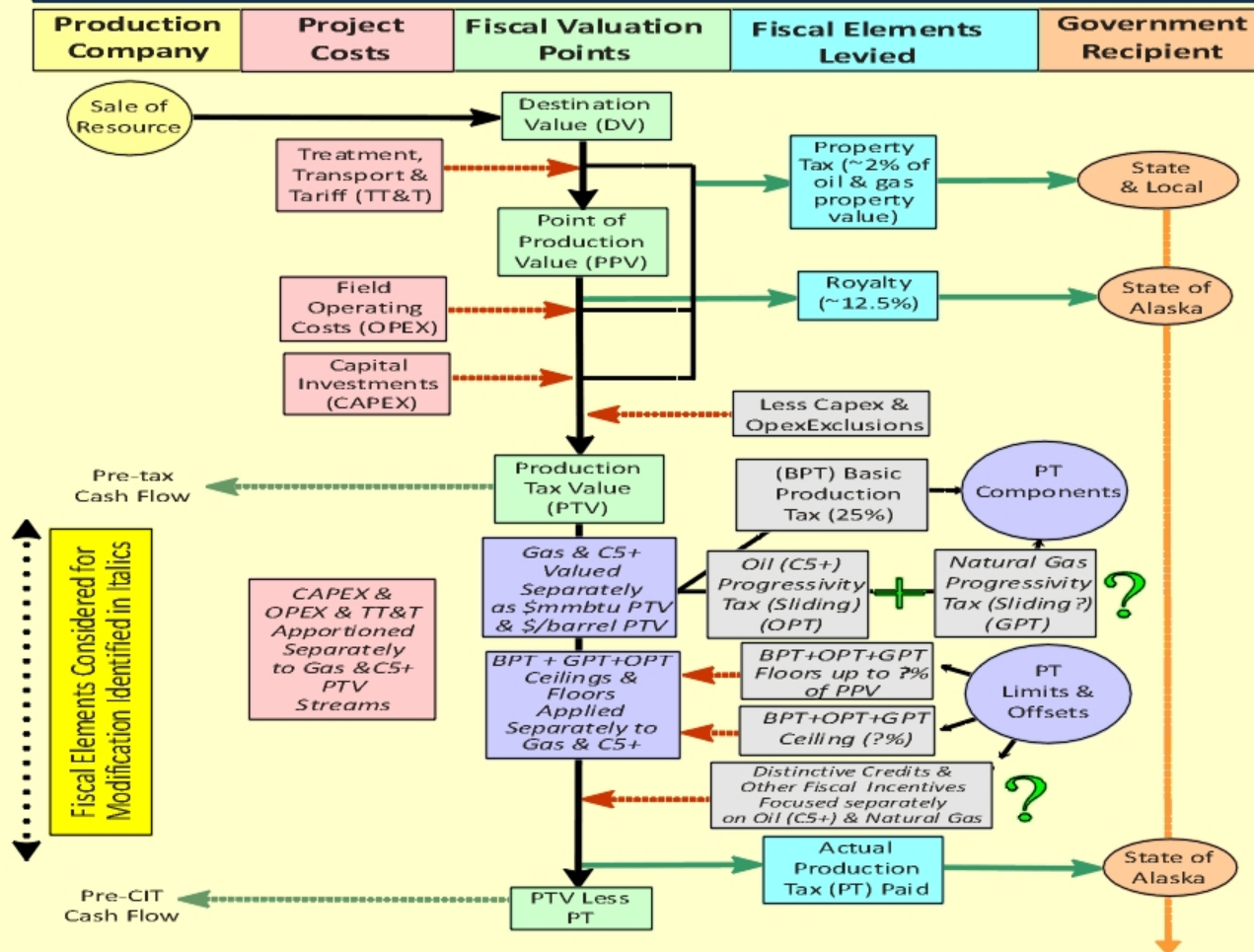
**Fiscal Elements
Levied**

**Government
Recipient**



Alaska Gas & Oil Fiscal Take & Funds Flow Diagram

Natural Gas & Oil (C5+) - focused Fiscal Design



Alternative Drivers of Gas Progressivity Tax Evaluated by Fiscal Model



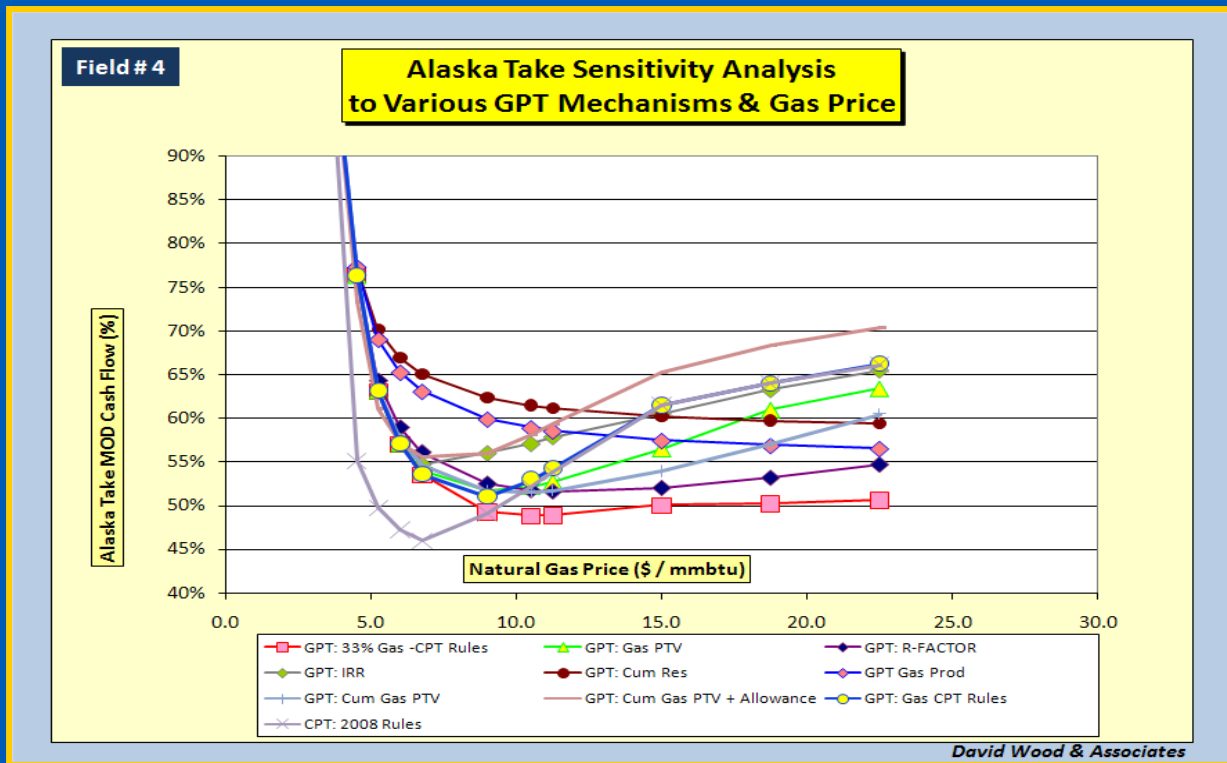
Ten different mechanisms are evaluated. No.1 represents the status quo evaluating gas progressivity as a combined revenue stream with oil (boe).

1. CPT: 2008 Rules (combined PTV/boe)
2. GPT/OPT: separates gas and oil on PTV/boe scale
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

Ten Progressivity Mechanisms: Sensitivity Analysis



A large gas field (5 tcf reserves) illustrates the impact on Alaska's state take of cash flow of the ten progressivity mechanisms at different oil prices.





Recommendations of preliminary study

Approaches to Fiscal Design that can improve Performance & Credibility



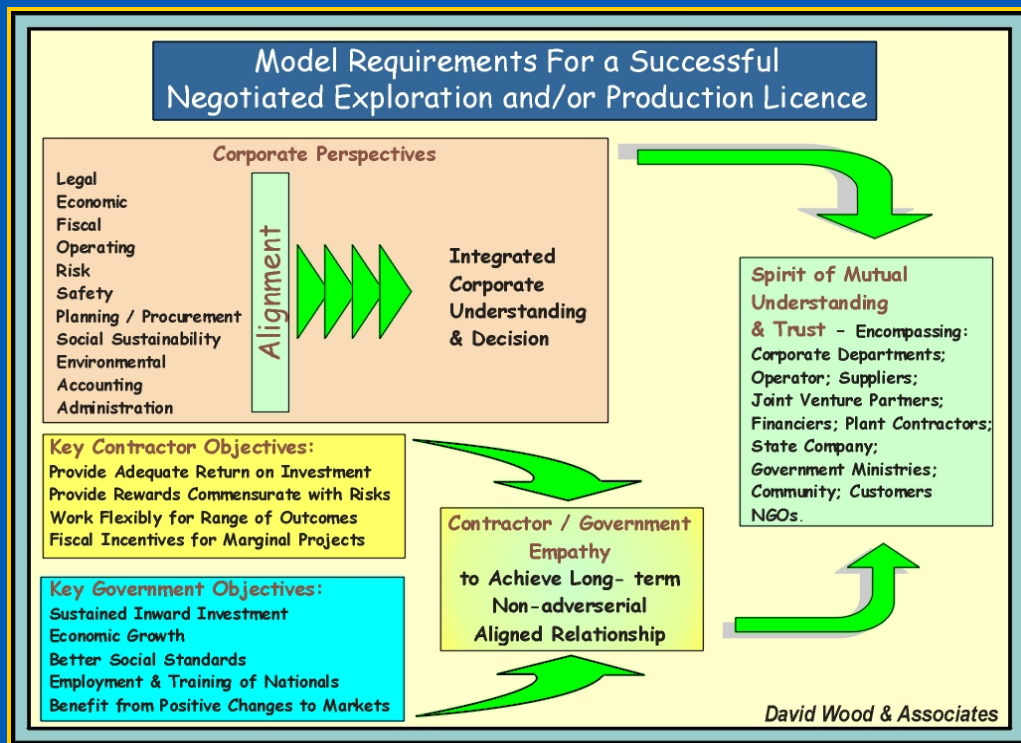
The following are selected recommendations for Alaska from the report:

- 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
- Consider offering allowances focused to offset regressive elements
- Aim to clarify and optimize fiscal revenue streams from NGLs
- Consider state equity involvement in infrastructure projects
- Involve cost control components to some fiscal incentives
- Apply time constraints to new leases to develop resources

Alignment between Government and Producer Objectives



Alignment of purpose should be taken into consideration when formulating fiscal designs. Win-win outcomes take a long-term view to achieve.



Influences on Fiscal Design



Technical, economic and risk analysis will determine whether fiscal designs on offer provide acceptable levels of return to justify IOC investment.

