
Petroleum Taxation Design

CASTLE**GAP**



Castle Gap Advisors, LLC.
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House Resources Committee

First Presentation Summary

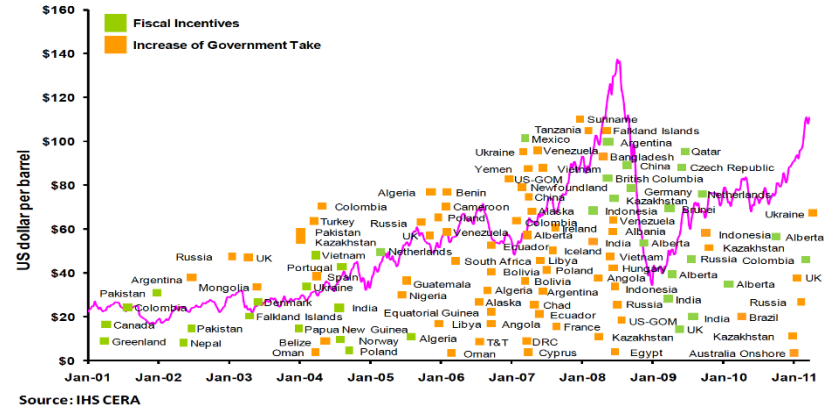
Message Summary from First Presentation

- Here are the key takeaways from the materials presented last week
 - Change in the industry is constant, including government taxation terms
 - Fiscal changes should be structured as per a set of long term guiding principles
 - Any increase in government take or reduction of credits/incentives is by definition a reduction of the value to the producer
 - Industry participants can help create a more durable and stable set of fiscal terms by helping decision makers understand, with a degree of specificity, current operations as well as what might be possible
 - New players should be encouraged to increase activity in the state as they bring a fresh perspective to unlocking unconventional plays and upside potential from otherwise mature plays
 - Almost all regime to regime comparisons do not tell the whole story, so questions should be asked to understand what comparison factors were included
 - When looking across the globe, there are numerous different ways in which overall petroleum fiscal systems are structured, typically based on the nuances of the host country

Petroleum Taxation Change Chart

- Thank you to AOGA for supplying the updated chart on regime change
- The intent was not to withhold information from or mislead the committee, or to serve a particular agenda
- The purpose of the slide titled “Alaska Is Not the Only Government Changing Taxes”, was not used to inform members as to specific changes, nor the direction of those changes, but to show that governments change fiscal terms fairly often, some more often than others
- The number of governments changing their tax is proportional to the degree of volatility in oil pricing
- Changing your fiscal system does not necessarily make you “unstable”, but making changes that are not responsive to price levels and competitive actions likely will have your regime viewed as unstable

Figure 1: Government Action Reflecting Commodity Prices



Source: AOGA via IHS

One Last Set of Takeaways

- Each taxing regime is to an extent unique, thus there is no ‘ideal’ structure for taxing oil and gas
 - Over time some aspects or tools have consistently worked better than others
- Regimes generally try to level the playing field or provide as much balance as possible between:
 - Incumbents and new operators
 - Large companies/producers and small companies/producers
 - Exploration for new resources and production enhancement of existing fields
- However, all petroleum taxation structures in use today have biases
 - Smart companies will exploit those biases, which sometimes leads to unintended results

Alaska Strategic Petroleum Taxation Design Goals

Alaska Strategic Petroleum Taxation Design Goals

- Based on testimony given in regards to HB 111, there appears to be a strong degree of alignment as to certain long term strategic goals for Alaska's petroleum taxation policies:
 - Keep oil flowing through TAPS as long as possible
 - Encourage the exploration for and development of new fields
 - Encourage new operators to come to Alaska
 - Understand and capture upside value from existing fields
 - Create a durable petroleum taxation system

- Alaska has great rock but a relatively high cost structure and long lead times to bring significant new supply into production
 - These risks for producers need to be offset to some degree by favorable taxation features

Near-Term Issues

- Working within the context of the longer term goals, new legislation such as HB 111 is being offered to address:
 - Keeping industry activity and flowing production as high as possible during a period of low to negative margins
 - Ensuring a steady flow of income to the state from hydrocarbon production
 - Seeing if there is a way to offer incentives without burdening the state with cash reimbursement payments

Where Does Alaska Stand Now?

Where Does Alaska Stand Now?

- Alaska Compared to Lower 48: Petroleum Taxation Terms
 - Royalty
 - In line with older leases
 - Favorable when compared to new leases
 - However in the Lower 48, many new leases have ‘drill or drop’ clauses, which will force spending and activity on those leases if acreage is believed to be productive
 - Effective tax rate
 - One of the lowest at lower price levels
 - Competing mainly against gross based severance taxes
 - Exploration and Production Credits
 - Very unique and valuable to the oil companies
 - Other unique aspects
 - Different taxation structures depending on location
 - Substantial tax credits for exploration and production, including cashable credits
 - ‘Monthly’ taxation

Where Does Alaska Stand Now?

- Alaska Compared to Lower 48: Relative Risks
 - A higher cost environment
 - Harsh weather conditions
 - Remote locations
 - Environmentally sensitive areas
 - Economies of scale
 - Potential reservoirs are larger
 - But, require significant capital outlay and long lead time to production
 - Stability of the petroleum taxation system
 - Are changes in the right direction at the right time
 - Many moving parts, complex to operate under and administer
 - Generally TAPS is the only outlet for production
 - Commercially competitive access for all producers
 - Unpredictable tariff levels

Self-Correcting Mechanisms

Why Use Self-Correcting Mechanisms?

- At the time of enactment, governments believe their system will provide the right balance of incentives and government take for the foreseeable future
- However, the future often brings unintended results
 - Prices can vary much higher or lower than the range of prices analyzed during the development of the fiscal policy
 - Interdependencies of input variables, such as costs and price, are often ignored for modelling and presentation simplicity
- Many different ‘tools’ and methods have been developed to try and make taxation systems self-correcting so as to minimize the unintended consequences

Self-Correcting Mechanisms

- If we go back to petroleum taxation theory, the idea is for producers to receive a return of their costs and a fair return on their investment with government to receive the remainder
 - In reality, determining fair return on investment for the producer is equally challenging as determining a government's fair share
- In practice, taxation terms are set prospectively, i.e. guessing about the future, and not retrospectively with 20:20 hindsight
- A number of mechanisms have been developed and put in practice to allow fiscal systems to adapt to changing market 'reality'
 - Most are profit-based tools like rate of return and return on investment
 - Can be on a discounted or undiscounted basis
 - Calculations can be done annually or shorter periodic basis
 - Changes in taxation related to metrics can be shaped as fixed, bracketed, S curve
 - With S curve the rate of change in tax relative to profitability is low at low profitability and high at higher profitability

Alaska Should Consider a Self-Correcting System

- Alaska petroleum taxation is a combination of gross and net taxes along with trigger elements based on both price and margin
 - Leads to complexity and unintended results
- To create durability, outside of royalty there should be a net based system that uses triggers based on margin and not price
 - A margin or profit based system provides for ‘predictability’ for potential new capital spending
 - Shows producers that the state will proportionally share the pain of low prices and low margins and the gain of high prices and high margins

Alaska Example of Unintended Consequences

- The current minimum gross tax is based on the ANSWC market price less shipping and transportation (or the Gross Value at Point of Production)
 - 4% above \$25/bbl GVPP
 - 3% at \$20 to \$25/bbl GVPP
 - 2% at \$17.50 to \$20/bbl GVPP
 - 1% at \$15 to \$17.50/bbl GVPP
 - 0% below \$15/bbl GVPP
- This was designed and put in place at a time when the opex plus capex per barrel were well under \$15/bbl
 - Essentially, there would not be any minimum tax payable when the producer was operating at a loss
- Today, the opex and capex costs have grown to approximately \$30/bbl
 - This results in the possibility of producers being charged a minimum tax when they are operating at a loss

Alaska Example of Unintended Consequences

- At the time the minimum tax was established shipping and transportation was \$5/bbl and costs totaled \$15/bbl. Converting the GVPP brackets for the minimum tax:
 - The maximum 4% gross minimum tax would apply at roughly \$30/bbl ANSWC, **\$25/bbl GVPP**, \$10/bbl PTV
 - The minimum 0% gross minimum tax would apply roughly below \$20/bbl ANSWC, **\$15/bbl GVPP**, \$0/bbl PTV
- If the same general design concept was used under the current cost structure of \$10 shipping and transportation and \$30/bbl costs
 - The maximum 4% gross minimum tax would apply at roughly \$50/bbl ANSWC, \$40/bbl GVPP, \$10/bbl PTV
 - The minimum 0% gross minimum tax would apply roughly below \$40/bbl ANSWC, \$30/bbl GVPP, \$0/bbl PTV
 - Basically the curve has shifted \$20/bbl

Alaska Example of Unintended Consequences

- This chart exemplifies how quickly things can change from when particular legislation was passed
- A net based set of parameters, e.g. basing the brackets on PTV instead of GVPP, would have automatically adjusted for the inflation in costs

	Spending (\$millions)	Production / day (000)	Production / Year (million)	Per Barrel		
				Tarriff & Transport	Opex & Capex	Total Cost
2007	3,201	734.2	268.0	\$ 5.40	\$ 11.94	\$ 17.34
2008	3,560	715.4	261.1	\$ 6.05	\$ 13.63	\$ 19.68
2009	3,688	692.8	252.9	\$ 6.38	\$ 14.58	\$ 20.96
2010	3,525	642.6	234.5	\$ 6.01	\$ 15.03	\$ 21.04
2011	3,858	599.9	219.0	\$ 6.67	\$ 17.62	\$ 24.29
2012	2,975	579.3	211.4	\$ 8.37	\$ 14.07	\$ 22.44
2013	4,442	531.6	194.0	\$ 9.76	\$ 22.89	\$ 32.65
2014	5,212	530.4	193.6	\$ 10.42	\$ 26.92	\$ 37.34
2015	5,615	501.0	182.9	\$ 9.72	\$ 30.71	\$ 40.43
2016	4,842	514.9	187.9	\$ 9.88	\$ 25.76	\$ 35.64

Source: DOR, Ken Alper

Another Possible Unintended Consequence

- The table below compares an NOL to credit conversion tax rate on the left with varying effective net petroleum tax rates (after per barrel deductions) across the top of the table
- For example, an operator that received a 35% credit for an NOL, who applies that against their tax bill when the effective rate is 35%, is indifferent to the NOL or the credit
- But, if their effective tax rate was 10%, then the 35% credits will shield from taxable income 3.5 times the amount of the loss that generated the credits

Income Shielded by Tax Credit (Uplift)

Spend		Effective Tax Rate %						
100		10	15	20	25	30	35	40
Credit %								
10	100	67	50	40	33	29	25	
15	150	100	75	60	50	43	38	
20	200	133	100	80	67	57	50	
25	250	167	125	100	83	71	63	
30	300	200	150	120	100	86	75	
35	350	233	175	140	117	100	88	
40	400	267	200	160	133	114	100	
45	450	300	225	180	150	129	113	
50	500	333	250	200	167	143	125	

Options for Consideration

Options to Consider

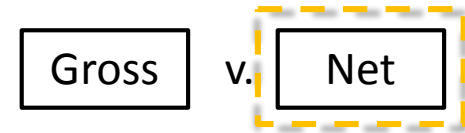
- Build on the current net approach and adapt to a ‘self-correcting’ system
 - Based on margin instead of price
 - Low base rate with upward progressivity not a high base rate with negative progressivity
 - Eliminate GVR and per barrel credits

- The state is essentially an indirect investor in all projects as costs are deductible against state taxation
 - Use carry forward losses instead of cashable credits
 - This will push state income into the later years of a project with no cash out up front
 - Ensure all costs are reasonable and justified
 - Ensure easy access for new players into existing facilities, prevent unnecessary duplication

- Continue to offer top quartile, if not top decile, exploration and investment incentives to attract new players and investments
 - Switch to deductions against project revenues versus cashable credits
 - In certain situations, for example a dry hole and where the oil company will never have revenues against which to use the losses, allow for credits that can be cashed
 - Consider some form of uplift to account for time value of money
 - Tie all credits or uplifts to a minimum level of data transparency

Overall Structure – Gross versus Net

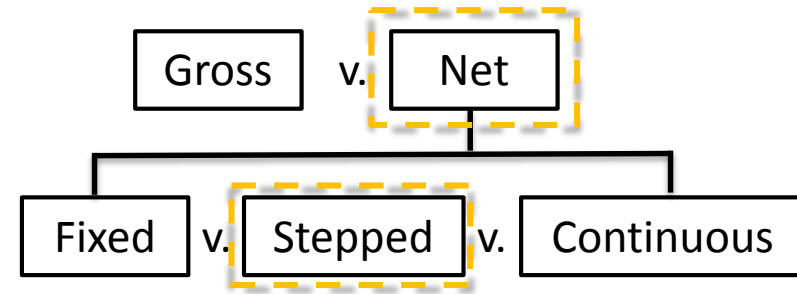
- Regimes that depend on energy to fund their treasury have royalty based systems
 - Those where it represents a small portion usually eliminate royalty
- Alaska already has a gross component to its take, i.e. royalty
 - Would not suggest going any higher
 - The remainder of its taxation should be net
- Royalty characteristics
 - Very regressive at very low margins
 - A hurdle that must be overcome by any new investment
 - When minimum tax puts operators at an operating loss, they could possibly reduce oil flow so to reduce losses



Overall Structure – Net Options

■ Net Options

- **Fixed:** one tax rate across all margins
- **Progressive:**
 - **Continuous** like ACES
 - **Stepped Brackets** like personal income tax



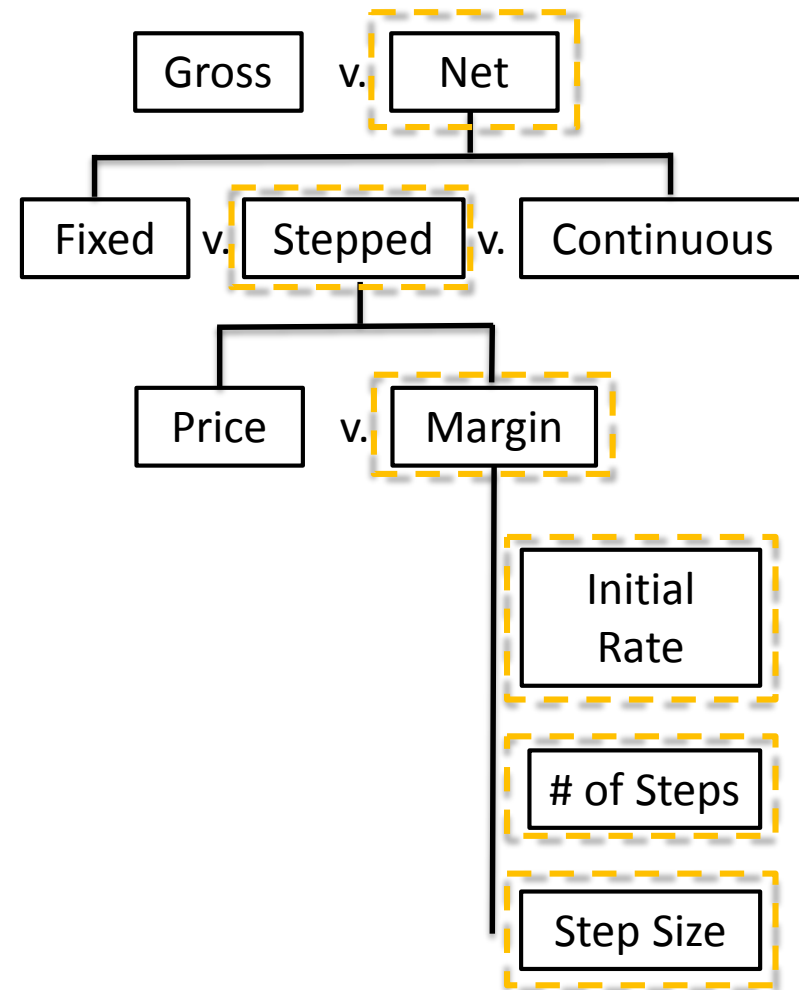
■ Characteristics of each option

- **Fixed** tends to over collect at low margin and significantly under-collect at high margins
- **Continuous** creates unrealistic marginal tax rates and essentially removes all upside for the operator thereby lessening likelihood of investment
- **Stepped** allows for low take when profits are low and higher take when profits are large

A net tax with progressive brackets allows for the petroleum fiscal system to be market responsive without the need for a number of credits or adjustments

Net System With Stepped or Bracketed Progressivity

- Any trigger points or brackets should be based on **margin or profit** and **not oil price**. Margin automatically 'adjusts' for changes in the overall energy markets and industry
- For a net based system, determine
 - Starting tax rate that resembles the effective rate after all the credits
 - Number of steps (3 min, 8 max)
 - Size of the step in terms of margin and tax rate change
- Just a Reminder:
 - Every dollar of profit not taken as state petroleum tax does not go straight to the operators' bottom line as it will have state and federal corporate income tax assessments



How to Build a Bracketed Net Tax

- Table below is just an example (**not a recommendation**) of progressive tax steps that delivers state take and producer take at levels similar to those under the current SB21 based system
 - Does not include any GVR or per barrel credits
 - Based on PTV
 - Self corrects for differences in project size and differential project cost structures

Production Tax Value		Base Tax	Tax Rate	Max Tax Owed	Effective Tax Rate
>	<=				
0	20	0	10%	2	10%
20	40	2	20%	6	15%
40	50	6	30%	9	18%
50	60	9	40%	13	22%
60	70	13	45%	17.5	25%
70	100	17.5	50%	32.5	33%

Example of Self-Correcting Nature

- Example: Using the table on the previous slide:

Oil price at \$80 ANSWC
~\$70 GVPP

- **Legacy field with \$30 costs**
 - \$40 PTV and effective tax rate of **15%**
- **New field with \$40 costs**
 - \$30 PTV and effective tax rate of **12.5%**
- **Unconventional heavy oil or shale field with \$60 costs**
 - \$20 PTV and effective tax rate of **10%**

Gas price \$6/Mmbtu or
\$36/BOE (at 15:1)

- **CI gas field with \$3/MMbtu costs, or \$18/BOE**
 - \$18 PTV and an effective tax rate of **10%**

Evening Session

- For this evening's session will be able to show live, interactive models for
 - A net based bracketed system
 - Relationship between cashable credits, carry forward credits and carry forward NOLs

Summary

- A mainly net based petroleum taxation system that automatically takes less at low margins and more at high margins would compete extremely well against most all other regimes
 - Lower 48 and rest of the world
- Simplification is possible while maintaining desired differences
- Operators should be allowed to recover their costs and NOLs
 - First from production based income
 - With some form of uplift to account for time value of money
 - Drastically reduce cashable credits by limiting the circumstances under which they can be claimed

Appendix

Professional Experience

Petroleum Taxation

Developing Fiscal Policy – Personal Learnings

- Worked with government bodies of all types and from all sorts of backgrounds
 - Highly educated, sophisticated, energy smart
 - Educated, sophisticated but limited to no prior oil and gas experience
 - Limited formal education, e.g. ex freedom fighters from the jungle
- Despite the past experience and learnings that have been brought to an assignment, a number of governments choose, for a variety of understandable reasons, to nonetheless pursue a pathway different to what was recommended
 - Make sure design goals, and tradeoffs, as well as key issues associated with chosen path are agreed and widely understood as much as is possible
 - Support client as much as is allowed by helping them to avoid the historical shortcomings of their decided pathway
 - This is how we worked with the State of Alaska for ACES and AGIA

Government Fiscal Policy Experience

- Working for a large integrated oil company
 - US state regulatory commission testimony on market demand, down spacing, allowables
 - FERC filings and testimony related to industry restructuring Orders 451, 500 and 636 that addressed the decontrol of natural gas and the setting of pipeline access and tariffs
 - Testimony and presentations to UK, Norway, Netherlands and EU energy and competition regulators on the opening up of European natural gas markets
 - Large project government approval processes on three continents for field development, offshore pipeline, LNG liquefaction, LNG regasification and power generation

Government Fiscal Policy Experience

- Working as an advisor to governments
 - Saudi Arabia
 - Natural Gas Initiative, or the reopening of Saudi Arabia to foreign investment, regulation design for upstream and midstream, design and negotiation of production sharing agreement
 - East Timor
 - Assisted the world's then newest country and was primary advisor for creation of petroleum legislation, associated regulations, their production sharing contract; designed and executed a seismic spec shoot and the countries first formal bid round; assisted negotiations on Darwin LNG
 - Kuwait
 - Updated their services agreement to an ETSA, or Enhanced Technical Service Agreement. Led effort to put together the countries first comprehensive natural gas strategy

Government Fiscal Policy Experience

- Working as an advisor to governments, continued
 - Venezuela
 - Bid round design and execution including government take terms.
Heavy oil mega project contract design and execution
 - Trinidad, Brunei, Indonesia
 - Master [Natural] Gas Plans
 - Australia, China
 - Oil and gas taxation
 - China
 - Midstream regulation design
 - Iraq
 - Assisted oil ministry with the opening of the country to foreign investors.
Rounds 1 and 2 design and execution of bid round, fiscal terms and production sharing contract

Negotiating Project Specific Fiscal Terms

- Working for one of the largest oil field service companies
 - Negotiated terms for 25 year deal in Malaysia
 - Negotiated terms for 30 year deal in Mexico
 - Bid Round modelling in Mexico, Ecuador, Peru, Colombia

- Understanding the economics of lower 48 shale plays
 - Multiple vendor financing deals in the US shale basins
 - Expert witness on valuations for bankruptcy proceedings

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