



MODELING GOVERNMENT TAKE UNDER SB 192

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SINGLE-YEAR SNAPSHOTS VS. LIFECYCLE ECONOMIC ANALYSIS

Oil and gas fiscal systems should be judged by their performance over time, not by their returns to the state in any one year. Single-year snapshots can easily create an incomplete or even distorted picture, especially when they cover assets in different stages of development and production.

The recent discussions about the Department of Revenue's (DOR) Fall 2013 Revenue Sources Book (RSB) forecast for 2015 underscore the limitations of a single-year approach. The table below reproduces Table E-1c of DOR's RSB for a single barrel of production in FY 2015 not only under SB21 but also under Alaska's former system (Alaska's Clear and Equitable Share or ACES) as well as under an 11.5% gross production tax (the system that applies in North Dakota).

TAX ON A SINGLE BARREL OF PRODUCTION: SB21, ACES AND 11.5% GROSS TAX, RSB 2015 FORECAST ASSUMPTIONS

	SB 21	ACES	11.5% GROSS TAX
ANS WEST COAST PRICE	\$105.06	\$105.06	\$105.06
LESS: TRANSPORTATION COSTS	\$10.03	\$10.03	\$10.03
GROSS VALUE AT POINT OF PRODUCTION	\$95.03	\$95.03	\$95.03
LESS: DEDUCTIBLE OPERATING EXPENDITURES	\$17.91	\$17.91	
LESS: DEDUCTIBLE CAPITAL EXPENDITURES	\$28.08	\$28.08	
LESS: GROSS VALUE REDUCTION	\$0.40		
PRODUCTION TAX VALUE	\$48.64	\$49.04	\$95.03
PRODUCTION TAX BEFORE CREDITS	\$17.02	\$16.00	\$10.93
ESTIMATED CREDITS (PRODUCERS W/ LIABILITY)	\$6.05	\$5.62	
PRODUCTION TAX AFTER CREDITS	\$10.97	\$10.38	\$10.93

In this snapshot, and based on the 2015 forecast figures for the North Slope, we see surprising results: SB21, ACES and the 11.5% gross tax return similar levels of production tax revenue, with SB21 being the highest taxing system, followed shortly by the 11.5% gross tax, and ACES being the lowest.

In a profit-based tax system, revenues depend critically on investment / spending levels

If, however, we reproduce this table but assume lower capital spending (\$15/bbl vs. \$28.08/bbl in the previous table), we see very different results: ACES is by far the highest-taxing regime, with almost double the tax burden of the 11.5% gross tax. SB 21 is half-way in-between.

**TAX ON A SINGLE BARREL OF PRODUCTION: SB21, ACES AND 11.5% GROSS TAX,
RSB 2015 FORECAST ASSUMPTIONS BUT ONLY \$15/BBL CAPEX**

	SB 21	ACES	11.5% GROSS TAX
ANS WEST COAST PRICE	\$105.06	\$105.06	\$105.06
LESS: TRANSPORTATION COSTS	\$10.03	\$10.03	\$10.03
GROSS VALUE AT POINT OF PRODUCTION	\$95.03	\$95.03	\$95.03
LESS: DEDUCTIBLE OPERATING EXPENDITURES	\$17.91	\$17.91	
LESS: DEDUCTIBLE CAPITAL EXPENDITURES	\$15.00	\$15.00	
LESS: GROSS VALUE REDUCTION	\$0.40		
PRODUCTION TAX VALUE	\$61.72	\$62.12	\$95.03
PRODUCTION TAX BEFORE CREDITS	\$21.60	\$23.51	\$10.93
ESTIMATED CREDITS (PRODUCERS W/ LIABILITY)	\$6.05	\$3.00	
PRODUCTION TAX AFTER CREDITS	\$15.55	\$20.51	\$10.93

Impact of new investment at a time of low production. This comparison illustrates the basic difference between a profit-based production tax and a gross production tax—taxes on profits fall when spending is high. Forecast spending in 2015 is indeed high, likely due to significant new development spending at projects including Alpine satellite CD5 and at Point Thomson, and substantial new drilling and capital programs at Prudhoe Bay and Kuparak. Therefore, the forecast of over \$28/bbl in capital spending includes costs of future development not just the cost to maintain existing production.

Under Alaska's profit-based production tax (and most comparable regimes in the world), spending is immediately deductible against a producer's taxes. As such, the investment needed to turn around declining production will squeeze state finances in the intervening years before new production is on-line. This is the reason by SB21 and ACES yield similar revenues as the 11.5% gross tax system in 2015—it is the high spending that matters.

SB 21 moderates the impact of higher spending on revenues by eliminating progressivity and the 20% capital credit on spending

Spending under ACES vs. SB 21. ACES and SB21 yield lower revenues when spending is high, but ACES magnified the impact of capital spending on tax revenues in two ways. This is because not only the tax base but also the tax rate itself was set on a progressive scale based on the value of the barrel after costs were deducted—and so the higher the spending, the lower the tax rate. Secondly, by offering an additional 20% credit on capital spending, the system amplified the budgetary impact of high spending in any given year.

As such, from the state's perspective, ACES was a 'bet' on high prices and low investment—and when these conditions were true, ACES provided much additional revenue to the state. But when investment rises, the very high level of government

support for spending that ACES provided, delivers low revenues to the state. Even more re-investment in additional North Slope production would further exacerbate this effect.

SB 21 reduced the impact of capital spending in three key ways: (a) it eliminated progressivity; (b) it eliminated the capital credit; and (c) it made the 4% gross minimum tax that applied under ACES firmly binding (previously capital credits had enabled a producer to reduce their tax liability below the gross minimum). It is for these reasons that SB 21 will likely generate slightly higher revenues in 2015, based on current DOR forecasts, than ACES would have.

SB 21 still maintained a mildly progressive system overall through a sliding-scale, production-based tax credit worth \$8/bbl for production from mature fields at oil prices (net of transportation costs) below \$90, falling to zero at prices above \$160.

Single-year snapshots are useful but limited—to fully judge a fiscal system, it is important to model results on a lifecycle basis

Fiscal competitiveness and lifecycle analysis. Such snapshots can tell us roughly what revenues the treasury can expect in a given year in a range of possible circumstances. They cannot, however, tell us much about the competitiveness of a fiscal regime as viewed by companies investing in new developments. This is because companies do not view the economics of a new investment based on what their entire tax liability may be in a single year; they look at the economics of a particular asset over its entire projected life, seeking to understand both the pre- and post-tax attractiveness of an investment against a range of criteria. It is for this reason that all competitiveness analysis performed in previous years by consultants to both the legislature (PFC Energy) and the administration (Econ One) examined fiscal system impacts on the lifecycle economics of an asset, whether that asset be the declining base production portfolio of an existing producer, or the economics of investment in a new project. Analysis that follows will also all be done on a lifecycle basis.

MODELING THE IMPACT OF SB 192

SB 192 proposes to further reduce the progressive nature of the production tax in two ways:

- It halves the production-based tax credit from a sliding scale of \$8 to \$0 (for prices of \$90 to \$160/bbl, net of transport costs) to \$4 to \$0 (for the same price range).
- It raises the minimum gross tax rate from 4% to 15%

Importantly, these changes only impact ‘old’ oil. This is because:

- The sliding-scale credit only applies to ‘old’ oil (per SB 21), and the fixed \$5/bbl credit applying to ‘new oil’ is not altered.
- The gross minimum is only binding on ‘old’ oil, because only for ‘old’ oil is there a hard floor (enacted in SB 21), where credits cannot take the total tax owed below the gross minimum. For ‘new’ oil, credits can still be applied to further reduce a taxpayer’s liability.

SB 192 would modify SB 21 in two critical ways

We have modeled results under two investment scenarios and across all prices from \$50/bbl to \$150/bbl

SB 192 is less progressive than SB 21 and delivers a higher government take under any price below \$150/bbl

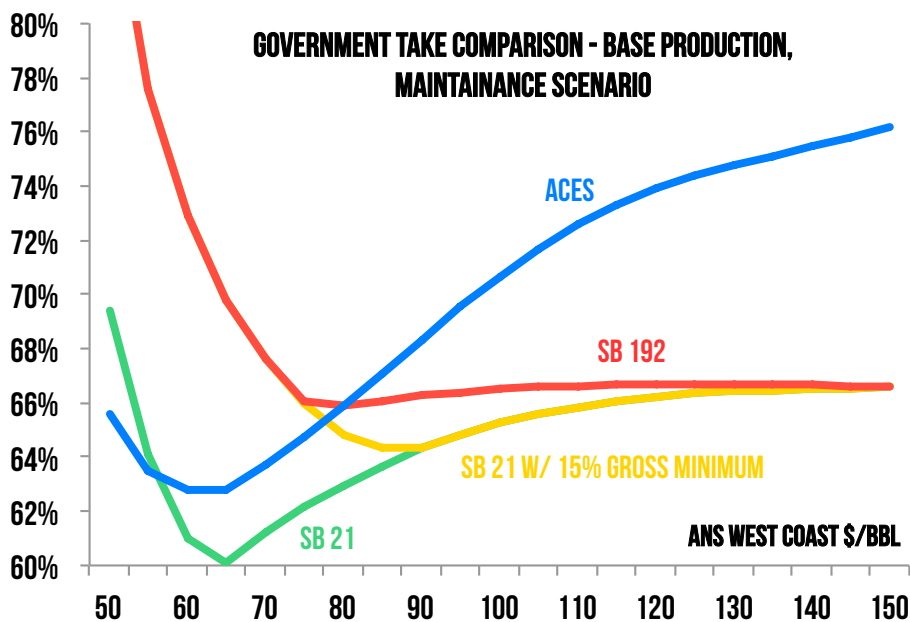
Two scenarios. To quantify the effect of the proposed changes in SB 192 across a range of capital spending possibilities, we have modeled government take across a price range of \$50 to \$150/bbl under two investment scenarios: base decline maintenance, and high reinvestment.

The **maintenance** scenario assumes capex and opex levels that are required to continue the historical decline curve in the mature fields, without adding significant new production (similar to the assumptions used by both PFC Energy and Econ One in analysis of base production for the 2013 legislative session).

The **high reinvestment** scenario doubles capital spending compared to base decline maintenance.

Maintenance scenario. The chart below shows government take under SB 21, SB 192 and ACES. In order to disaggregate the sliding scale from the 15% gross minimum tax effects of SB 192, we have also shown an SB 21 with a 15% gross minimum tax (rather than 4%). The analysis yields several insights.

First, SB 192 yields a government take that is either higher or equal to SB 21 no matter than the oil price—and the two converge when prices reach \$150/bbl. Both entail a lower government take than ACES above a certain crossover point: \$60/bbl for SB 21 and \$75/bbl for SB 192.



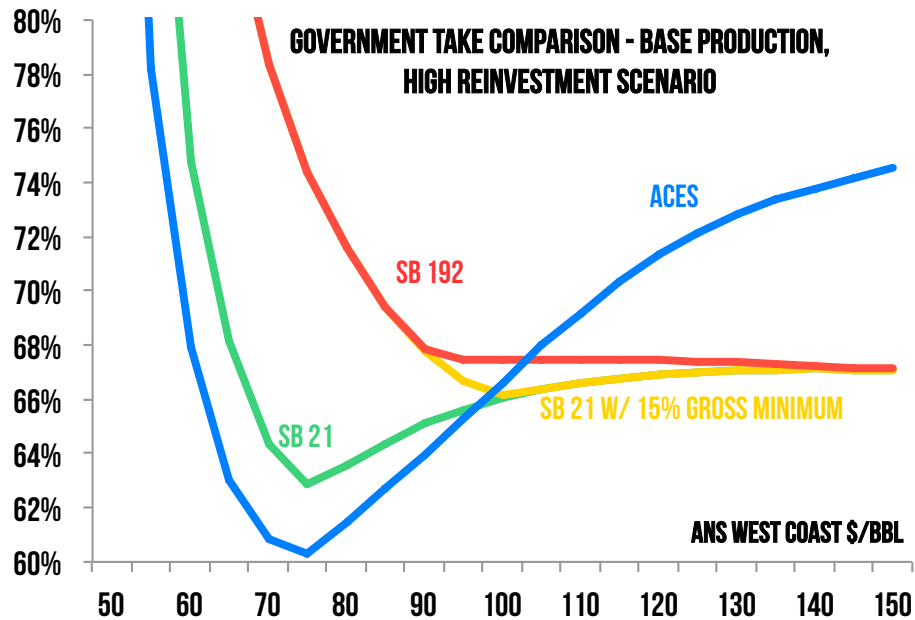
Second, the gross minimum tax aspect of SB 192 impacts government take more than than the sliding scale—which is why the yellow SB 21 + 15 gross minimum tax curve is much closer to the red SB 192 curve than it is to the green SB 21 curve.

Third, the reduced sliding-scale production credit in SB 192 eliminates the progressive aspect of SB 21, replacing it with near flat 67% government take from high oil prices all the way down to the point where the gross minimum tax binds.

Higher investment pushes out the cross-over point to higher price levels

High reinvestment scenario. The biggest impact of higher capital spending is to increase the price levels at which SB 21 or SB 192 represent a tax increase over ACES: the cross-over points rise from \$60 to \$95/bbl for SB 21, and from \$75 to \$105/bbl for SB 192.

The impact of the 15% gross minimum also becomes more pronounced in this scenario; the tax increase between \$70/bbl and \$90/bbl, where much of the analysis of oil companies is concentrated, becomes very significant indeed.



CONCLUSIONS

Through changes to the gross minimum tax and the sliding-scale production credit, SB 192 would shift Alaska's profit-based production tax to a more regressive orientation. Doing so increases price risk to producers, reducing the likelihood that more expensive projects will be sanctioned. It also represents a substantial tax increase over ACES at lower oil prices.

Both regressive and progressive fiscal systems can be attractive to producers because each offers a different risk-reward balance. Regressive systems place most price and cost risk on producers, but offer more upside. Progressive systems reduce producer upside, but compensate for this by mitigating downside risks. Combining a high, regressive gross minimum with a neutral-to-progressive profit-based tax, however, in many ways offers the least attractive features of both from a producer's perspective. Price and cost risk is shifted firmly onto the producer, but most upside remains captured by the state. Such a move would certainly protect the state well, but it does so at the expense of its relative competitiveness and ability to attract capital.

ABOUT US



Janak Mayer. Before co-founding analytica, Janak led the Upstream Analytics team at PFC Energy, focusing on fiscal terms analysis and project economic and financial evaluation, data management and data visualization.

Janak has modeled upstream fiscal terms in all of the world's major hydrocarbon regions, and has built economic and financial models to value prospective acquisition targets and develop strategic portfolio options for a wide range of international and national oil company clients. He has advised Alaska State Legislature for multiple years on reform of oil and gas taxation, providing many hours of expert testimony to Alaska's Senate and House Finance and Resources Committees.

Prior to his work as an energy consultant, Janak advised major minerals industry clients on a range of controversial environmental and social risk issues, from uranium mining through to human rights and climate change. He has advised bankers at Citigroup and policy-makers at the US Treasury Department on the management and mitigation of environmental and social impacts in major projects around the world, and has undertaken macroeconomic research with senior development economists at the World Bank and the Peterson Institute for International Economics.

Janak holds a BA with first-class honors from the University of Adelaide, Australia and an MA with distinction in international relations and economics from the Johns Hopkins School of Advanced International Studies (SAIS).



Nikos Tsafos. Nikos Tsafos has a diverse background in the private, public and non-profit sectors. He is currently a founding partner at analytica. He previously spent 7 ½ years at PFC Energy, where he advised the world's largest oil and gas companies on some of their most complex and challenging projects; he also played a pivotal role in turning the firm into one of the top natural gas consultancies in the world, with responsibilities that included product design, business development, consulting oversight and research direction.

Prior to PFC Energy, Nikos was at the Center for Strategic and International Studies (CSIS) in Washington, DC where he covered political, economic, and military issues in the Gulf, focused on oil wealth, regime stability and foreign affairs. Before CSIS, he was in the Greek Air Force, and prior to his military service, Nikos worked on channeling investment from Greek ship-owners to Chinese shipyards.

Nikos has also written extensively on the domestic and international dimensions of the Greek debt crisis. His blog (Greek Default Watch) was listed as one of "Europe's Top Economic Blogs" by the Social Europe Journal, and his book "Beyond Debt: The Greek Crisis in Context" was published in March 2013.

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