Senate Resources Committee

Alaska Fiscal System Discussion Slides

February 15 2013

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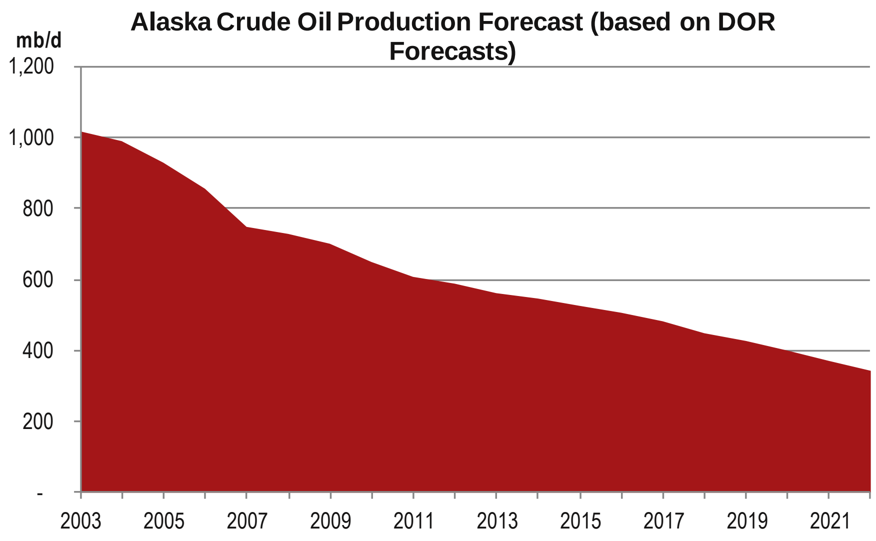
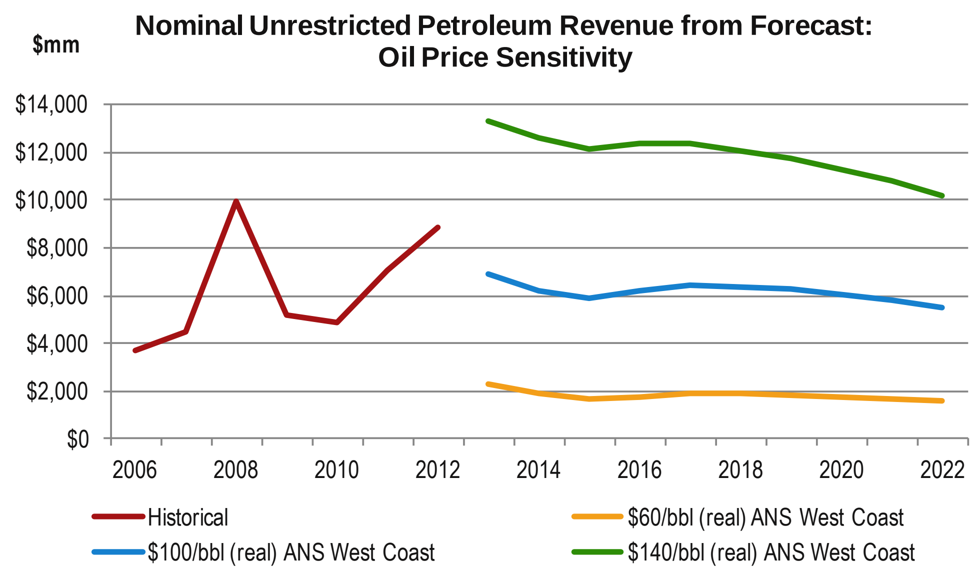
PFC Energy

Alaska's Future Petroleum Revenues: Sensitivities to Oil Price, Production Decline, and Fiscal Terms

Oil Price is the Major Determinant of Alaska's Future Petroleum Revenue





- The major factor determining Alaska's future petroleum revenue is not oil & gas fiscal terms, or even, in the short run, production levels, but rather something entirely outside Alaska's control: the crude oil price
- Restricting a sensitivity analysis only to the a range of oil prices observed in the last 5 years, and **holding future production constant** (based on DOR forecasts) the potential variation in possible future petroleum revenue is substantial:
  - In a $140/bbl environment, revenue in 2022 under ACES would approach $10bn
  - In a $60/bbl environment, revenue in 2022 under ACES would be as low as $1.8bn

In reality, the potential for variation is even greater than this, since production also responds to price:

- In a sustained high price environment, more projects would be economic, and long-run production would improve
- In a sustained low price environment, fewer projects would be economic and sustaining capital would be lower, resulting in a more rapid decline in long run production

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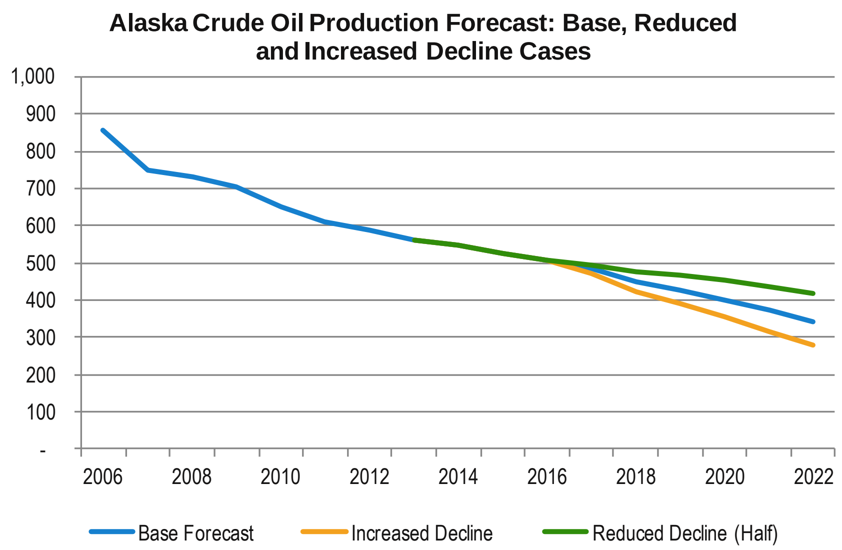
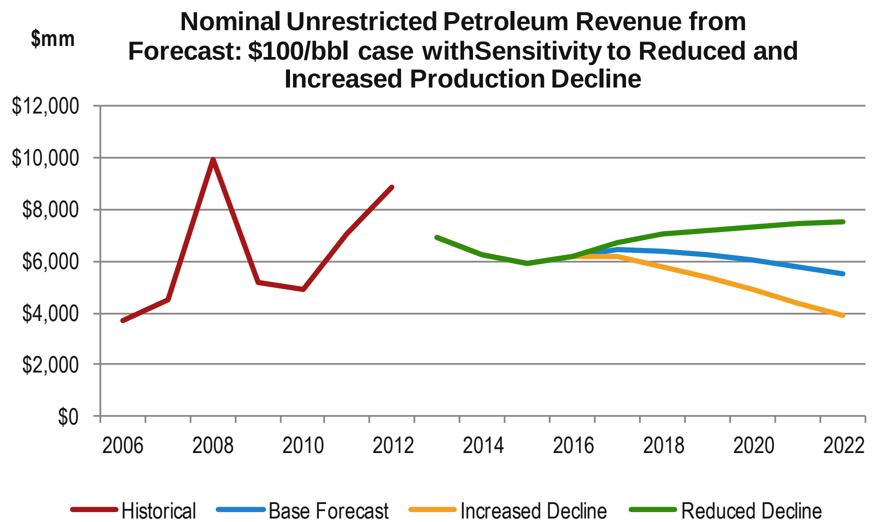
Decline Rate is the Other Major Determinant





- The Base Forecast anticipates an average annual production decline between 2017 and 2022 of **~6%** (including the contribution from new producing areas brought on-stream), yielding production of ~344 mb/d in 2022
- Increasing the average decline rate by half to **9%** in every year from the base case would see production declining to ~280 mb/d in 2032
- Reducing the average decline rate by half to **3%** in every year from the base case would see production of ~419 mb/d in 2032
- In the low decline scenario, more robust production combined with the impact of inflation mean that nominal revenues would continue to grow beyond 2017, reaching ~$7.8 bn at a nominal crude price of $100/bbl
- In the high decline scenario, 2022 nominal revenues would fall well below the $4 bn level anticipated in the Base Forecast case, reaching less than ~$4 bn even with nominal crude prices at $100/bbl

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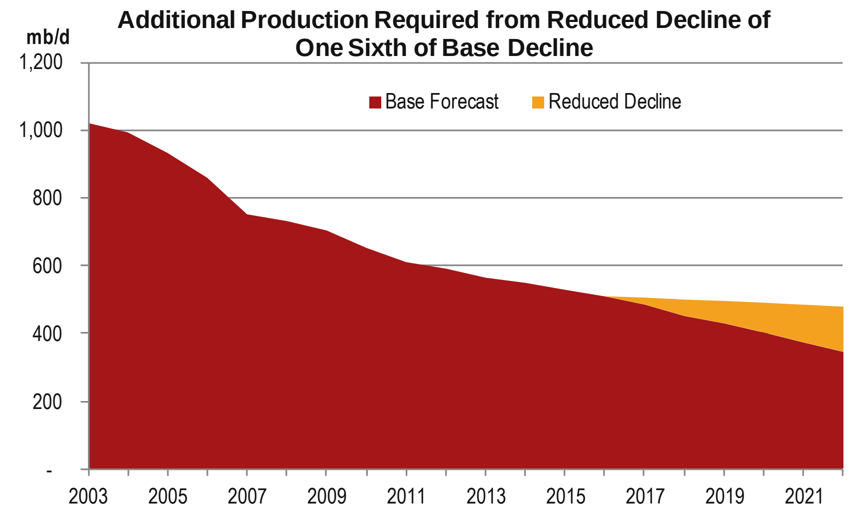
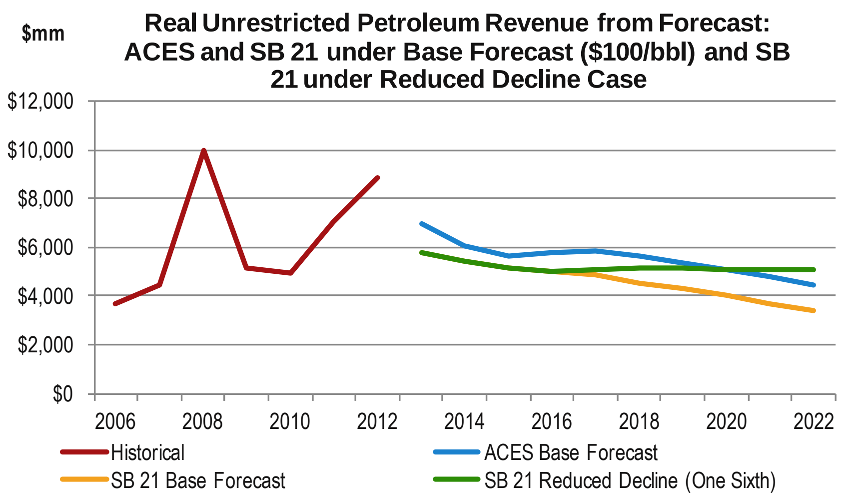
Fiscal Terms Changes and Investment Impacts





Year	2017	2018	2019	2020	2021	2022
Additional Production (mboe/day)	20	48	66	88	111	133

- Even significant changes to fiscal terms, by contrast, have a far smaller impact on future revenues than either oil price or future production declines
  - Under the Base Forecast decline case, at $100/bbl crude oil, SB 21/HB72 results in a parallel shift of the revenue curve, reducing the state's petroleum revenue by a little over $1 bn each year
- If an improvement in fiscal terms can stimulate sufficient new investment to stem declines, it has the long run potential to increase revenue, despite the near-term cost of the change
  - To maintain revenues to the state at a steady level in real terms, a reduction in government take such as that under SB 21 would need to spur sufficient investment to **reduce the North Slope base decline from 6%** as currently forecast **to 1%**

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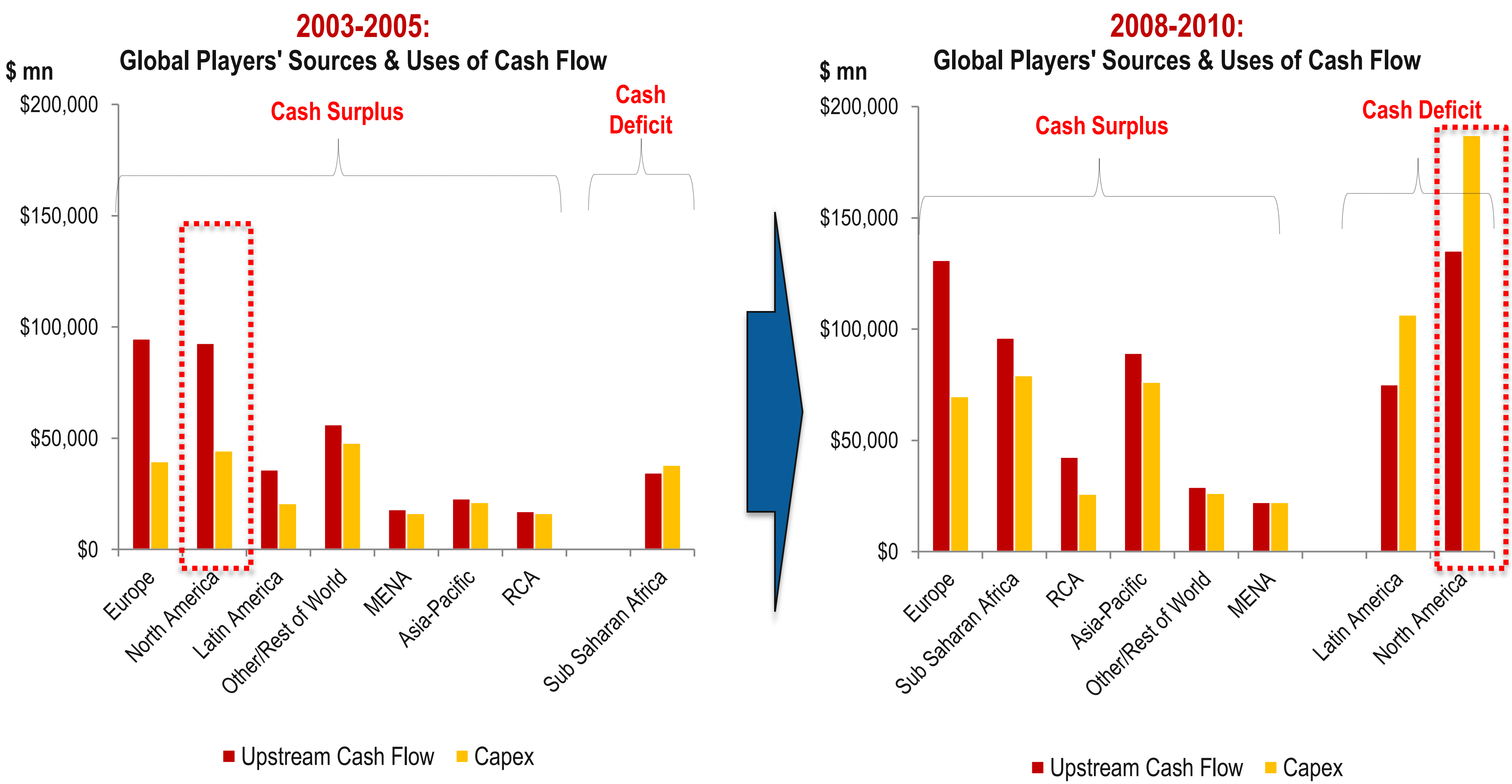
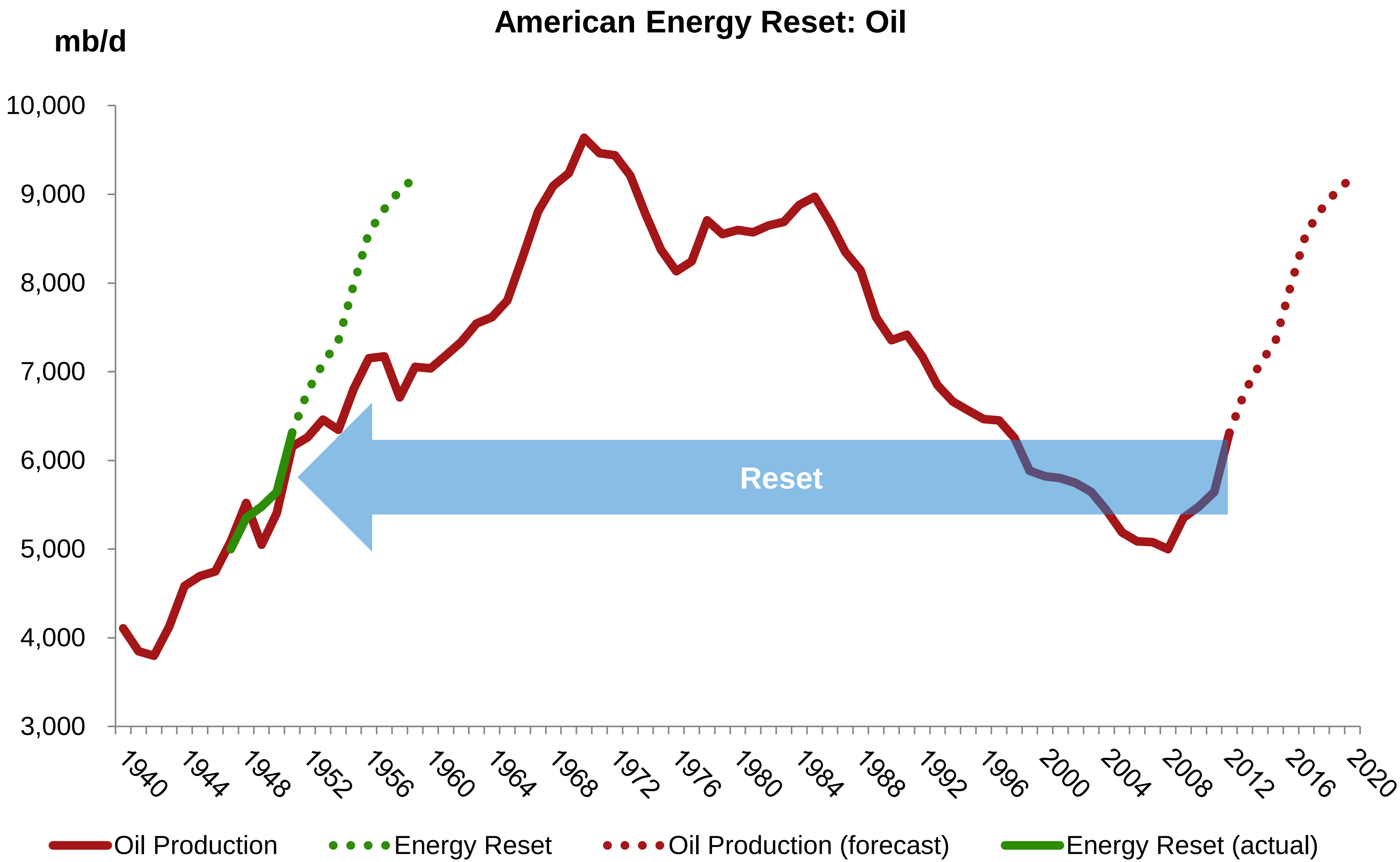
Context: Investment Competition & Global Oil Price Environment

Fixed-Royalty Jurisdictions in US Lower 48 Are A Key Competitor to Alaska for Investment Dollars



It is now an exception not to be targeting unconventionals in North America as a major growth platform.

American Energy Reset
United States Production – Back at Post-War Period



Anatomy of the Physical Market for Crude Oil

Final Product Consumption

- Fuel needed for economic activity
- Main ingredient in hot dogs

Refining Demand for Crude

- Inputs needed to provide fuel demanded by consumers

Non-OPEC Crude

- As price takers, will produce at capacity given positive project economics

OPEC Crude

- Plays a balancing role, adjusting output as needed in line with overall objectives

Four broad segments to balance the market

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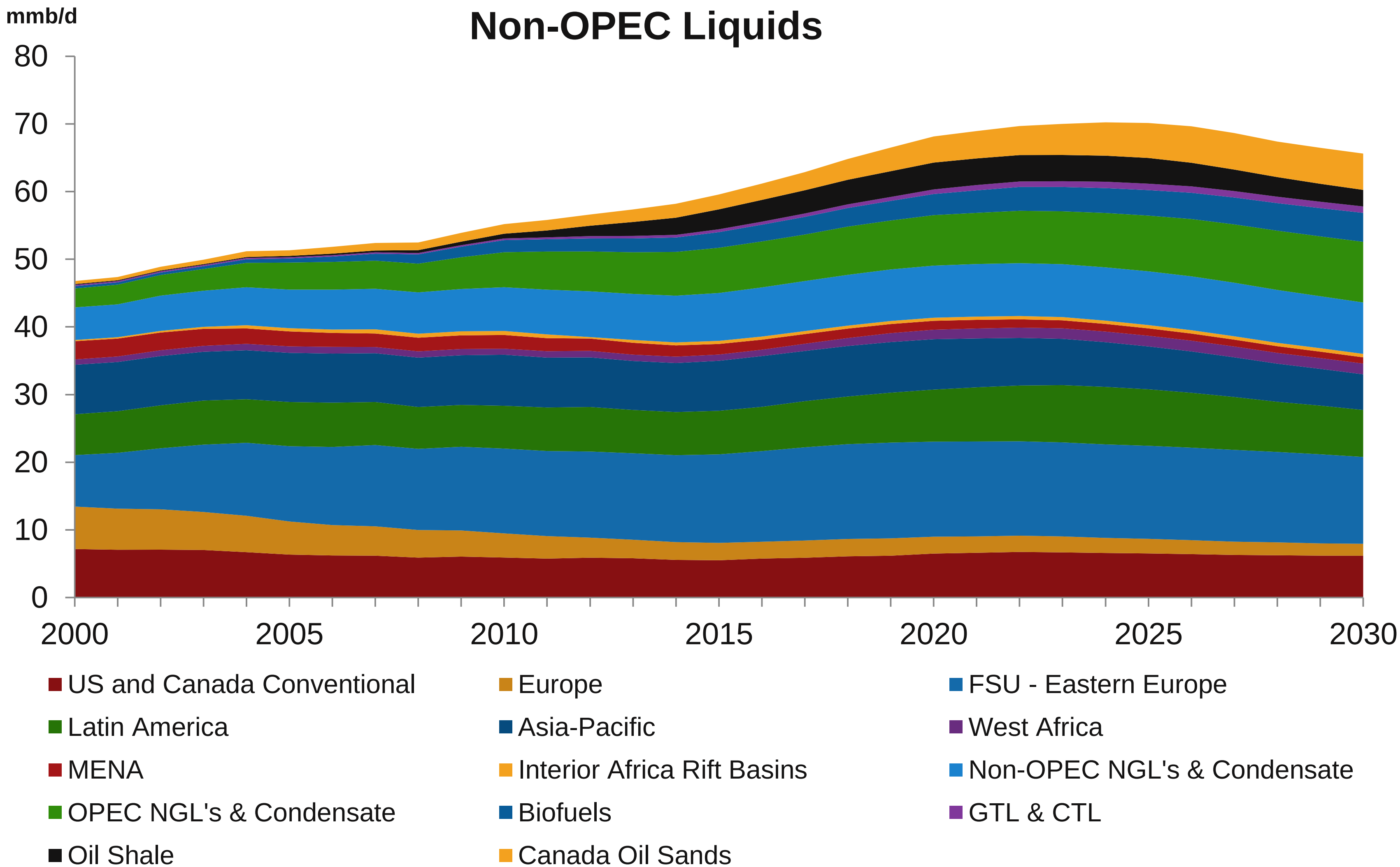
Non-OPEC Liquids Will Show Substantial Growth

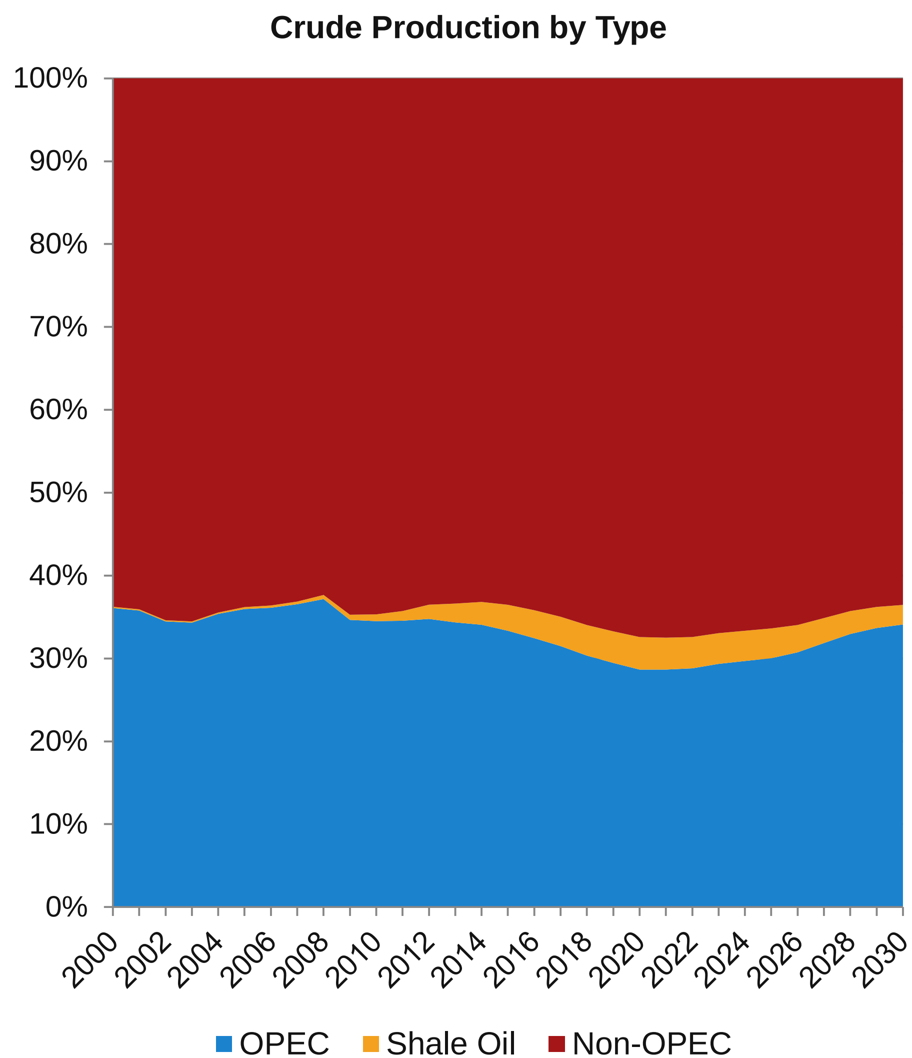
In the past production not affected by price swings



Shale Oil Major Factor in Reducing OPEC's Share

Potentially upsetting to long-time oil market balancer

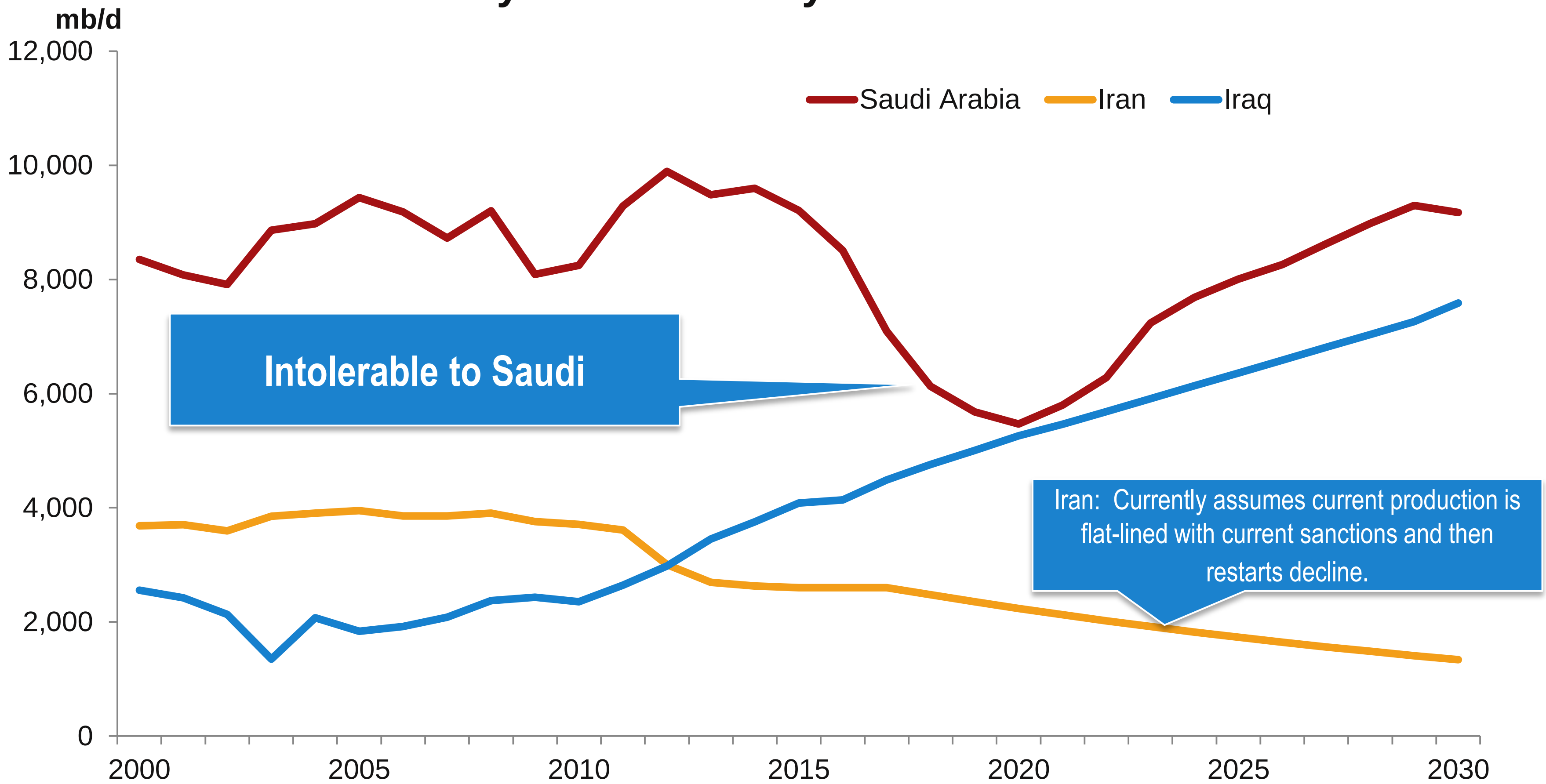
- Shale oil now forecast to reach ~4 mmb/d of production by end of the decade (largest recent Saudi swing was 2.2 mmb/d – post recession through Libya response)
- Shale oil production joins ranks of potential short-term global oil balancers. Traditionally made up of:
  - OPEC (Primarily Saudi Arabia)
  - IEA/SPR stocks
  - Demand destruction (potential is diminishing with rise of non-OECD demand growth given subsidies)
- OPEC has yet to begin grasping both the scale and potential impact that shale oil will have on its traditional role.
  - Is only now beginning to address Iraqi production



Initial Output Implications for Major OPEC Producers

Iran and Iraq complicate market management

Key OPEC Country Production

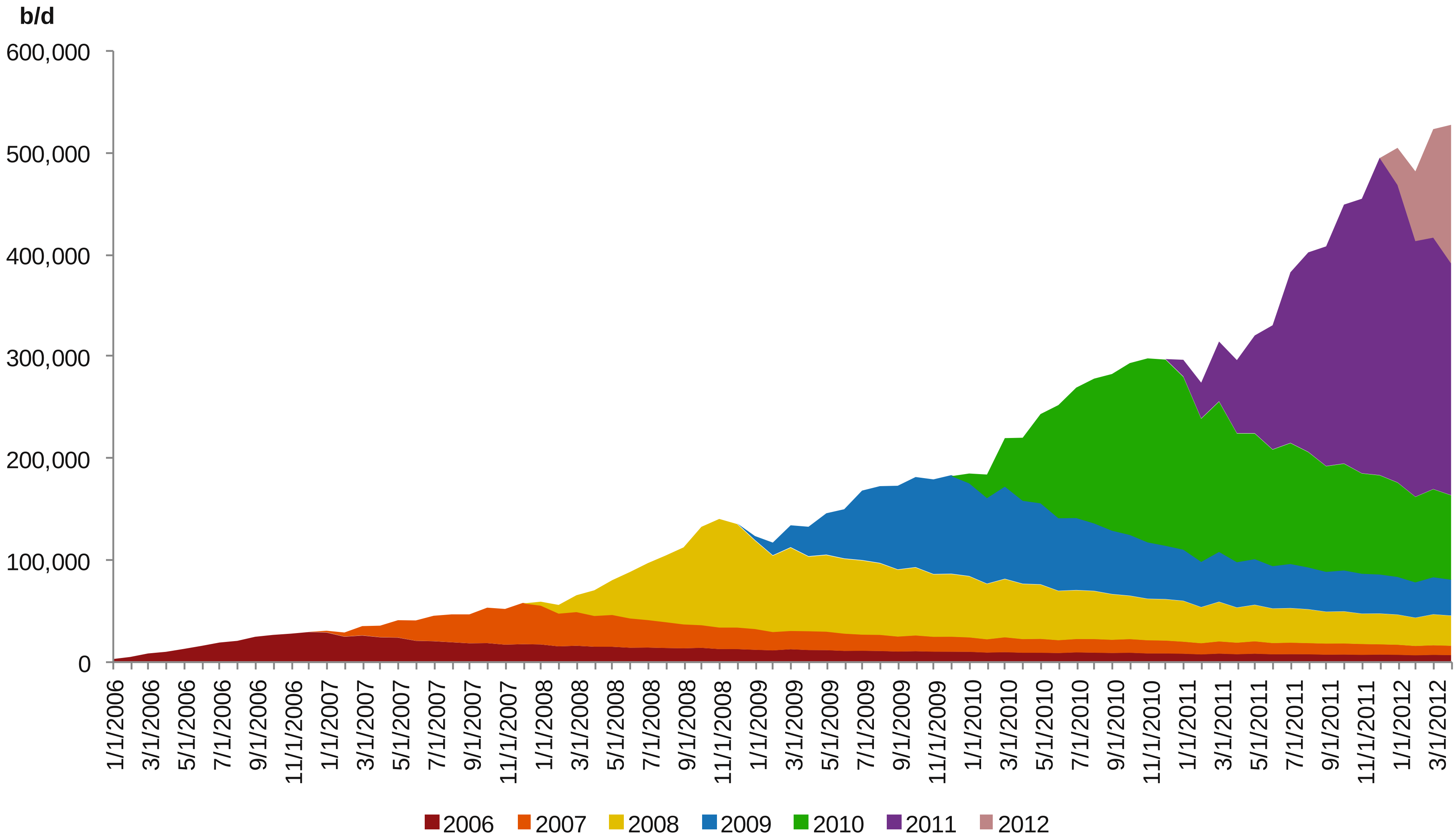


A diplomatic solution that brings Iran back into the oil markets makes OPEC management worse via increased volumes

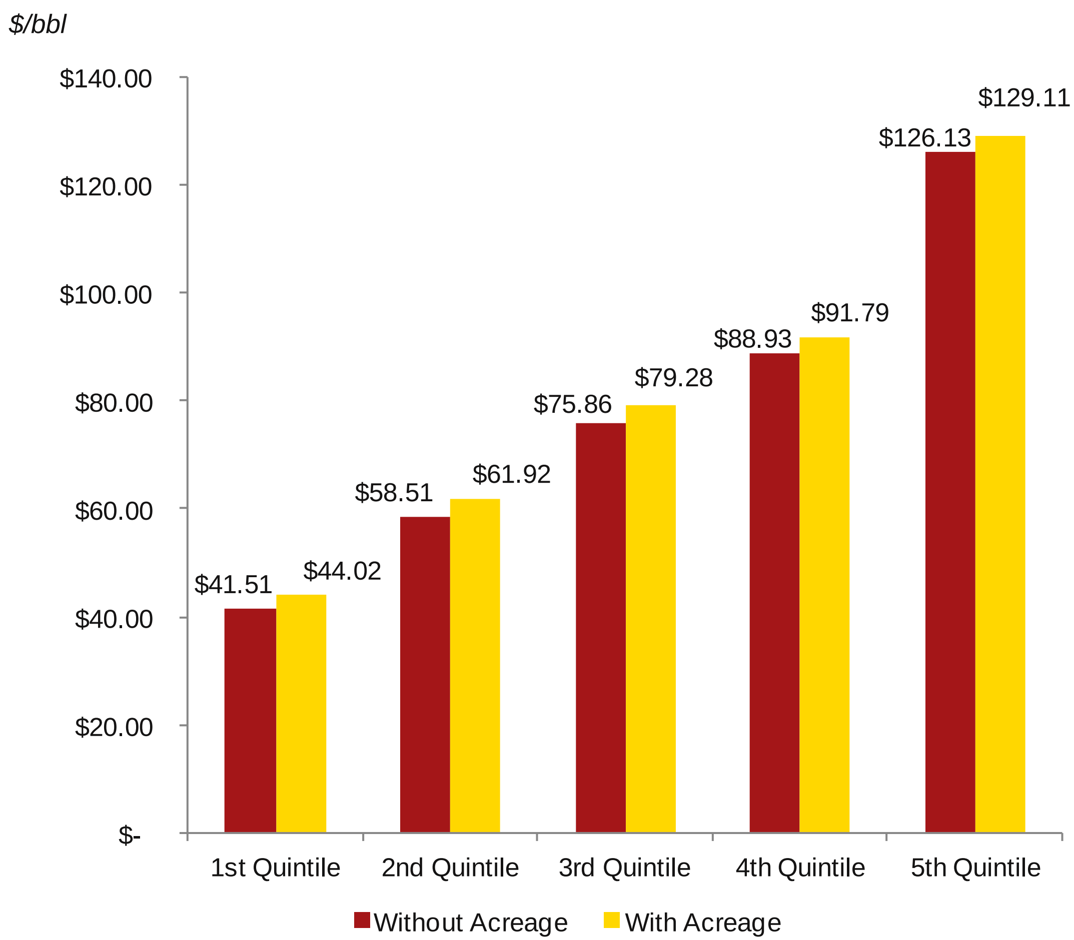
Character of US Growth Changing

Potential for sudden stop to growth or even declines on price softness

- Each year more production must be brought on just to maintain the prior year's levels.



Bakken Quintile Breakeven PV 10



Assumptions for Breakeven are:

Drilling Cost: $8MM

Acreage Costs by Class:
Class 1 $20,000/acre
Class 2 $13,333/acre
Class 3 $8,889/acre
Class 4 $5,926/acre
Class 5 $3,951/acre

Risked : 95%

Basis : $(10.00)/bbl

Severance taxes:
Gas: 7.5%
Oil: 4.6%

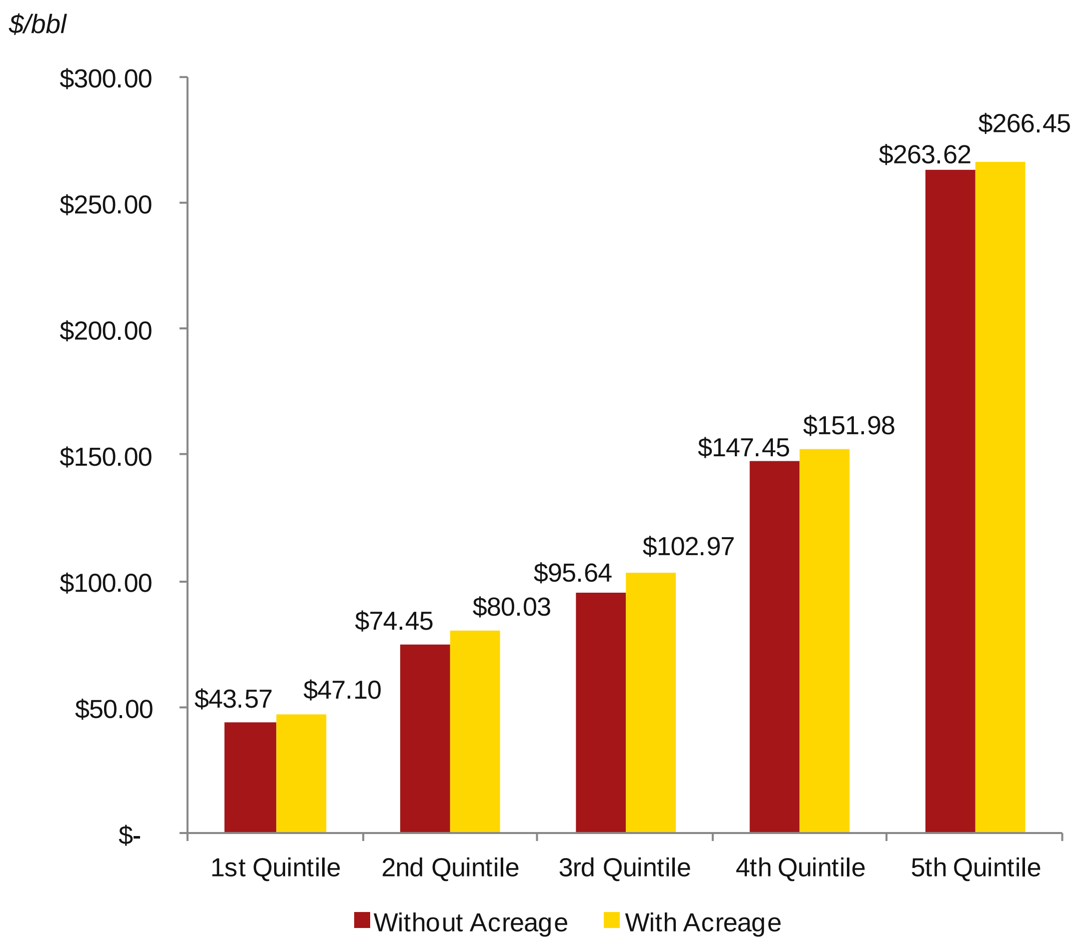
Fed taxes: 35%

Operating Costs:
Fixed: $1,000/well/month
Variable: $7.00/ boe

Gen/Admin costs: $1.50 / boe

Royalty Rates:
Q 1: 18.8%
Q 2: 14.1%
Q 3: 10.6%
Q 4: 7.9%
Q 5: 5.9%

Eagleford Quintile Breakeven PV 10



Assumptions for Breakeven are:

Drilling Cost: $7.5 MM

Acreage Costs by Class:
Class 1 $20,000/acre
Class 2 $15,000/acre
Class 3 $10,000/acre
Class 4 $5,000/acre
Class 5 $2,000/acre

Risked : 95%

Basis : $(4.00)/bbl

Severance taxes:
Gas: 7.5%
Oil: 4.6%

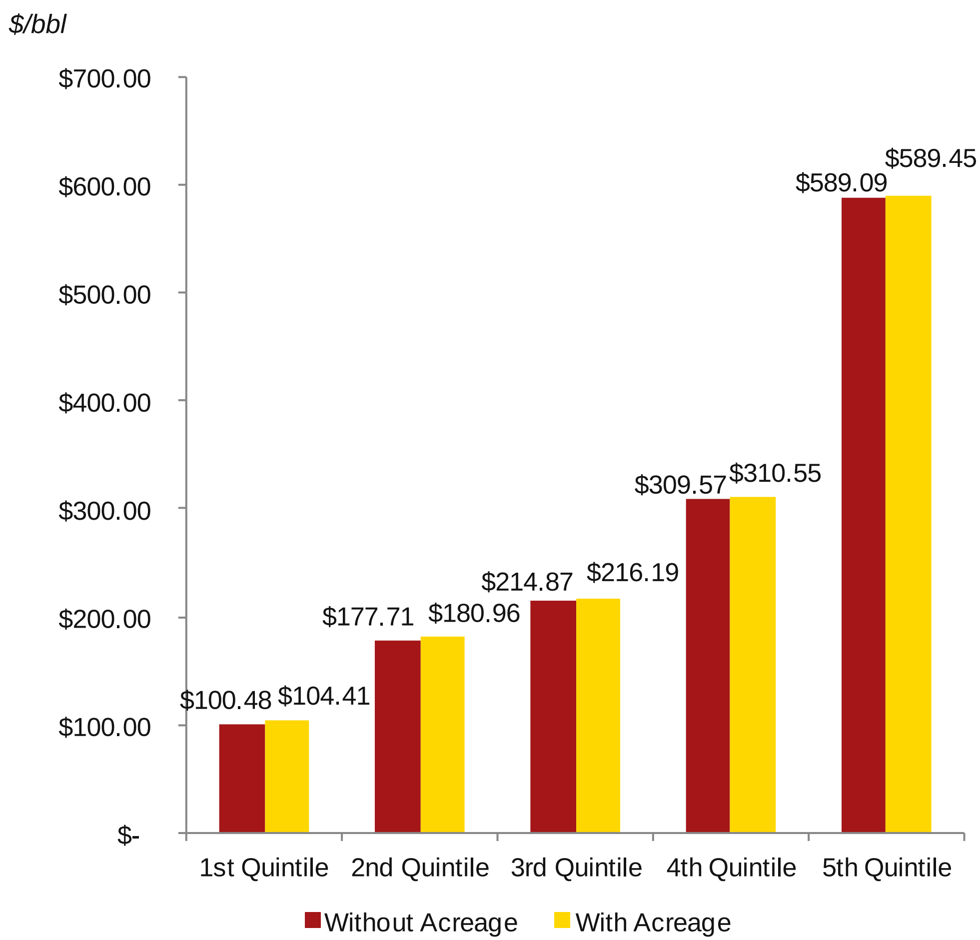
Fed taxes: 35%

Operating Costs:
Fixed: $1,000/well/month
Variable: $3.00/ boe

Gen/Admin costs: $1.50 / boe

Royalty Rates:
Q 1: 25%
Q 2: 20%
Q 3: 18%
Q 4: 14%
Q 5: 12.5%

Granite Wash Quintile Breakeven PV 10



Assumptions for Breakeven are:

Drilling Cost: $7.5 MM

Acreage Costs by Class:
Class 1 $6,000/acre
Class 2 $3,000/acre
Class 3 $1,000/acre
Class 4 $500/acre
Class 5 $100/acre

Risked : 95%

Basis : $(4.00)/bbl

Severance taxes:
Gas: 7.3%
Oil: 7.3%

Fed taxes: 35%

Operating Costs:
Fixed: $1,000/well/month
Variable: $3.00/ boe

Gen/Admin costs: $1.50 / boe

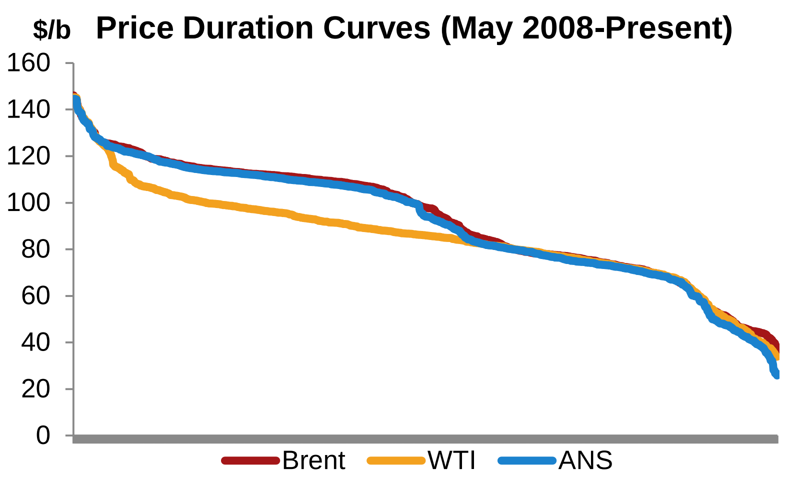
Royalty Rates:
Q 1: 1/6
Q 2: 1/6
Q 3: 1/6
Q 4: 1/8
Q 5: 1/8

Risks to Price Forecast

Upside Price Risk	Strong global economic growth	• Increases demand strongly, tightening supply/demand balance
	Instability removes barrels from market	• Repeat of Libya-type event • Confrontation with Iran
Downside Price Risk	American Energy Reset	• US production boom is now delivering most of the worlds incremental demand growth, leaving little room for additional growth from other countries
	Economic slowdown	• Eurozone, US or China slowdown causing demand slowdown. Loosens supply/demand balance
	OPEC mismanagement	• OPEC will need to cut barrels in the future but may have difficulty organizing this among its members
	US WTI disconnect expands geographic scope	• Discounts to WTI and other inland markers may begin to affect US west coast markets as Bakken and Eagle Ford crudes increase into those areas.

What is the Potential Floor for ANS West Coast Crude?

- Since 2008, the average for the 100 lowest priced days ranged form $38-44/b for the three key markers.
- **In the short-term, the potential floor price for ANS is in the mid-$30/b range.**
  - Would require substantial global oversupply, likely through a combination of OPEC mismanagement and booming US production
  - This low price is not sustainable for long as it will begin to cut US production within 60-90 days.



- **In the medium- to long-term, the floor price is near the cost of the marginal barrel**:
  - If US constrained, potential for $55-60/b
  - If global (and assuming US production does not again surprise to the upside), the price floor is higher at $70-75/b

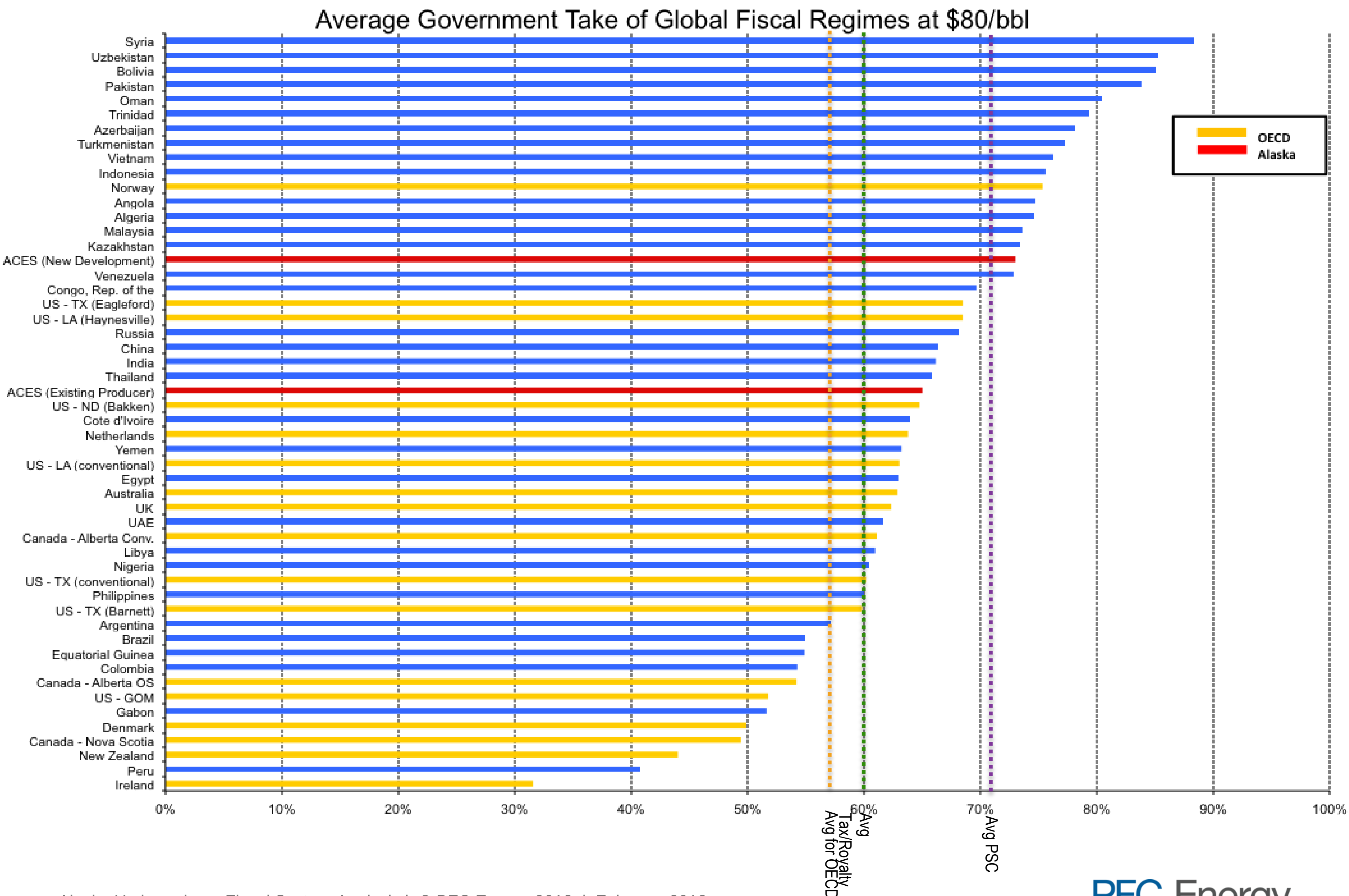
Alaska's Fiscal System: Problems and Approaches

ACES: 5 key problems

- **High levels of Government Take reduce competitiveness for capital, especially at high prices**
- High marginal tax rates reduce incentives for spending control
- Complexity makes meaningful economic analysis and comparison difficult
- Significant state exposure in low price environments, and for high-cost developments
- Impact of large-scale gas sales on tax rates

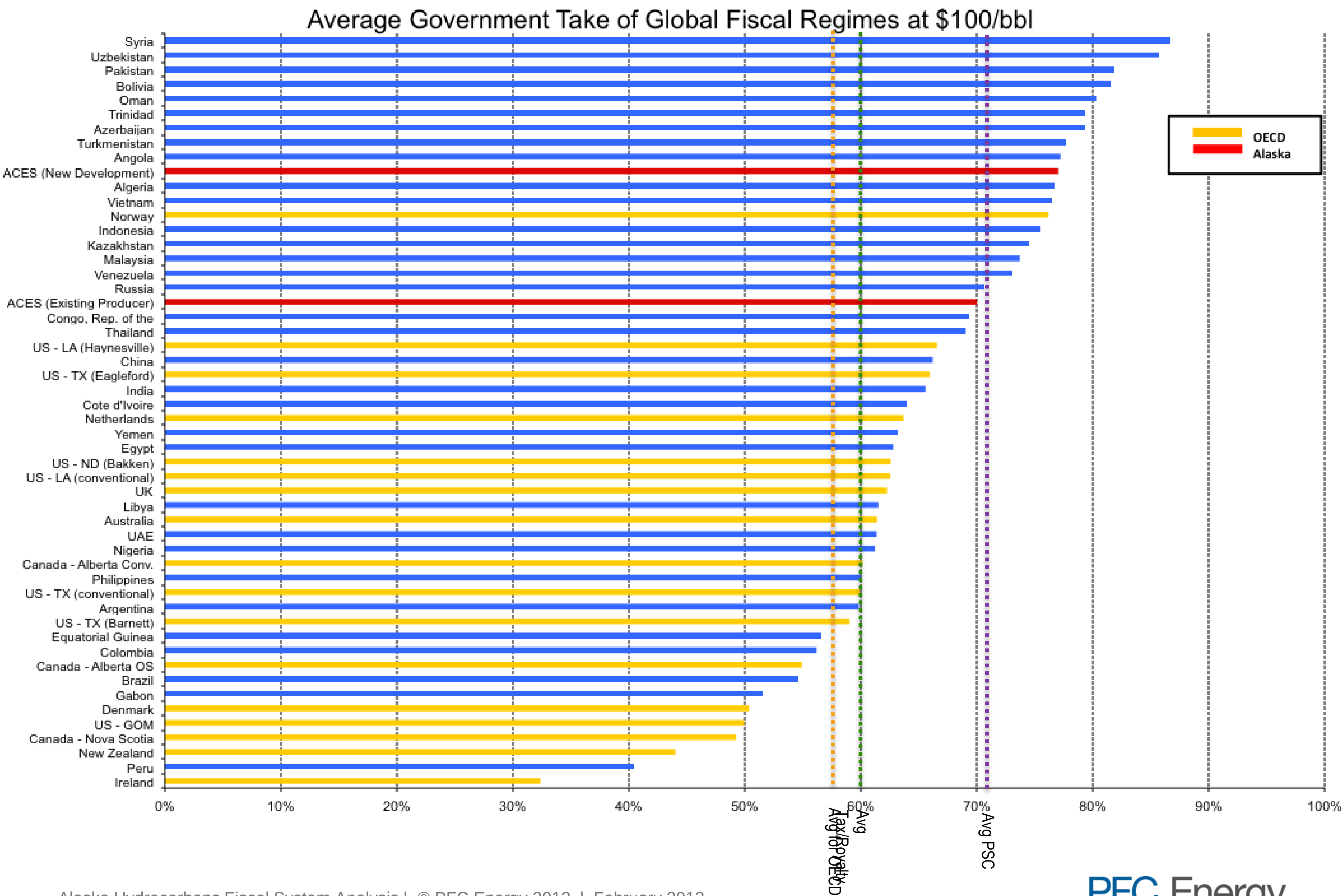
PFC Energy

Regime Competitiveness: Average Government Take at $80/bbl



PFC Energy

Regime Competitiveness: Average Government Take at $100/bbl



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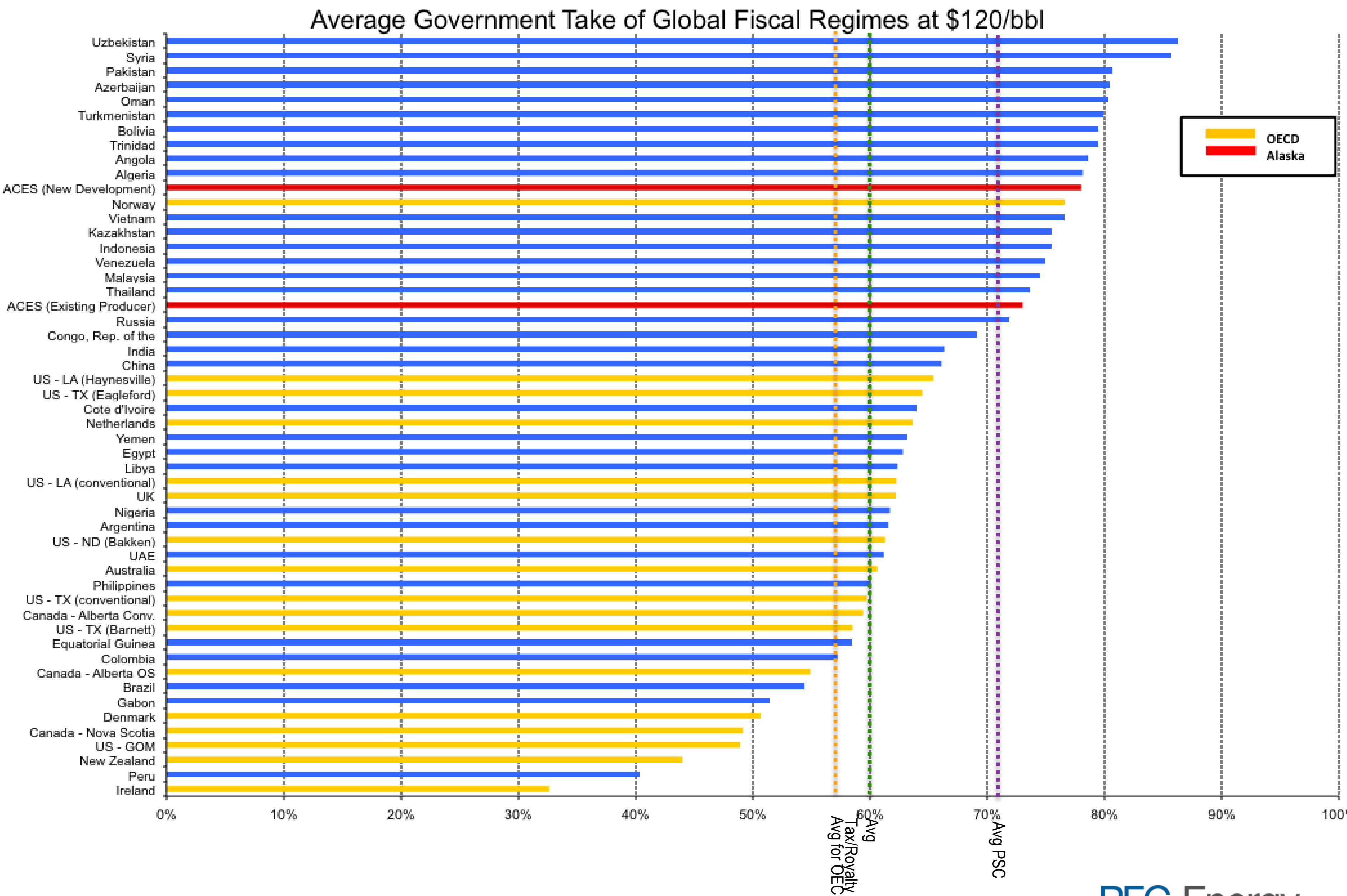
Regime Competitiveness: Average Government Take at $120/bbl



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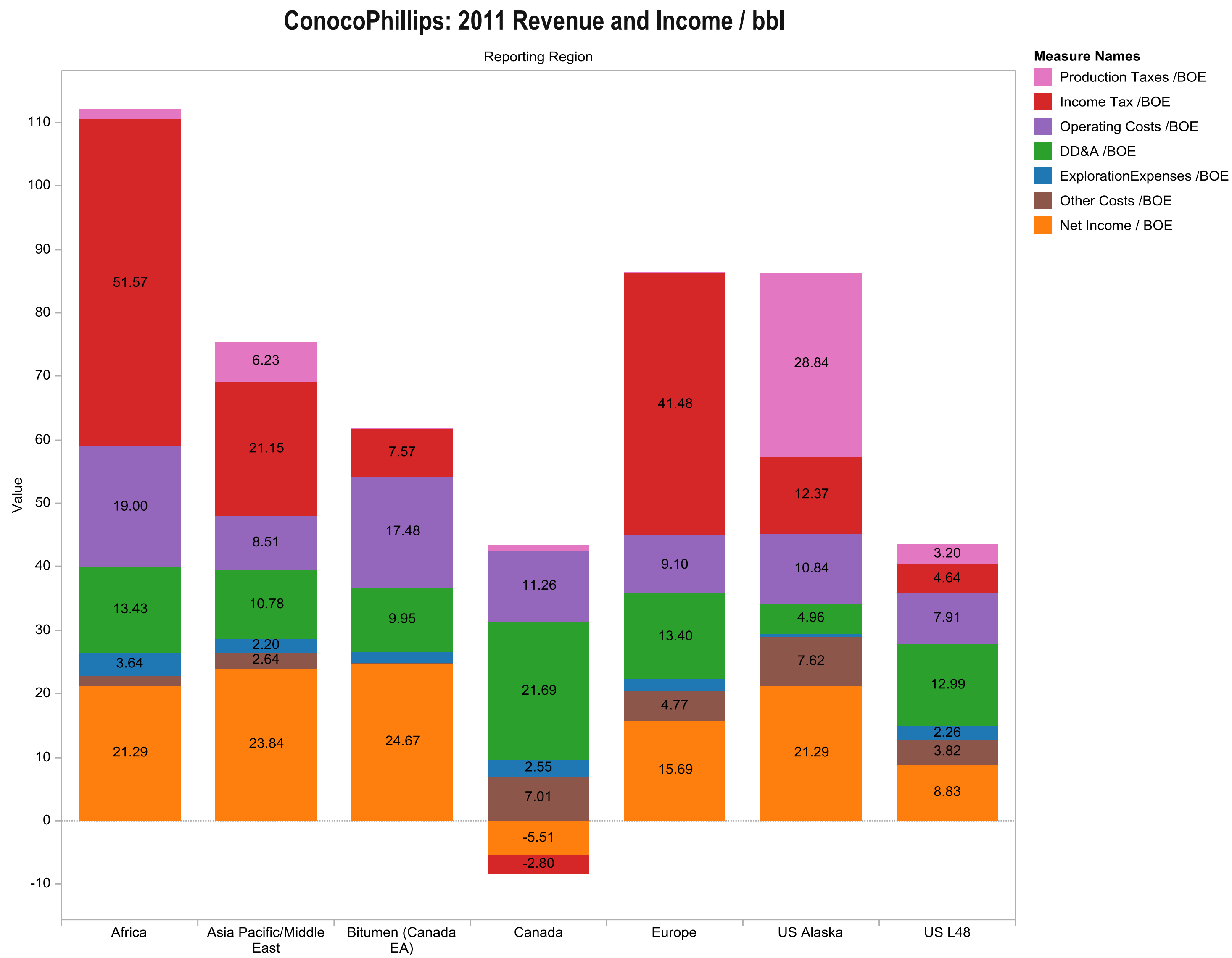
Difference Between New Investment vs Base Production is Critical



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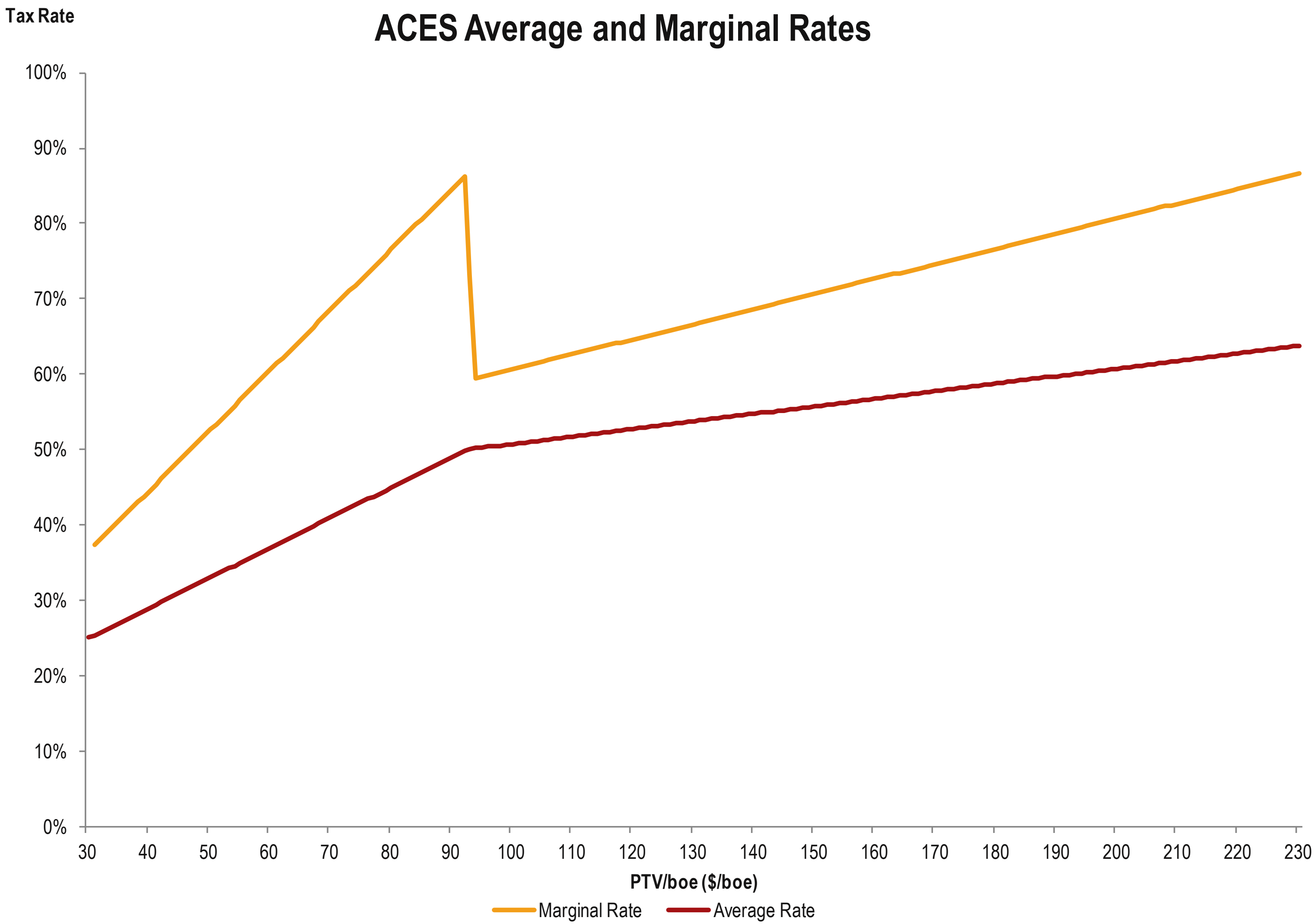
ACES: Average and Marginal Production Tax Rates



Impact of Spending Under High Marginal Rates

Calculation of ACES Tax: Additional Capital Spending

Annual Taxable Production (Bbls)		50,000,000	50,000,000	50,000,000
Initial Expenditure ($)		$1,500,000,000	$1,500,000,000	$1,500,000,000
Additional Expenditure ($)	+	250,000,000	250,000,000	250,000,000
Total Lease Expenditure ($)		$1,750,000,000	$1,750,000,000	$1,750,000,000
WC ANS Price ($/Bbl)		$80.00	$100.00	$120.00
Tax Value Prior To Additional Expenditure ($/Bbl)		$40.00	$60.00	$80.00
Additional Capital Spending Per-Barrel of Existing Production ($/Bbl)	-	5.00	5.00	5.00
Tax Value After Additional Expenditure ($/Bbl)	=	$35.00	$55.00	$75.00
Taxes Before Additional Expenditure				
Tax Rate (%)		29.0%	37.0%	45.0%
Production Tax Before Credits ($)		$580,000,000	$1,110,000,000	$1,800,000,000
Capital Credits (20% x Capital Expenditures) ($)	-	300,000,000	300,000,000	300,000,000
Production Tax After Credits ($)	=	$280,000,000	$810,000,000	$1,500,000,000
Taxes After Additional Expenditure				
Tax Rate (%)		27.0%	35.0%	43.0%
Production Tax Before Credits ($)		$472,500,000	$962,500,000	$1,612,500,000
Capital Credits (20% x Capital Expenditures) ($)	-	350,000,000	350,000,000	350,000,000
Production Tax After Credits ($)	=	$122,500,000	$612,500,000	$1,262,500,000
Reduction in Taxes From Additional Expenditure				
Before Credits		$107,500,000	$147,500,000	$187,500,000
Additional Credits	+	50,000,000	50,000,000	50,000,000
Total Reduction in Taxes After Credits	=	$157,500,000	$197,500,000	$237,500,000
Reduction in Tax as % of Expenditure		63%	79%	95%
Due to Change in Taxes (Buy Down Effect)		43%	59%	75%
Due to Additional Credits		20%	20%	20%

Econ One Research

Source: Econ One Presentation, February 13 2013

ACES: 5 key problems

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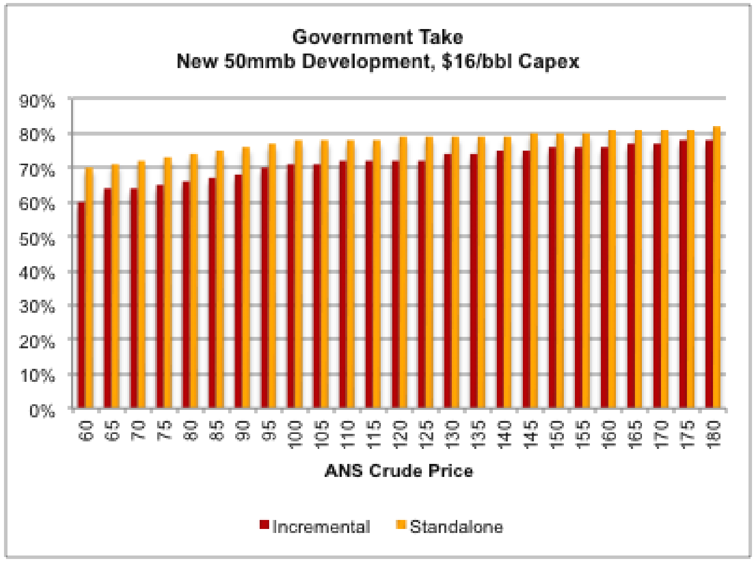
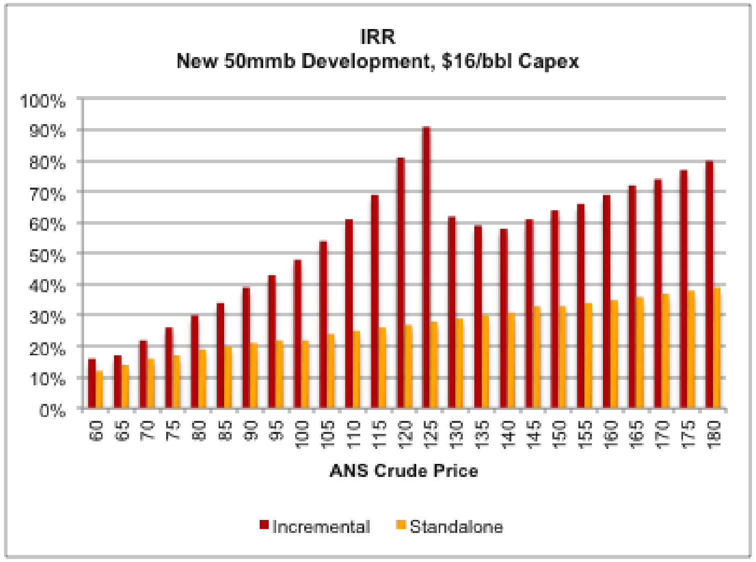
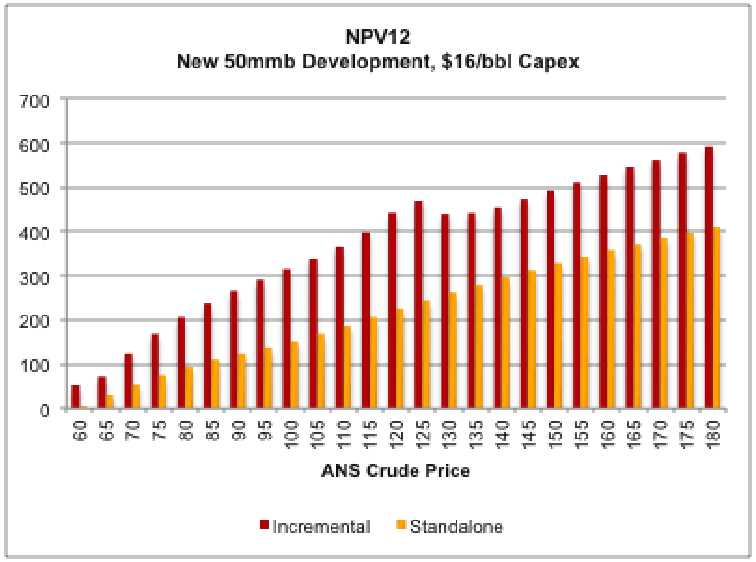
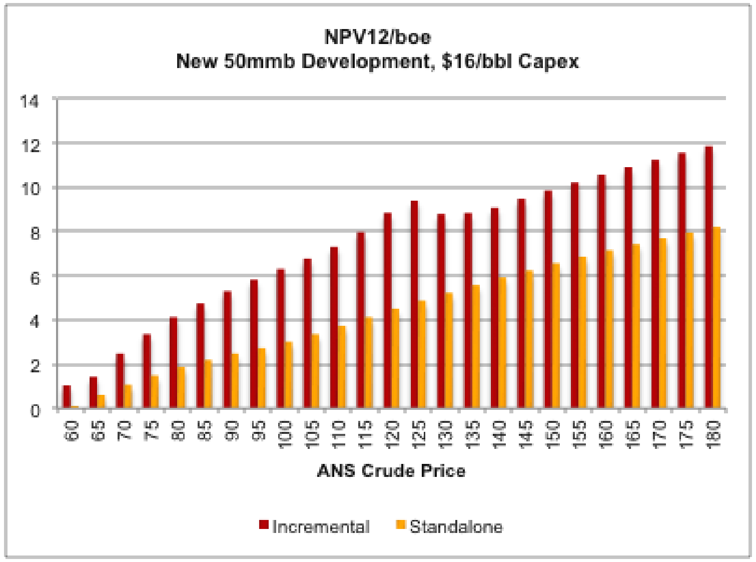
ACES: Standalone vs Incremental









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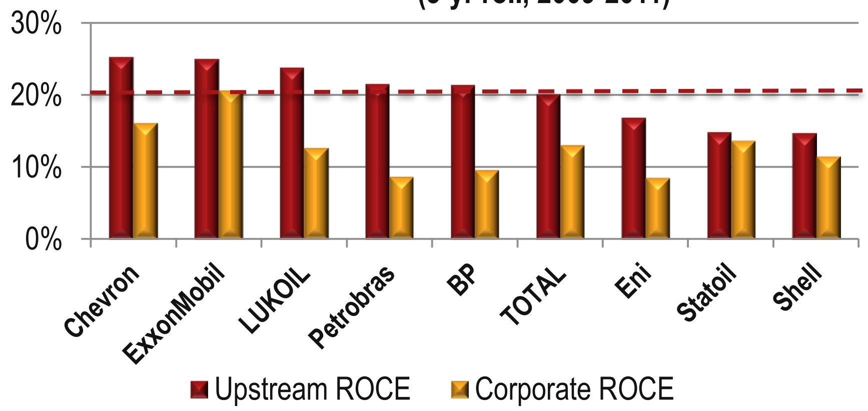
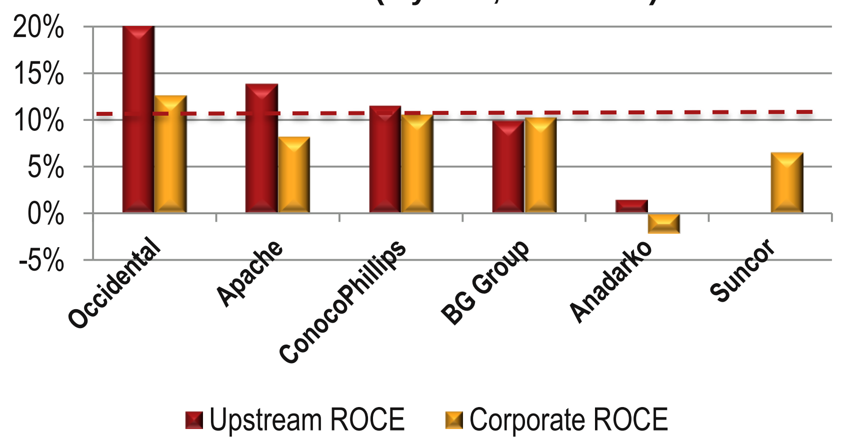
Portfolio Efficiency: Return on Capital Employed (ROCE)

- **Return on Capital Employed**:
  - ROCE = [(Net profit before interest and taxes) / (Gross Capital employed)] x 100
  - Where:
    - Gross capital employed = Fixed assets + Investments + Current assets ***OR***
    - Gross capital employed = Share Capital + General & Capital Reserves + Long term loans
    - (+) Correlation with production, commodity prices
    - (-) Correlation with upstream spending
  - Indicates how well management has used the investment made by owners and creditors into the business.
  - The higher the return on capital employed, the more efficient the firm is in using its funds. Over time, ROCE reveals whether the profitability of the company is improving or eroding

Upstream & Corporate ROCE, Global Players (3-yr roll, 2009-2011)



Tier I Indies Upstream & Corporate ROCE (3-yr roll, 2009-2011)



Global Players Average Upstream ROCE: 20.4%
Tier I Independents Average Upstream ROCE: 11.4%

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ACES: 5 key problems

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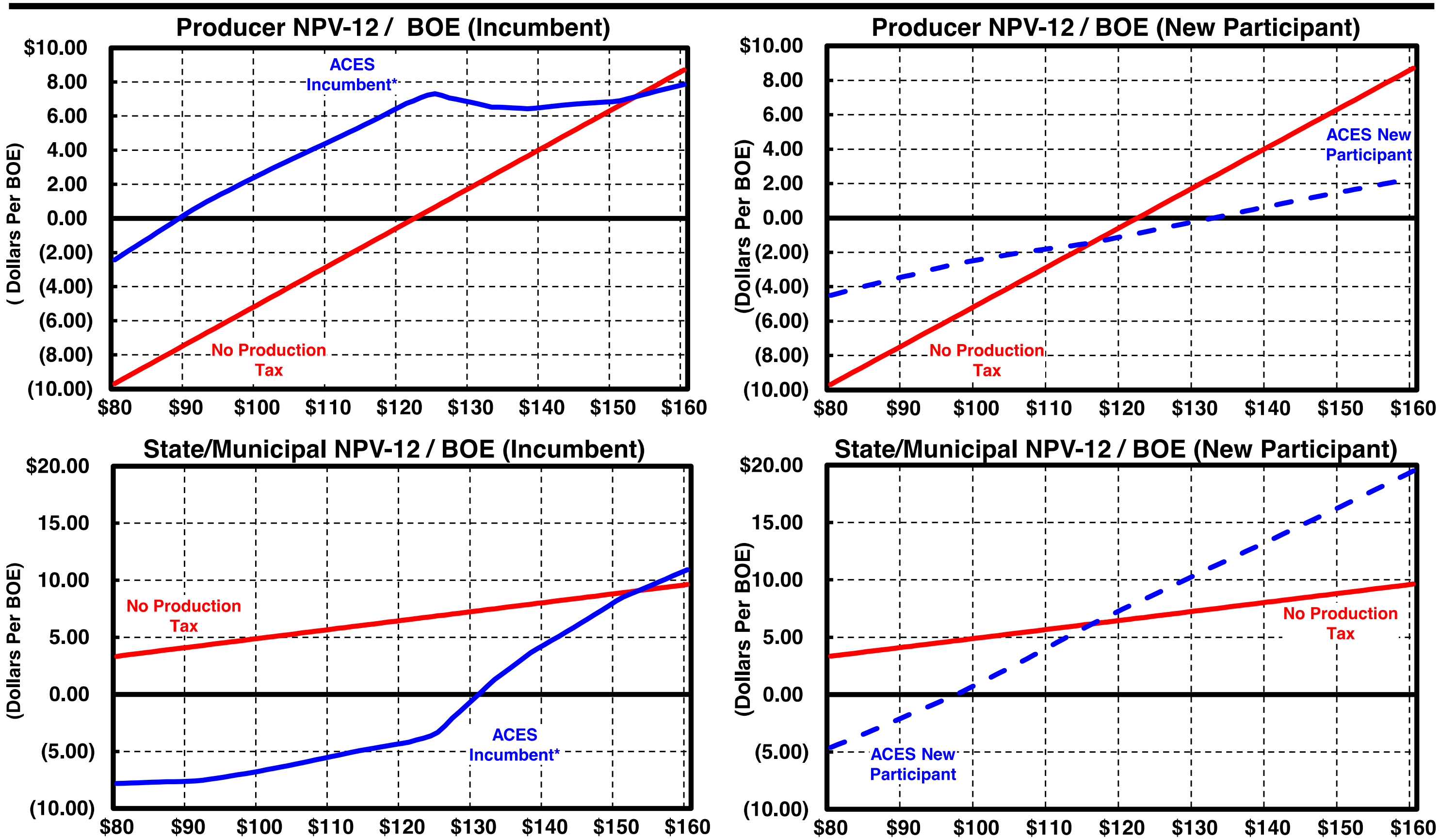
- **Significant state exposure in low price environments, and for high-cost developments**
- Impact of large-scale gas sales on tax rates

High state exposure for high-cost developments

The Economics of High Cost Heavy Oil Development



* Analysis of incumbent production includes “buy-down” impact for reduced taxes on existing production.

Econ One Research

ACES: 5 key problems

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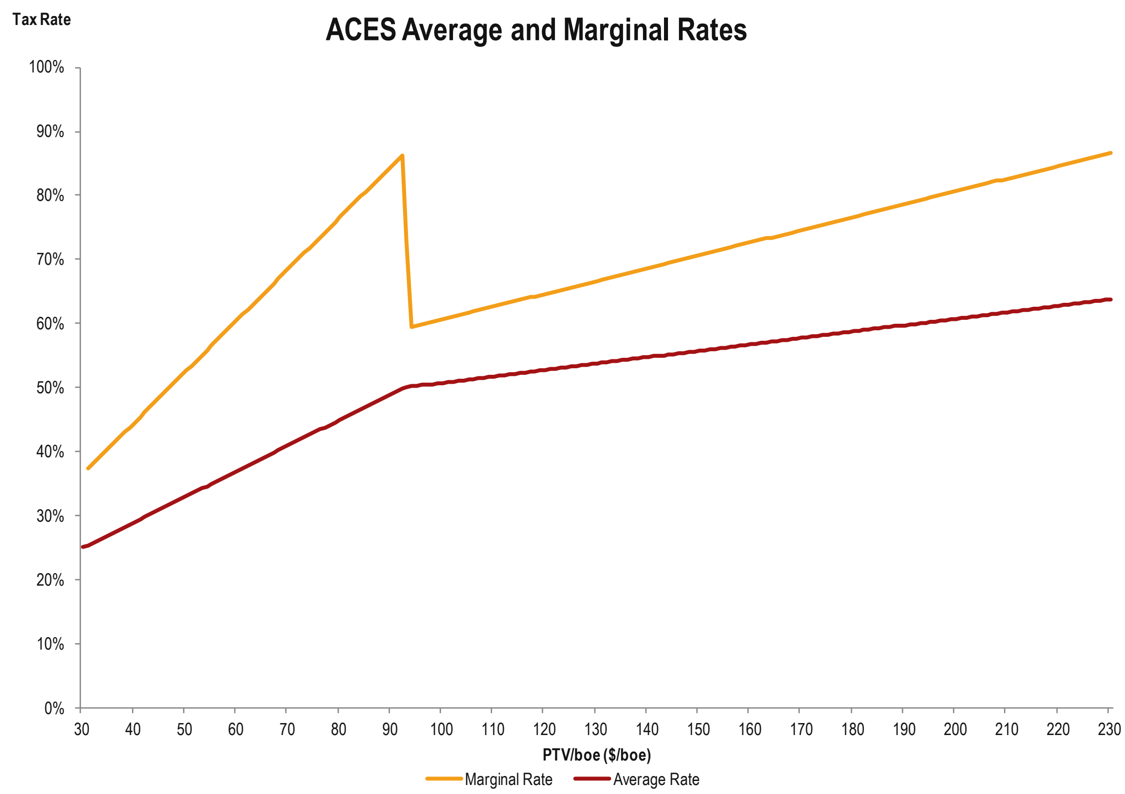
- **Impact of large-scale gas sales on tax rates**

Impact of Large-Scale Gas Sales on Tax Rates

- Under ACES, production tax value is assessed on a combined BTU-equivalent basis for both oil and gas production
  - So long as no major gas export project is under development, this has no impact
  - In the event of the development of a major gas export project, however, when gas prices are significantly lower than oil prices, this could lead to significant reductions in Government Take



ACES: 5 key problems – *available solutions*

- High levels of Government Take reduce competitiveness for capital, especially at high prices
  - *Reduce, bracket or eliminate progressivity*
  - *Reduce base rate*
- High marginal tax rates reduce incentives for spending control
  - *Reduce, bracket or eliminate progressivity*
  - *Reduce, restrict or eliminate credits*
- Complexity makes meaningful economic analysis and comparison difficult
  - *Simplify overall system design, especially interaction of progressivity with credits*
  - *Improve economics for new development*
- Significant state exposure in low price environments, and for high-cost developments
  - *Reduce or eliminate some or all credits*
  - *Eliminate ability to claim credits from state treasury*
  - *Carry credits forward to production*
- Impact of large-scale gas sales on tax rates
  - *Eliminate progressivity, levy progressivity on gross basis, or use progressive Gross Revenue Exclusion*

ACES: 5 key problems – ***SB21/HB72 Solutions***

- High levels of Government Take reduce competitiveness for capital, especially at high prices
  - *Reduce, bracket or* ***eliminate progressivity***
  - *Reduce base rate*
- High marginal tax rates reduce incentives for spending control
  - *Reduce, bracket or* ***eliminate progressivity***
  - ***Reduce, restrict or eliminate credits***
- Complexity makes meaningful economic analysis and comparison difficult
  - ***Simplify overall system design, especially interaction of progressivity with credits***
  - ***Improve economics for new development***
- Significant state exposure in low price environments, and for high-cost developments
  - ***Reduce or eliminate some or all credits***
  - ***Eliminate ability to claim credits from state treasury***
  - ***Carry credits forward to production***
- Impact of large-scale gas sales on tax rates
  - ***Eliminate progressivity****, levy progressivity on gross basis, or use progressive Gross Revenue Exclusion*

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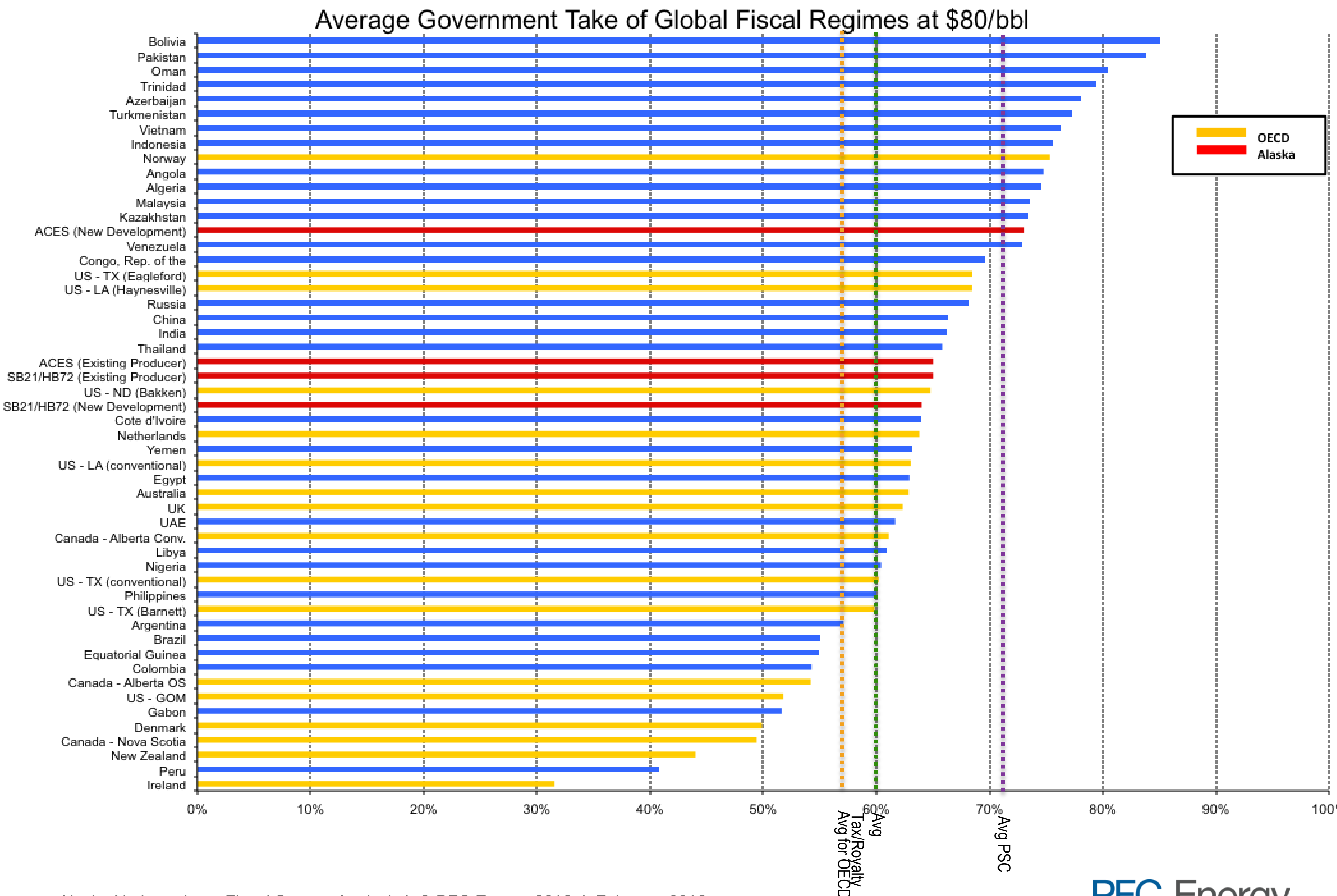
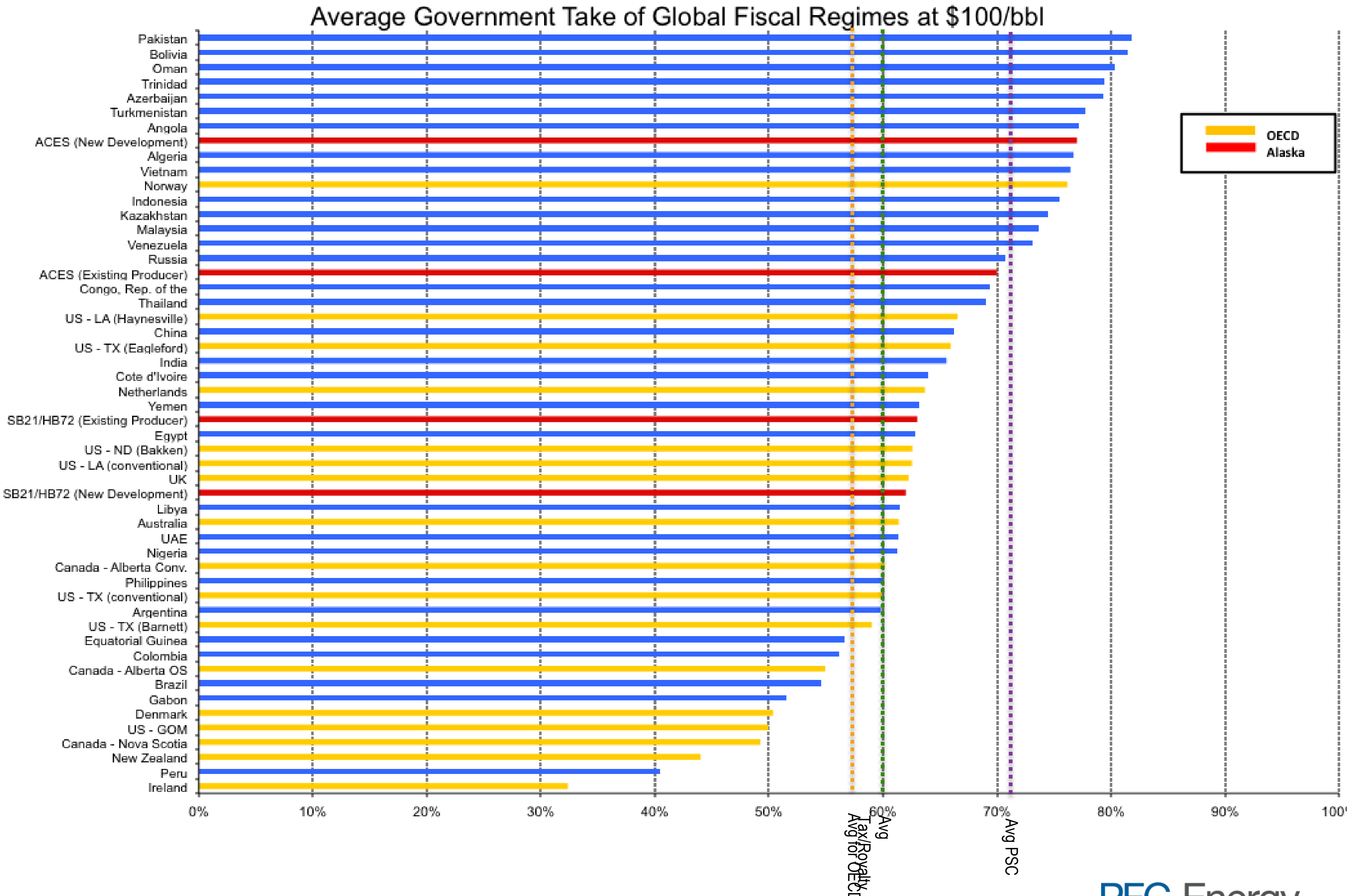
Regime Competitiveness: Average Government Take at $80/bbl



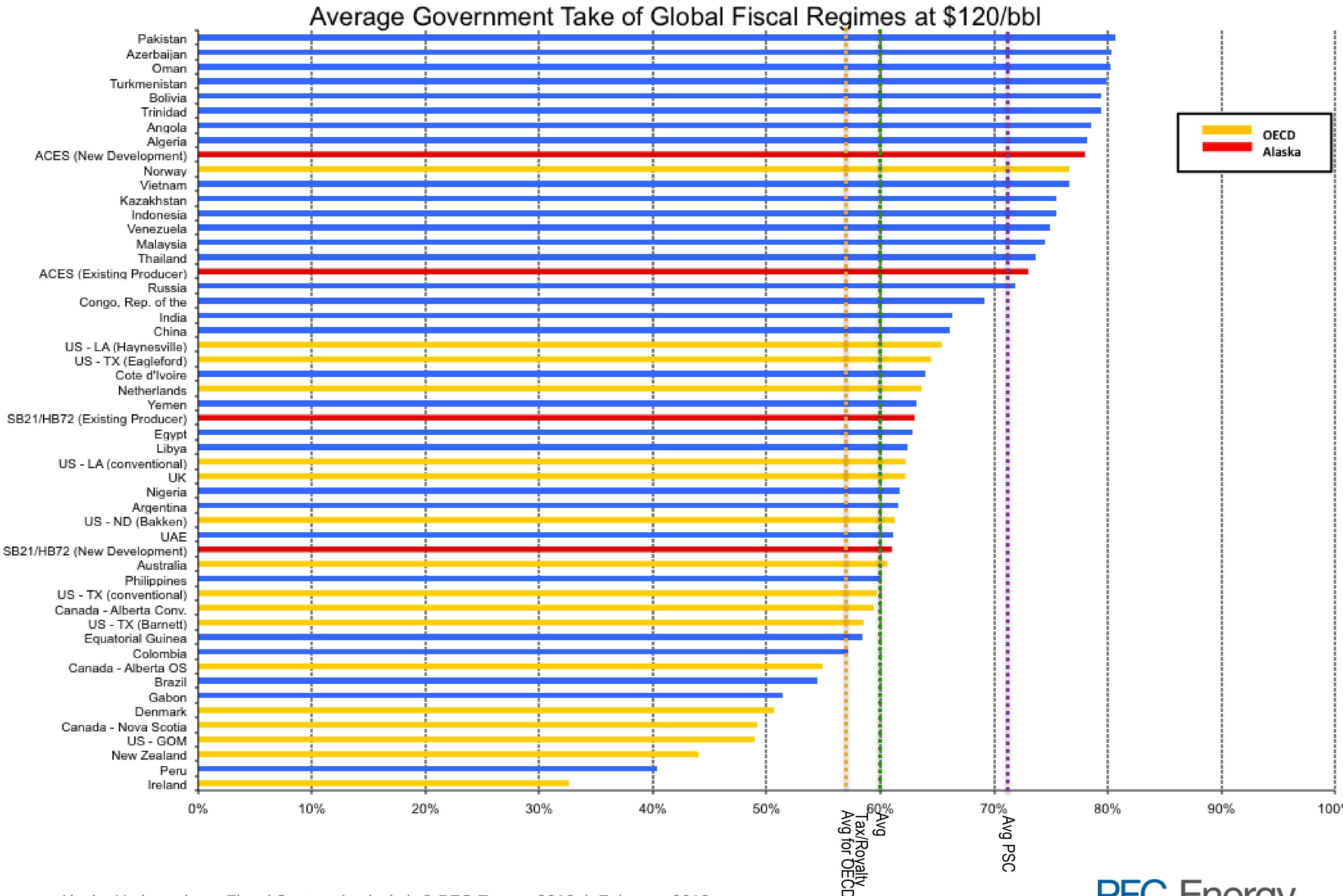
PFC Energy

Regime Competitiveness: Average Government Take at $100/bbl



PFC Energy

Regime Competitiveness: Average Government Take at $120/bbl



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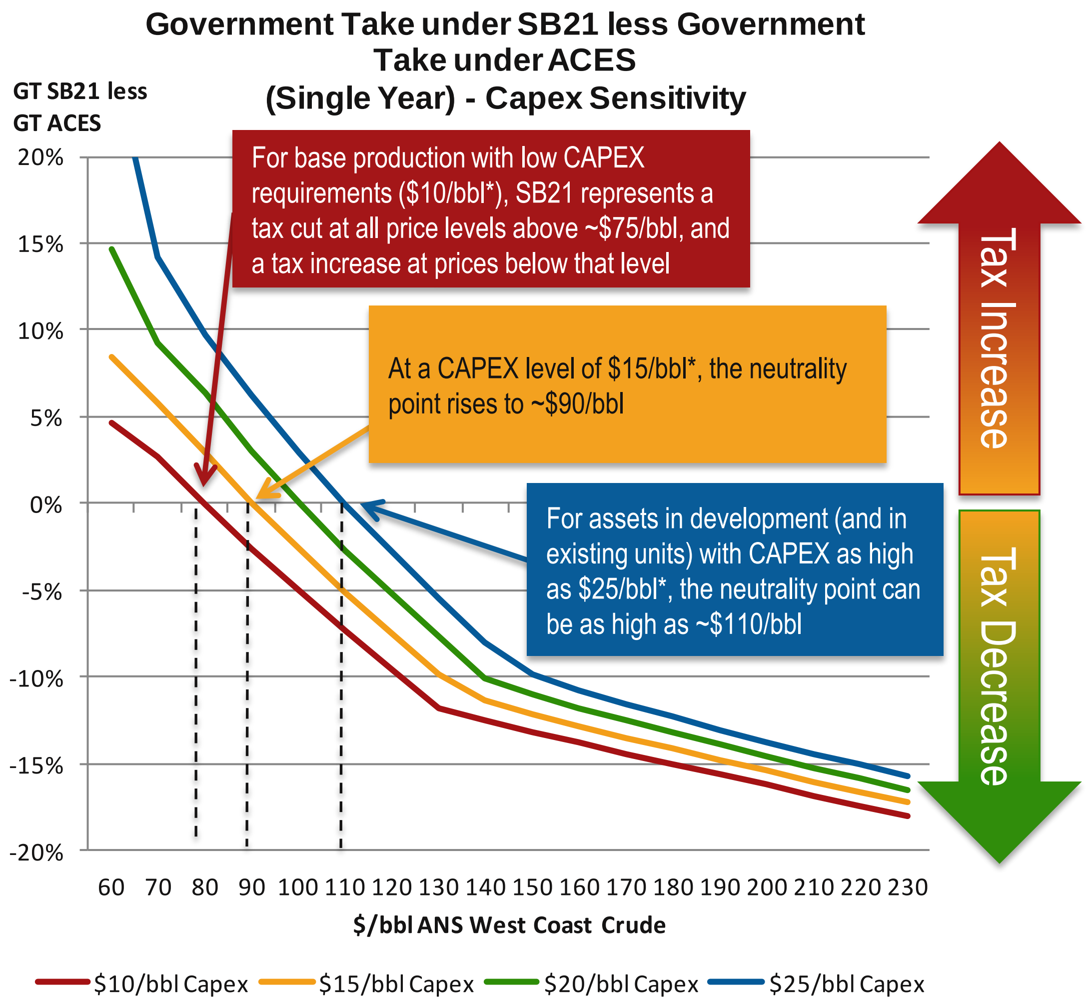
Government Take under SB21/HB72 and ACES – Capex Sensitivity



** All CAPEX figures are in gross bbl terms ($15 per gross bbl is roughly equivalent to DOR 2014 average North Slope forecast of $19.6 per bbl net of royalty, when adjusted for gross/net and for capital expenditures by non-taxable entities)*

- As noted in PFC Energy testimony on 1/31/13, at low oil prices, Relative Government Take under SB 21 is higher than under ACES, due to the impact of low or no progressivity, combined with the elimination of the 20% capital credit under SB 21
- The **oil price level** at which this occurs is highly **sensitive to annual levels of capital spending**, since CAPEX both reduces the oil price level at which progressivity kicks in under ACES, and determines the size of the available capital credit under ACES
- Looking at a **single year of production** also slightly raises this neutrality point, since over many years, inflation reduces the real price level at which progressivity starts under ACES
- For mature, producing assets with a low ongoing CAPEX requirement ($10/bbl), SB21 represents a **reduction in government take at prices above ~$75**, however for capital intensive new developments in existing units, that neutrality **point can be as high as $110/bbl**
- It is thus important to understand that one impact of the removal of the 20% capital credit under SB 21 is that for companies with high development costs relative to overall production, it **can represent a tax increase at current prices**

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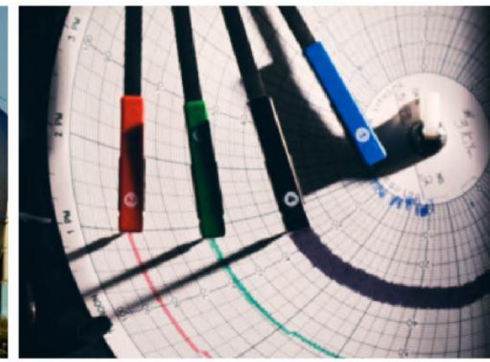

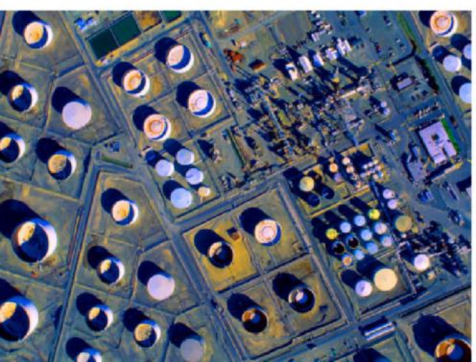

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