Discussion Slides: Alaska House Resources Committee

April 23, 2012
Janak Mayer
Manager, Upstream & Gas
PFC Energy
Alaska’s Oil & Gas
Competitive Context
Fixed-Royalty Jurisdictions in US Lower 48 Are A Key Competitor to Alaska for Investment Dollars

2003-2005: Global Players' Sources & Uses of Cash Flow

- Cash Surplus
- Cash Deficit

2008-2010: Global Players' Sources & Uses of Cash Flow

- Cash Surplus
- Cash Deficit

It is now an exception not to be targeting unconventionals in North America as a major growth platform.
Alaska’s Days of “Easy Oil” Are Gone: High Costs and High Government Take Present Challenges

Costs are significantly higher in Alaska than the Lower 48 – even compared to unconventionals. Meanwhile, Alaska’s Government Take has risen significantly over recent years, meaning new project economics can be very challenging.
Relative Government Take (Definition)

**Relative Government Take** = \[
\frac{\text{Government Take}}{\text{Divisible Income}}
\]

Divisible Income equals Gross Revenues less costs, including capex and transportation costs.

Government Take includes all payments the government mandates in its function as a sovereign:
- Royalties
- Land rental fees, property taxes
- Production taxes
- Income taxes

Government Take does not include amounts the government earns via a direct equity stake.
Fixed Royalty v Profit Based Fiscal Systems

Incidence of a 30% Fixed Royalty on 5 Different Projects

Incidence of a 50% Profit-Based Tax on 5 Different Projects

Divisible Income

Capital Cost / boe  Operating Cost / boe  Normal Return on Capital  Rent
Regime Competitiveness: Average Government Take

Average Government Take of Global Fiscal Regimes at $140/bbl
Effect of Progressivity on Price Upside

**NPV - Project Value - Oil Price Sensitivity**

- **ACES**
- **Flat 25% Profits-Based Tax**

**IRR - Project Value - Oil Price Sensitivity**

- **ACES**
- **Flat 25% Profits-Based Tax**
Low Cost Light Oil: Hypothetical 10 mb/d Project Cashflows ($13/bbl Capex, $10/bbl Opex)

Cash Flow Analysis - $100 ANS West Coast

<table>
<thead>
<tr>
<th>Price</th>
<th>NPV</th>
<th>IRR</th>
</tr>
</thead>
<tbody>
<tr>
<td>$40</td>
<td>$</td>
<td>6%</td>
</tr>
<tr>
<td>$60</td>
<td>$55</td>
<td>14%</td>
</tr>
<tr>
<td>$100</td>
<td>$166</td>
<td>21%</td>
</tr>
</tbody>
</table>

Price NPV IRR

$40 $ (52) 6%
$60 $55 14%
$100 $166 21%
New Light Oil: Hypothetical 10 mb/d Project Cashflows
($17/bbl Capex, $15/bbl Opex)

<table>
<thead>
<tr>
<th>Price</th>
<th>NPV</th>
<th>IRR</th>
</tr>
</thead>
<tbody>
<tr>
<td>$40</td>
<td>$(167)</td>
<td>-11%</td>
</tr>
<tr>
<td>$60</td>
<td>$(24)</td>
<td>9%</td>
</tr>
<tr>
<td>$100</td>
<td>$113</td>
<td>16%</td>
</tr>
</tbody>
</table>

Cash Flow Analysis - $100 ANS West Coast
Mid-High Cost Project: Hypothetical 10 mb/d Project Cashflows ($25/bbl Capex, $15/bbl Opex)

Cash Flow Analysis - $100 ANS West Coast

<table>
<thead>
<tr>
<th>Price</th>
<th>NPV</th>
<th>IRR</th>
</tr>
</thead>
<tbody>
<tr>
<td>$40</td>
<td>$ (304)</td>
<td></td>
</tr>
<tr>
<td>$60</td>
<td>$ (140)</td>
<td>4%</td>
</tr>
<tr>
<td>$100</td>
<td>$ 24</td>
<td>11%</td>
</tr>
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</table>
High Cost Project: Hypothetical 10 mb/d Project Cashflows ($34/bbl Capex, $15/bbl Opex)

Cash Flow Analysis - $100 ANS West Coast

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<th>Price</th>
<th>NPV</th>
<th>IRR</th>
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<tbody>
<tr>
<td>$40</td>
<td>$ (456)</td>
<td></td>
</tr>
<tr>
<td>$60</td>
<td>$ (285)</td>
<td>1%</td>
</tr>
<tr>
<td>$100</td>
<td>$ (92)</td>
<td>7%</td>
</tr>
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</table>
Project Value Under ACES: Cost and Price Sensitivity

**Project Value - Oil Price Sensitivity**

- Low Cost Light Oil
  - $17/bbl Capex
  - $25/bbl Capex
  - $34/bbl Capex

**IRR**

- Low Cost Light Oil
  - $17/bbl Capex
  - $25/bbl Capex
  - $34/bbl Capex
• ACES appears to work well as a “harvest” regime
  – Existing **mature fields remain profitable**, including capital work required to achieve ~6% decline (renewal capex)
  – **Maximum ‘rent’** extracted from a declining production base is captured for the state
• ACES inhibits the development of new projects and resources that might help stem or even reverse the decline
  – ACES is **not progressive with regard to costs**, so high government take applies even to very high cost projects
  – Existing system of capital credits etc appears to do more to encourage ‘renewal capex’ than it does new production spending
  – Progressivity can have a major **detrimental impact on breakeven prices** for high-cost projects at current oil prices
## Options to Spur New Developments

<table>
<thead>
<tr>
<th>Approach</th>
<th>Implementation Options</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
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<tr>
<td>Uniform lowering of Government Take</td>
<td>• Bracketing • Reduced Base Rate • Increased Progressivity Thresholds • Reduced Progressivity Rates • Progressivity Caps</td>
<td>• Does not require increased complexity • May present opportunities for simplification</td>
<td>• Incentivizing new high cost resources through this method alone requires giving substantial ‘rent’ back to producers on the mature producing assets</td>
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<tr>
<td>Differentiation between old and new production</td>
<td>• Allowance for New Oil • Switching in part away from Net Profits taxation to Gross Revenue Taxation, to enable different tax rates for different production streams without separate cost accounting and tax returns • Use of some combination of definitions for incremental production, ie base decline rate, regulator-agreed new programs, new areas</td>
<td>• Allows significant reductions in Govt Take on new and costlier developments (including heavy oil etc) without requiring significant reductions on the mature producing assets</td>
<td>• Administrative difficulties around definitions of ‘new production’</td>
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<td>Enhancements to cost progressivity of ACES</td>
<td>• Changes to allowable cost deduction or credits mechanism etc to provide greater ‘uplift’ for high capital and operating costs, while restricting negative Production Tax in marginal cases • Enhancements to royalty relief</td>
<td>• Does not require structural change away from ACES</td>
<td>• Increases already high complexity and opacity • May exacerbate problem of poor cost control incentives • Increases likelihood of unintended consequences • Likely less significant impact than new production differentiation</td>
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Analysis of HB 3001
## Options to Spur New Developments

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• For production from new North Slope fields, 30% gross revenue exclusion
  – Applies to calculation of both base and progressive tax amounts
  – Does not apply to progressivity rate calculation
  – Applies for 10 years
• For all other North Slope production, 40% gross revenue exclusion
  – Applies to calculation of progressive tax amount only
  – Does not apply to base tax amount or to progressivity rate calculation
  – Applies indefinitely
• Maximum progressive tax rate capped at 60% (reduced from 75%)
• 40% Well Lease Expenditure Credit applied to North Slope
• Capital credits redeemed in single year (rather than spread over two)
### Understanding the Gross Revenue Exclusions

<table>
<thead>
<tr>
<th></th>
<th>Price /Barrel</th>
<th>Barrels</th>
<th>ACES ($mm)</th>
<th>HB 3001 Existing</th>
<th>HB 3001 New Fields</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANS Oil Price</td>
<td>$109.47</td>
<td>555,227.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Annual Production</strong></td>
<td></td>
<td></td>
<td>$22,185</td>
<td>$22,185</td>
<td>$22,185</td>
</tr>
<tr>
<td>Royalty Barrels</td>
<td>(30,158,081)</td>
<td>$3,301</td>
<td>$3,301</td>
<td>$3,301</td>
<td>$3,301</td>
</tr>
<tr>
<td>Taxable Barrels</td>
<td>172,499,814</td>
<td>$18,884</td>
<td>$18,884</td>
<td>$18,884</td>
<td>$18,884</td>
</tr>
<tr>
<td>Total Transportation Costs</td>
<td>$ (8.56)</td>
<td>$ (1,477)</td>
<td>$ (1,477)</td>
<td>$ (1,477)</td>
<td>$ (1,477)</td>
</tr>
<tr>
<td><strong>Gross Value at Point of Production (GVPP)</strong></td>
<td>172,499,814</td>
<td>$17,407 $17,407 $17,407 $17,407</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Lease Expenditures</td>
<td>$ (29.11)</td>
<td>$(5,021)</td>
<td>$(5,021)</td>
<td>$(5,021)</td>
<td>$(5,021)</td>
</tr>
<tr>
<td><strong>Production Tax Value (PTV)</strong></td>
<td>$71.80</td>
<td>$12,385 $12,385 $12,385 $12,385</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30% GVPP Allowance</td>
<td></td>
<td>$5,222</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40% GVPP Allowance</td>
<td></td>
<td>$6,963</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted PTV for Base Tax</td>
<td>$12,385</td>
<td>$12,385 $12,385 $7,163</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted PTV for Progressive Tax</td>
<td>$12,385</td>
<td>$5,423 $7,163</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Base Production Tax - 25%</td>
<td>$3,096</td>
<td>$3,096 $1,791</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Progressive Production Tax - 16.72%</td>
<td>$2,071</td>
<td>$907 $1,198</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production Tax before Credits</td>
<td>$5,167</td>
<td>$4,003 $2,989</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credits</td>
<td>$450</td>
<td>$750</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated Total Tax After Credits</td>
<td>$4,717</td>
<td>$3,253 $2,239</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Purpose of Gross Revenue Exclusion Concept

• ACES Production Tax is a profit-based tax – ie it taxes wellhead revenue net of costs

• Under the ACES structure, varying either the base or the progressive rates for some forms of production and not others introduces significant complexity – requires ‘ring-fencing’ to allocate costs between different streams of production

• Gross Revenue Exclusion is a concept that makes it possible to reduce government take on some streams of production but not others, without requiring ring-fencing

• In HB 3001, however, it is also used to reduce government take across all North Slope fields
  – This could also be accomplished through simply lowering progressivity
  – Approximately equivalent to reducing progressivity from .4% to .15%
<table>
<thead>
<tr>
<th>Production Tax</th>
<th>Total State Take</th>
<th>Total Government Take</th>
<th>Cash to Companies</th>
<th>FY 2013 % Government Take</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANS West Coast Oil Price</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>HB10</th>
<th>HB10</th>
<th>HB10</th>
<th>HB10</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACES (With 40% Well Credit)</td>
<td>1,161</td>
<td>1,563</td>
<td>378</td>
<td>81</td>
</tr>
<tr>
<td>HB10 (With 40% Well Credit)</td>
<td>1,142</td>
<td>1,533</td>
<td>378</td>
<td>81</td>
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<tr>
<td>HB10 (With 40% Well Credit)</td>
<td>1,142</td>
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<td>1,142</td>
<td>1,533</td>
<td>378</td>
<td>81</td>
</tr>
</tbody>
</table>

Note: Consistent with DOR methodology, these revenue numbers do not include payments for tax credits which are not claimed against current production, as these are accounted for separately in the budget. In 2013, DOR forecasts a potential liability of $400mm for these credits.

Well Credit impact has been estimated assuming 40% of Capex dollars are Well Expenditures, qualifying for the 40% Well Credit. Actual impact will vary depending on proportion of Capex qualifying for the Well Credit.
FY 2013 Government Take Comparison

<table>
<thead>
<tr>
<th>Price</th>
<th>ACES</th>
<th>HB 3001 (Existing)</th>
<th>HB 3001 (New)</th>
<th>HB110 (Existing)</th>
<th>HB110 (New)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>81%</td>
<td>72%</td>
<td>72%</td>
<td>79%</td>
<td>79%</td>
</tr>
<tr>
<td>50</td>
<td>70%</td>
<td>65%</td>
<td>62%</td>
<td>68%</td>
<td>65%</td>
</tr>
<tr>
<td>60</td>
<td>67%</td>
<td>64%</td>
<td>58%</td>
<td>66%</td>
<td>62%</td>
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<td>70</td>
<td>66%</td>
<td>64%</td>
<td>58%</td>
<td>65%</td>
<td>61%</td>
</tr>
<tr>
<td>80</td>
<td>67%</td>
<td>64%</td>
<td>59%</td>
<td>65%</td>
<td>61%</td>
</tr>
<tr>
<td>90</td>
<td>69%</td>
<td>65%</td>
<td>60%</td>
<td>65%</td>
<td>61%</td>
</tr>
<tr>
<td>100</td>
<td>70%</td>
<td>65%</td>
<td>61%</td>
<td>65%</td>
<td>61%</td>
</tr>
<tr>
<td>110</td>
<td>72%</td>
<td>66%</td>
<td>62%</td>
<td>66%</td>
<td>61%</td>
</tr>
<tr>
<td>120</td>
<td>73%</td>
<td>67%</td>
<td>63%</td>
<td>67%</td>
<td>62%</td>
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<tr>
<td>130</td>
<td>75%</td>
<td>68%</td>
<td>64%</td>
<td>67%</td>
<td>63%</td>
</tr>
<tr>
<td>140</td>
<td>76%</td>
<td>69%</td>
<td>65%</td>
<td>68%</td>
<td>63%</td>
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<tr>
<td>150</td>
<td>76%</td>
<td>69%</td>
<td>66%</td>
<td>68%</td>
<td>64%</td>
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<tr>
<td>160</td>
<td>77%</td>
<td>69%</td>
<td>66%</td>
<td>69%</td>
<td>64%</td>
</tr>
<tr>
<td>170</td>
<td>77%</td>
<td>70%</td>
<td>67%</td>
<td>69%</td>
<td>65%</td>
</tr>
<tr>
<td>180</td>
<td>77%</td>
<td>70%</td>
<td>67%</td>
<td>70%</td>
<td>65%</td>
</tr>
<tr>
<td>190</td>
<td>78%</td>
<td>70%</td>
<td>67%</td>
<td>70%</td>
<td>65%</td>
</tr>
<tr>
<td>200</td>
<td>78%</td>
<td>71%</td>
<td>68%</td>
<td>70%</td>
<td>65%</td>
</tr>
</tbody>
</table>
$17/bbl Field: Project Value Under Different Fiscal Options

NPV vs Oil Price Sensitivity

- ACES
- HB 3001 (Existing)
- HB 3001 (New)
- HB110 (Existing)
- HB110 (New)

IRR vs Oil Price Sensitivity

- ACES
- HB 3001 (Existing)
- HB 3001 (New)
- HB110 (Existing)
- HB110 (New)
$25/bbl Field: Project Value Under Different Fiscal Options

[Diagram showing Project Value - Oil Price Sensitivity with NPV and IRR axes, comparing different fiscal options such as ACES, HB 3001 (Existing), HB 3001 (New), HB110 (Existing), and HB110 (New).]
$34/bbl Field: Project Value Under Different Fiscal Options

**NPV**

**Project Value - Oil Price Sensitivity**

**IRR**

**Project Value - Oil Price Sensitivity**

- **ACES**
- **HB 3001 (Existing)**
- **HB 3001 (New)**
- **HB110 (Existing)**
- **HB110 (New)**

Oil Price Sensitivity:
- -5%
- -10%
- -15%
- 0%
- 5%
- 10%
- 15%
- 20%
- 25%
- 30%
40% Well Credits Create High Levels of Government Support

After Tax Effective Government Well Work Contribution With 40% Credit
Key Issues

• Across-the-board reduction in government take is simplest approach, but requires forgoing significant revenue on activities that are currently economic

• If, hypothetically, decline on legacy fields could be reduced to 2% from 6%, revenue from 2020 onward could be higher than under current scenario; revenue until that point would be significantly reduced

• Alternative approach is to endeavor to differentiate between existing incremental production from legacy fields
  – Significant complexities to doing this effectively

• HB3001 does not address other key issues with ACES including
  – Oil / Gas decoupling
  – High levels of spending support through high credits & progressivity
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