
Analysis of Alaska's Tax System, North Slope Investment and The Administration's Proposal SB 21

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Managing Director
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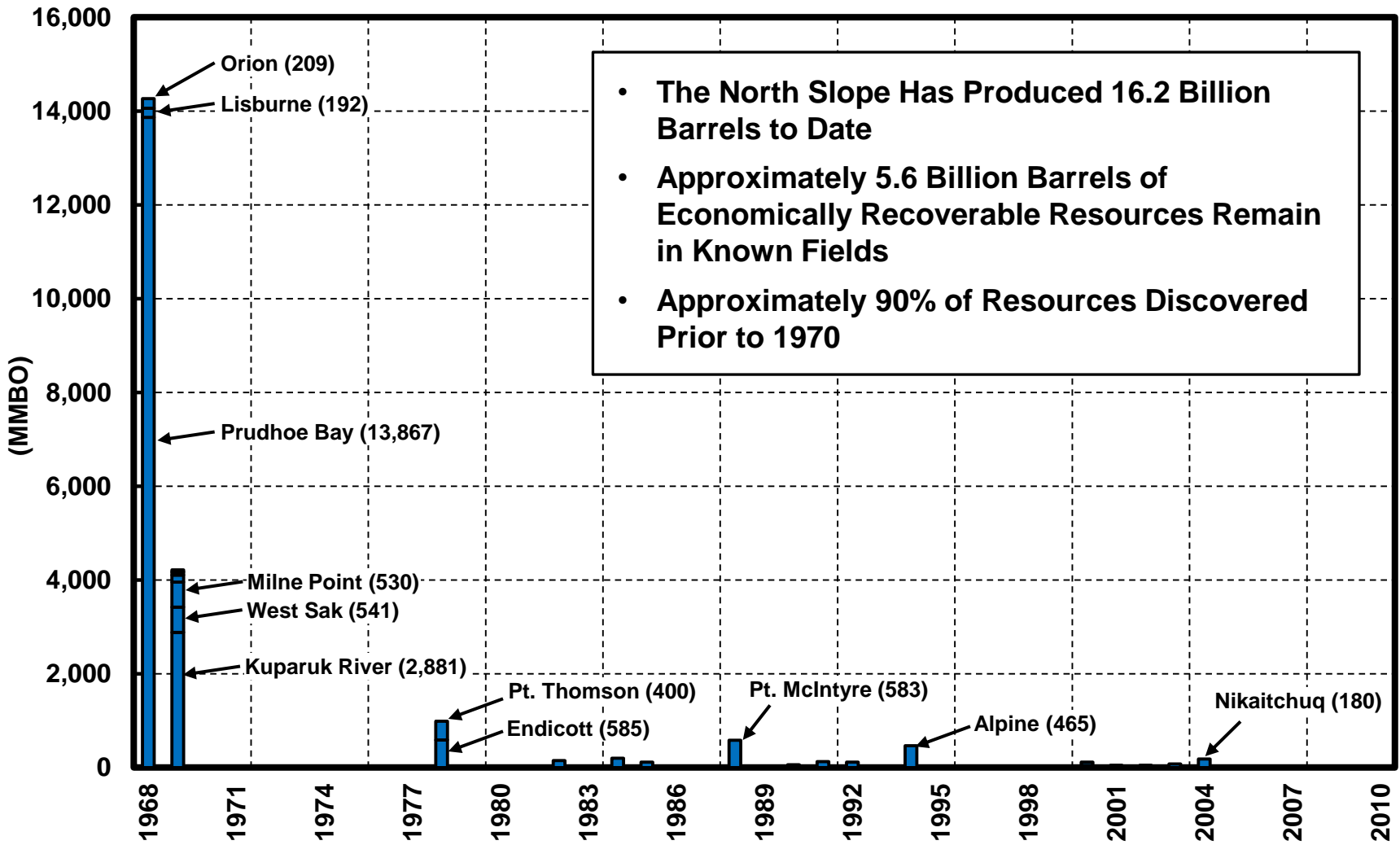
February 13, 2013

Econ One: Who We Are

- **Economic Research and Consulting Firm**
 - **Provides Economic Analysis In Energy and Other Industries**
- **Advised the State of Alaska on Petroleum Related Matters For Over Two Decades**
- **Worked With the Cowper, Hickel, Knowles, Murkowski, Palin, and Parnell Administrations**
- **Assisted the Legislature Between 2005 and 2008 on Tax and Gas Development Issues**
- **Energy-Related Work Outside Alaska**
 - **State Governments: Texas, Louisiana, New Mexico, Oklahoma, California**
 - **Federal Government Agencies: Department of Interior, Federal Trade Commission**
 - **Energy Companies: Producers, Refiners, Mid-Stream Services, Pipelines, Chemicals**

Background

Alaska North Slope Discovered Resources by Discovery Year (1969 – 2010)

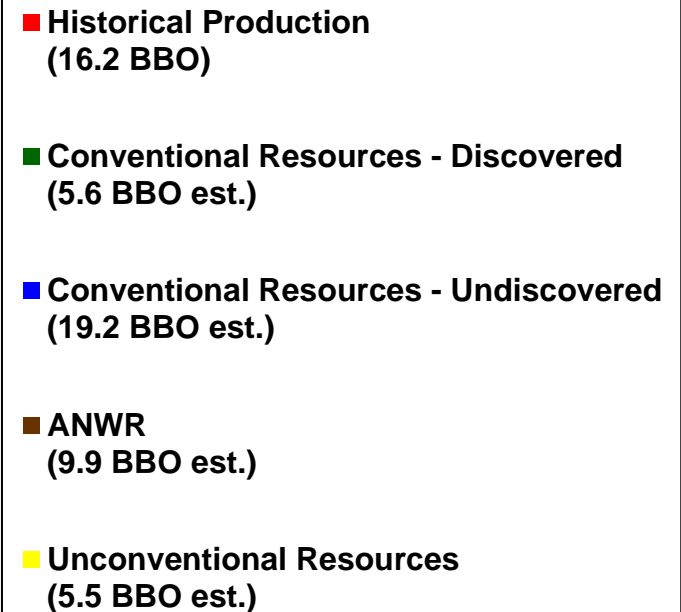
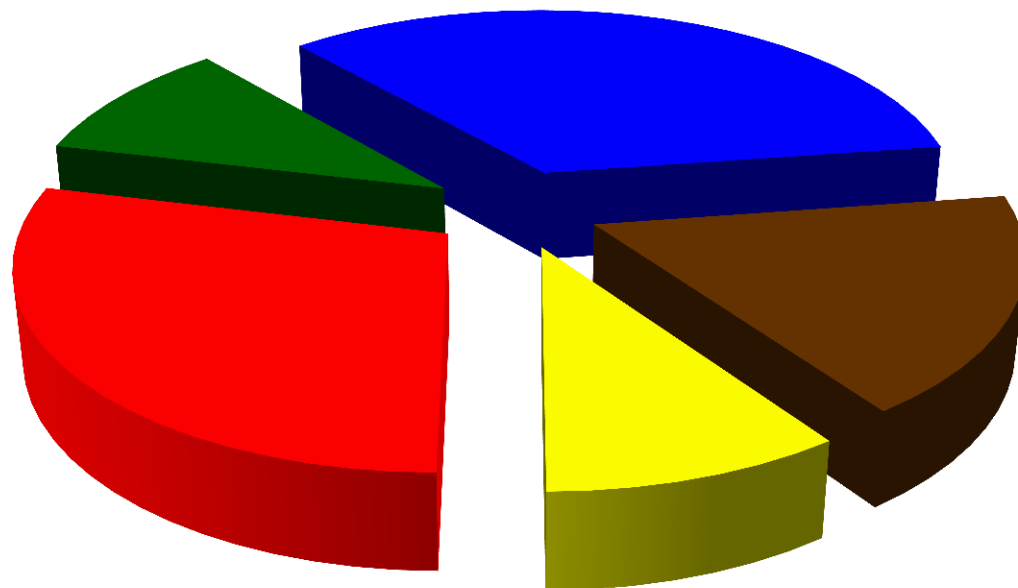


- The North Slope Has Produced 16.2 Billion Barrels to Date
- Approximately 5.6 Billion Barrels of Economically Recoverable Resources Remain in Known Fields
- Approximately 90% of Resources Discovered Prior to 1970

Source: DNR: The Historical Resource and Recovery Growth in Developed Fields, Arctic Slope of Alaska, 2004; DOE/NETL-2009/1385; AOGCC.

Alaska North Slope Production and Resources

- **Many North Slope Fields are Now at Mature Stages. However, Less Than Half of its Potential Economic Oil Resources Have Been Produced to Date**
- **In Total, the North Slope Contains Approximately 40 Billion Barrels of Additional Estimated Economic Recoverable Resources at Today's Prices**



Estimated Undiscovered Conventional Oil Resources on Alaska North Slope

	Technically Recoverable Resources			Economically Recoverable	Expected Typical
	P95	Mean	P5	@ \$90/bbl	Field Size
	(Million Barrels)				
	(1)	(2)	(3)	(4)	(5)
Central North Slope	2,800	3,400	3,900	3,000	32 - 64
Beaufort Sea	400	8,200	23,200	5,800	-
Chukchi Sea	2,300	15,400	40,100	9,900	-
NPRA	400	900	1,700	500	32 - 64
ANWR	5,900	10,400	15,200	9,900	64 - 128
Total		38,300		29,100	

Source:

USGS Reports 2011-1103 and 2009-1112;

BOEM, Assessment of undiscovered technically recoverable oil and gas resources of the nation's outer continental shelf.

Estimated Undeveloped Unconventional Oil Resources on Alaska North Slope

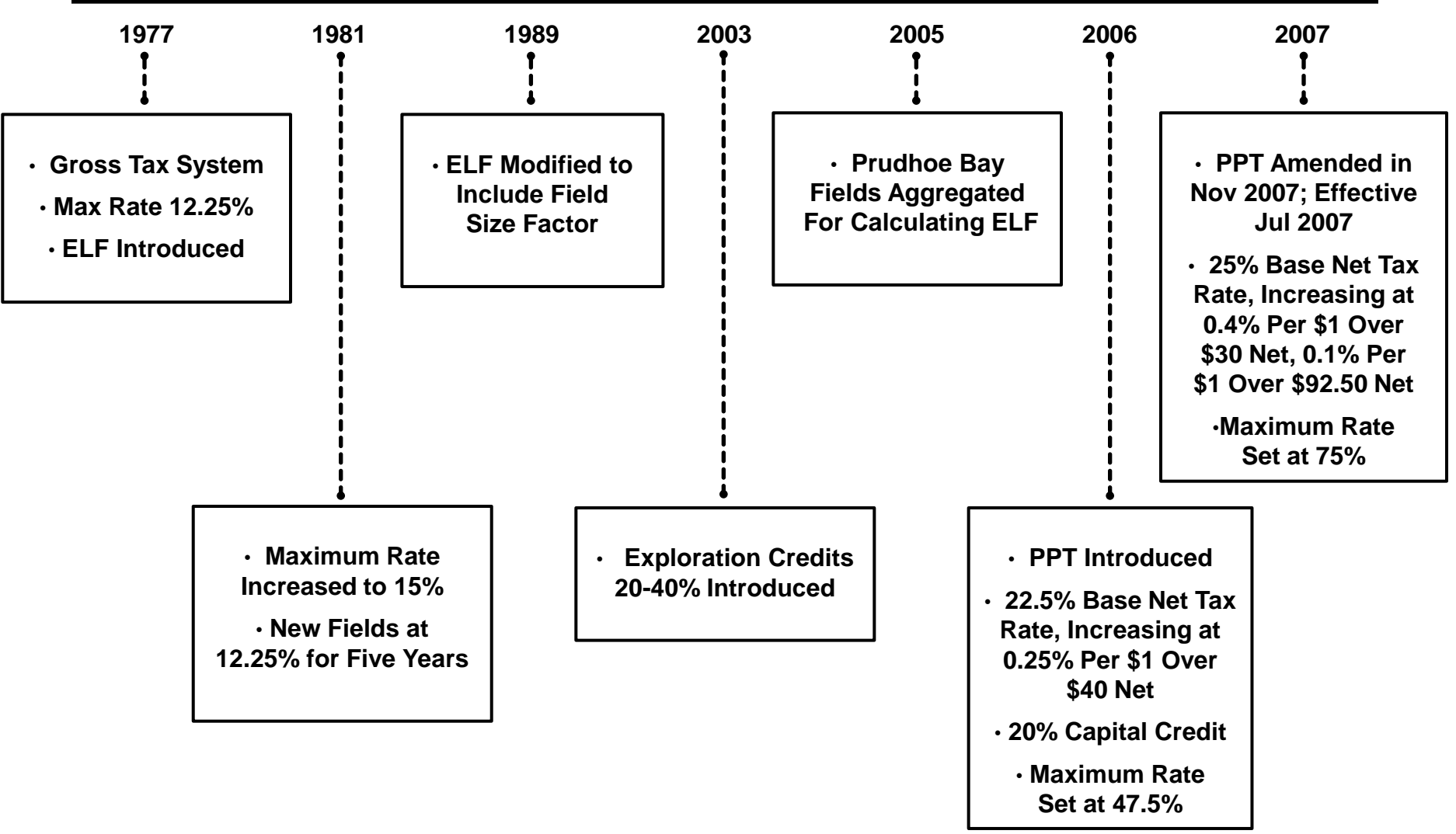
Shale **~ 1 Billion Bbls**
 (Mean Estimated Technically Recoverable Barrels)
(USGS, 2012)

Viscous and Heavy Oil
 (Includes All Schrader/West Sak and Ugnu Reservoirs in the Kuparuk River,
 Prudhoe Bay, Milne Point and Nikaitchuq Units, Not Just PAs or Areas
 Under Development)

Total In-Place Resource **24 - 27 Billion Bbls**
(Hartz, et al., 2007; AOGCC)

Economically Recoverable **3.6 - 5.6 Billion Bbls**
(Assuming 15% Average Recovery)

A History of Alaska's Production Tax System: North Slope



Benchmarking North Slope Activity Over The Past Decade Against Other Areas

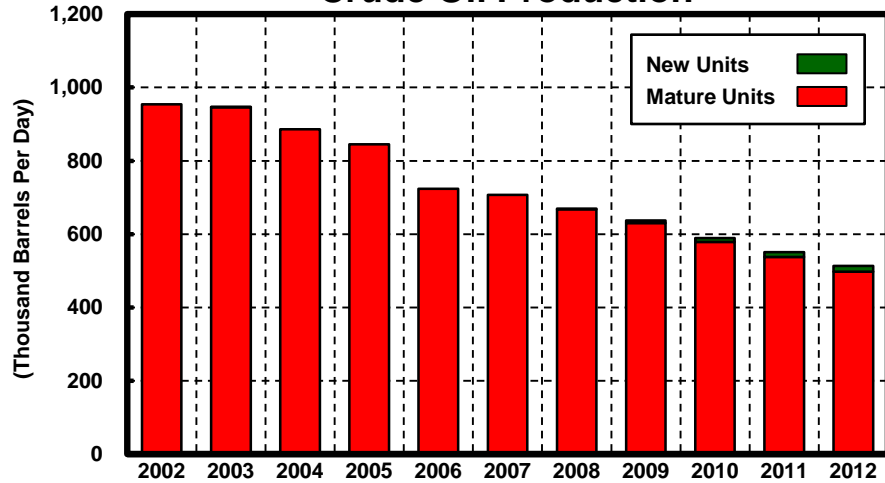
Benchmarking

- **Benchmarking Allows Us to Evaluate Activity in Alaska by Controlling for Significant Variables That are Common to All Oil Producing Properties**
- **No Two Producing Areas are Exactly Alike. We Attempt to Choose Locations That Share a Number of Similar Characteristics, Allowing for the Most Meaningful Comparisons**
- **We Benchmark the North Slope Against Significant Producing Areas in OECD Countries**
 - **The North Sea**
 - **The U.S. and Several Key Producing States / Areas**
 - **Canada and Producing Provinces**
 - **Australia**
- **All of These OECD Areas Have Many Characteristics in Common With North Slope**
 - **Similar Political and Legal Structure / Risk**
 - **Significant Prospectivity**
 - **But, Much of the “Low-Hanging” Fruit Has Been Produced**
 - **Development of Remaining Resources are Largely High-Cost, Either Conventional or Unconventional**
 - **Resources are Developed in Large Part by the Private Sector**

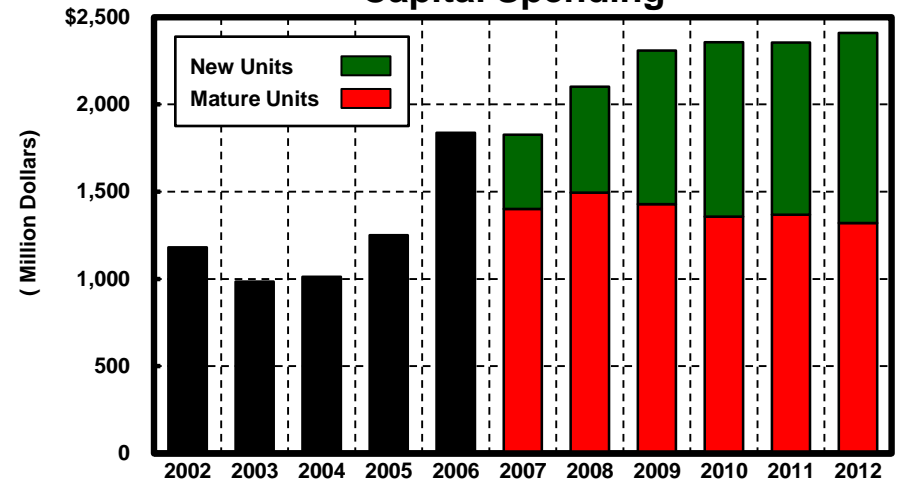
Country/Area Profile

Alaska North Slope

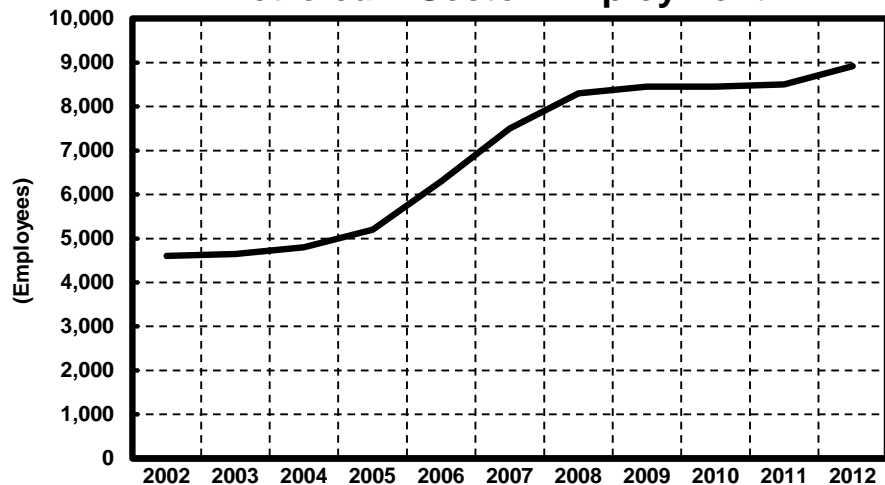
Crude Oil Production



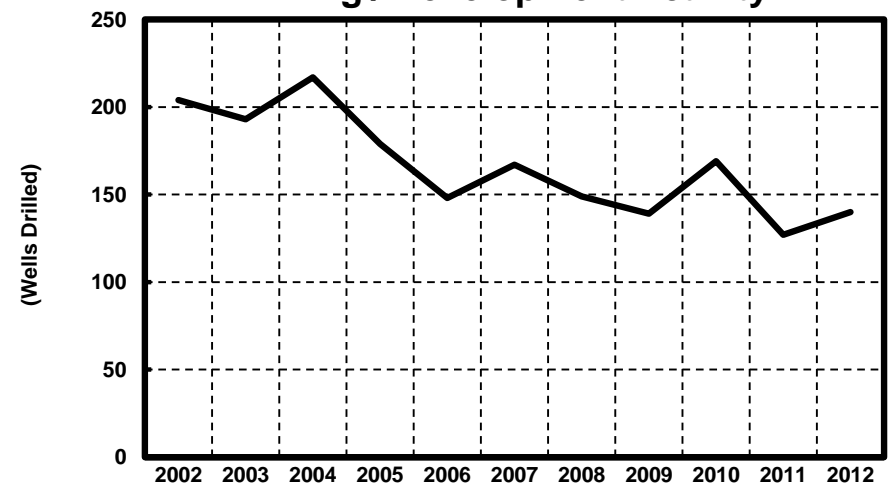
Capital Spending



Petroleum Sector Employment



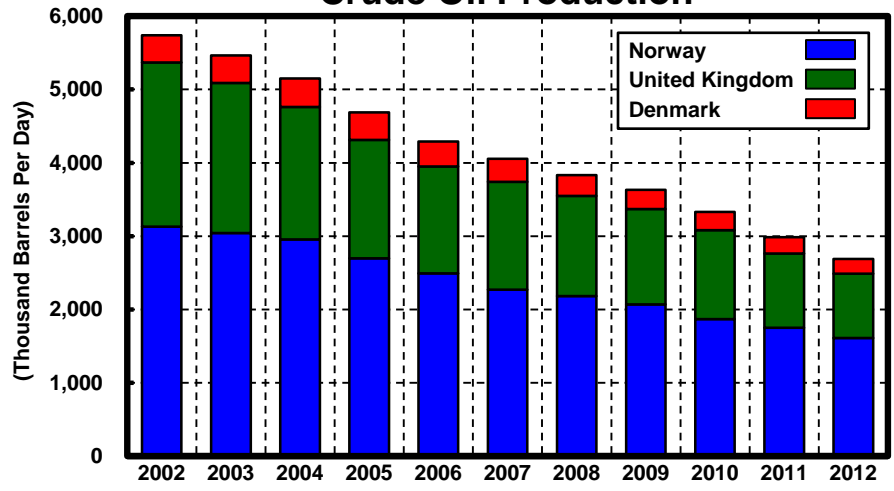
Drilling / Development Activity



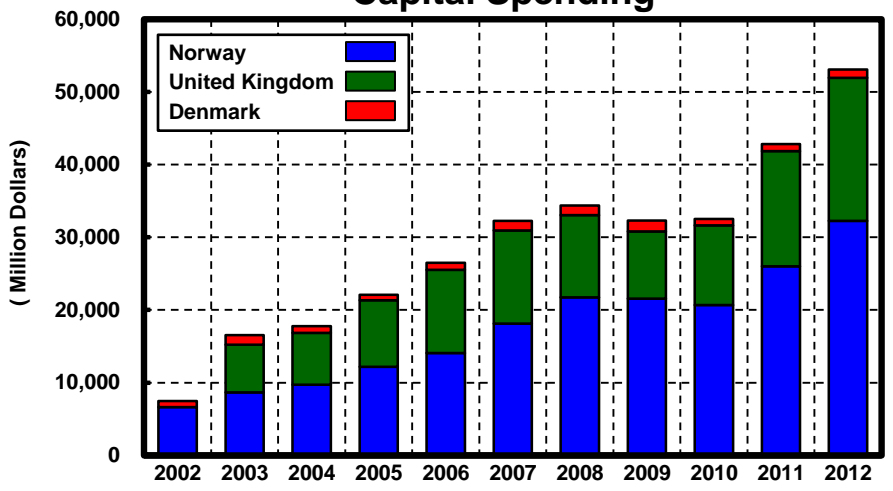
Country/Area Profile

Northwest Europe (North Sea)

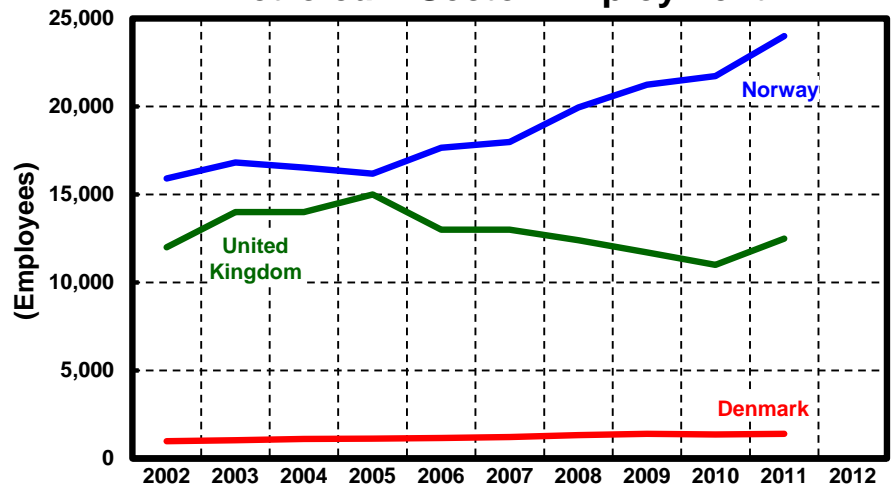
Crude Oil Production



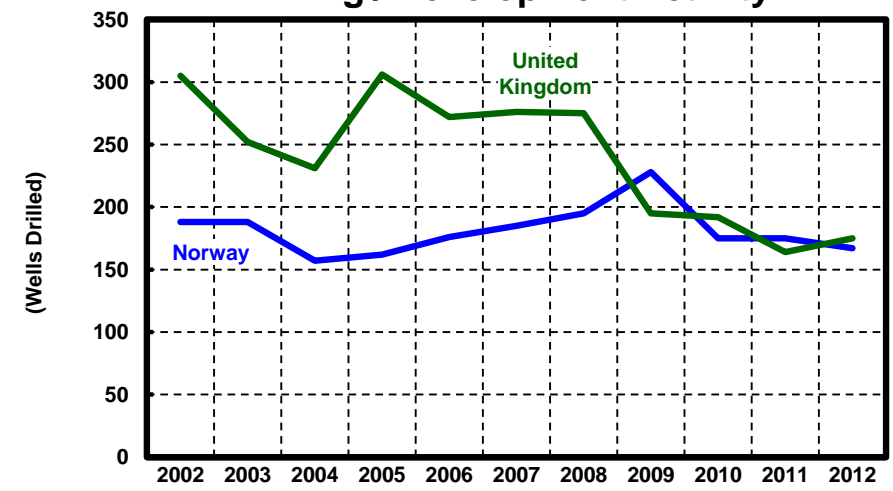
Capital Spending



Petroleum Sector Employment



Drilling / Development Activity

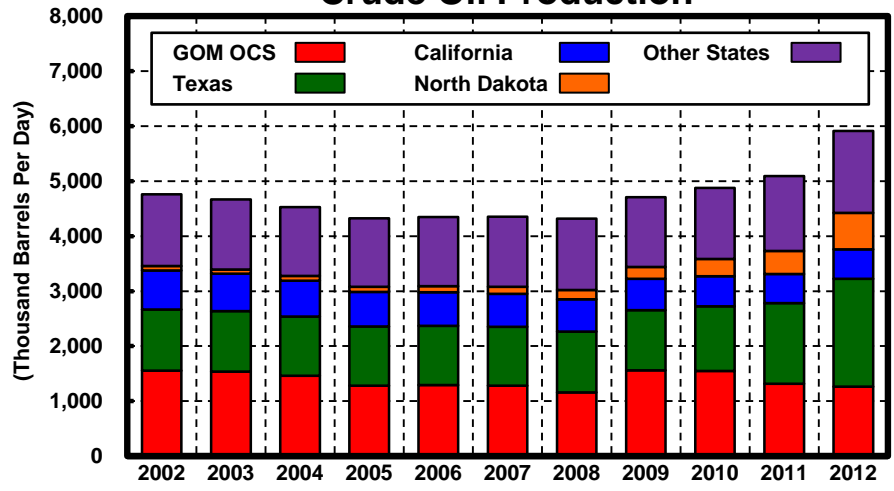


Note: 2012 figures are preliminary.

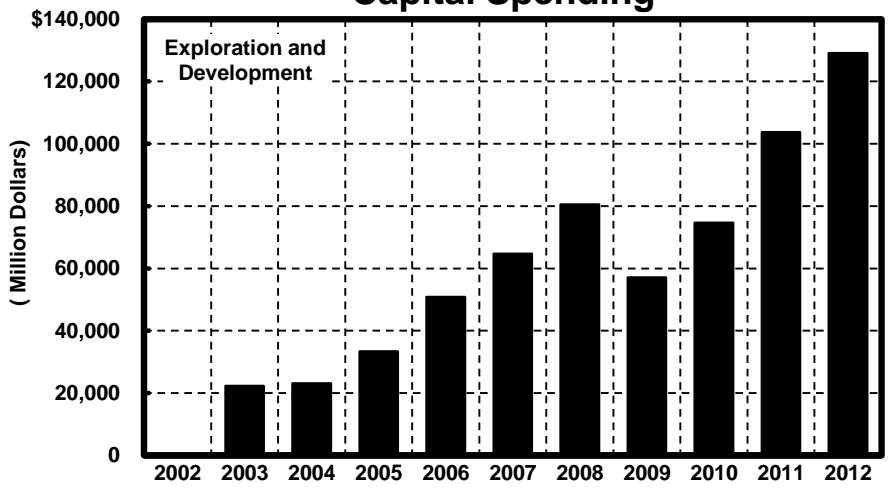
Country/Area Profile

United States Excluding Alaska North Slope

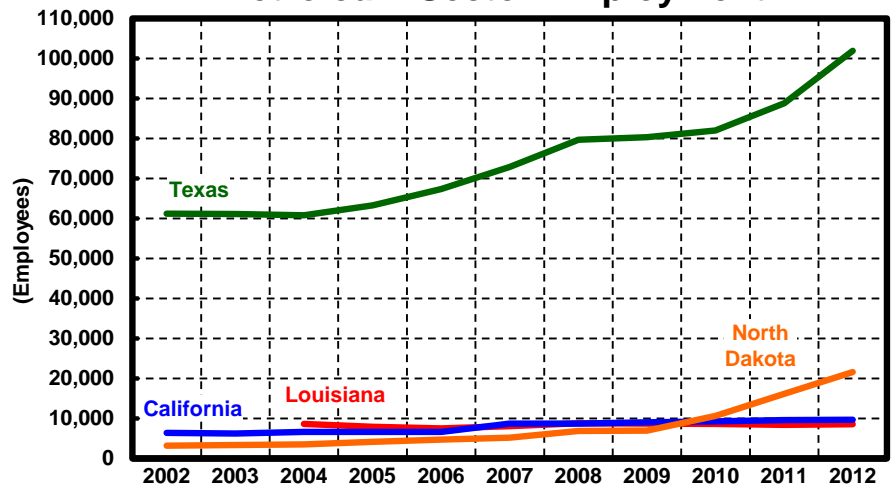
Crude Oil Production



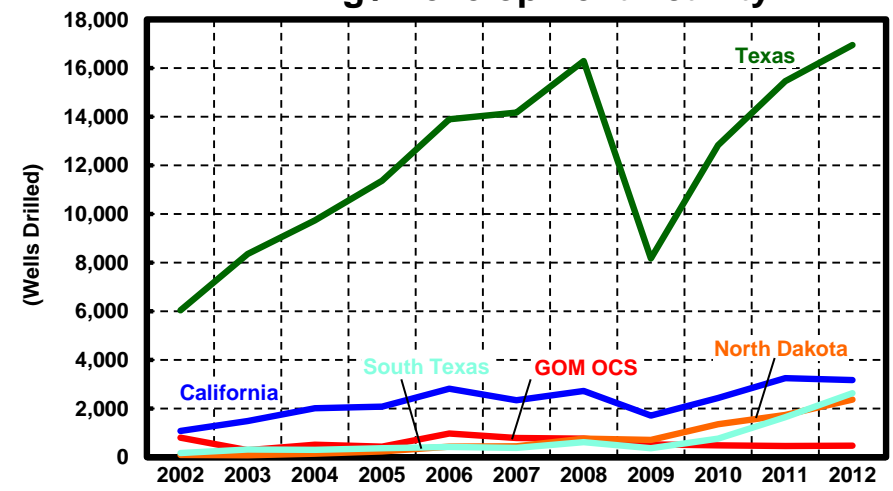
Capital Spending



Petroleum Sector Employment



Drilling / Development Activity

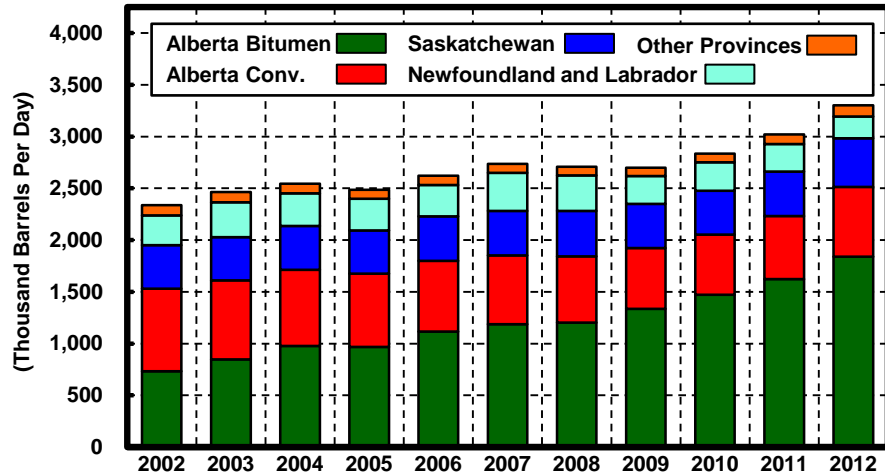


Note: 2012 figures are preliminary.

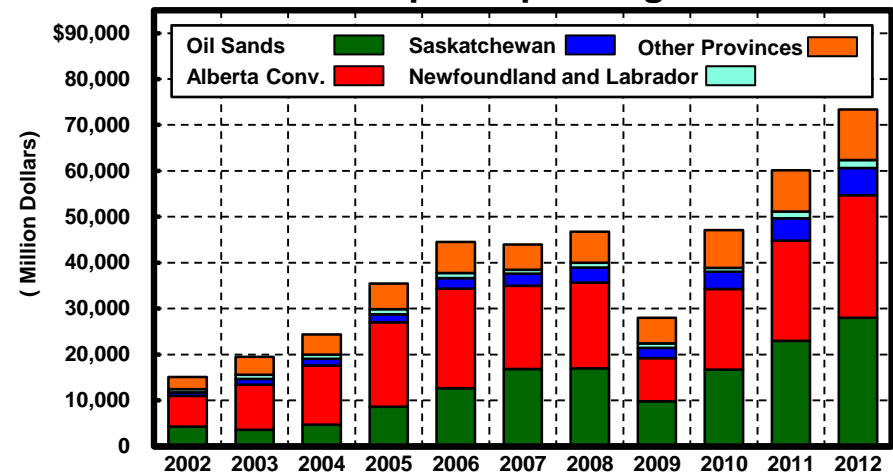
Country/Area Profile

Canada

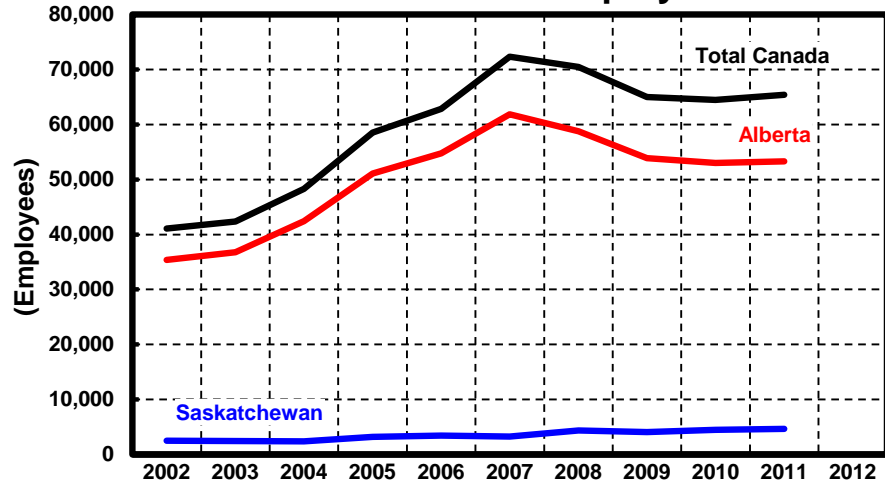
Crude Oil Production



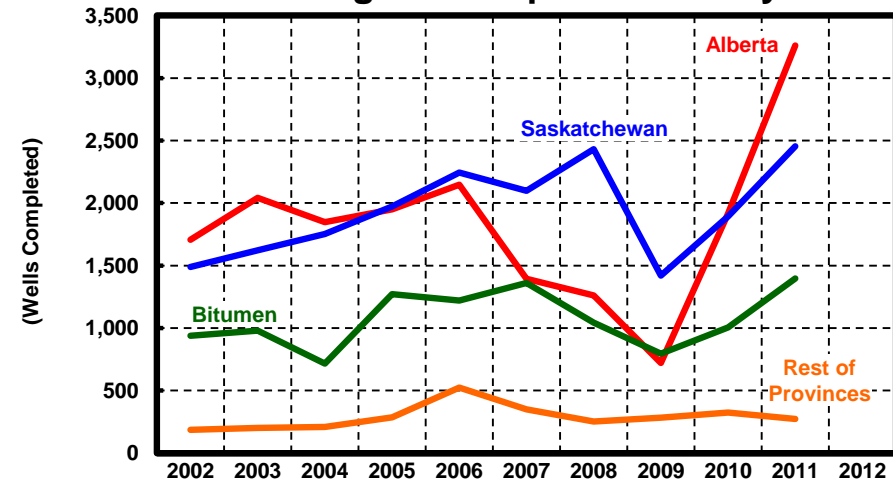
Capital Spending



Petroleum Sector Employment



Drilling / Development Activity

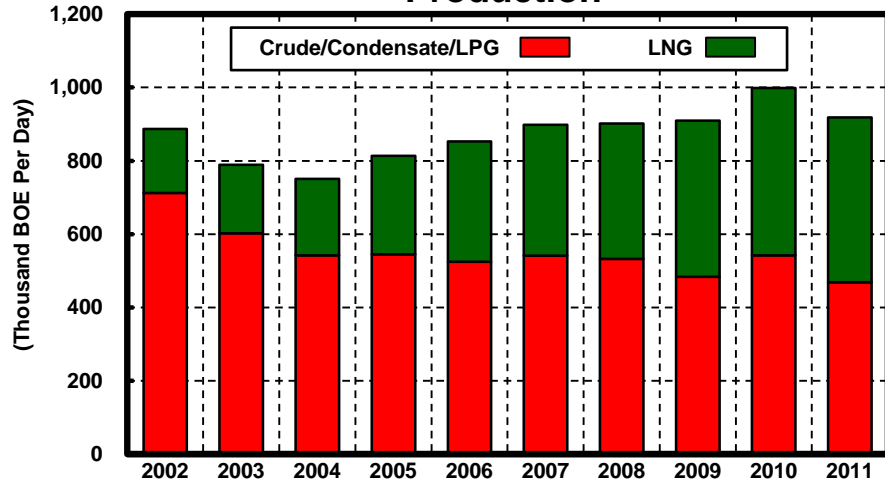


Note: 2012 figures are preliminary.

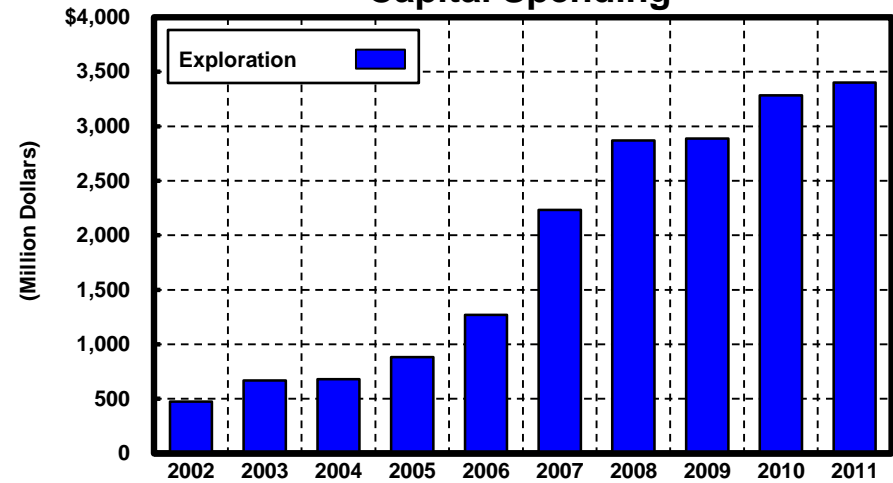
Country/Area Profile

Australia

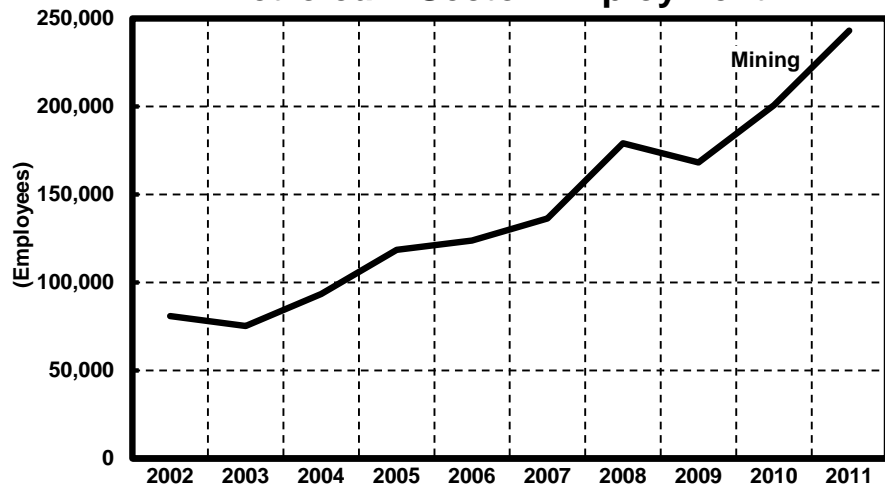
Production



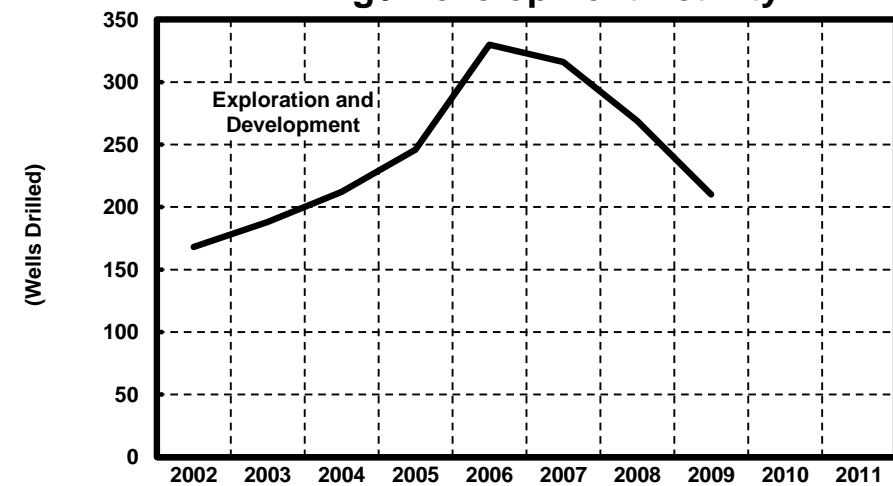
Capital Spending



Petroleum Sector Employment



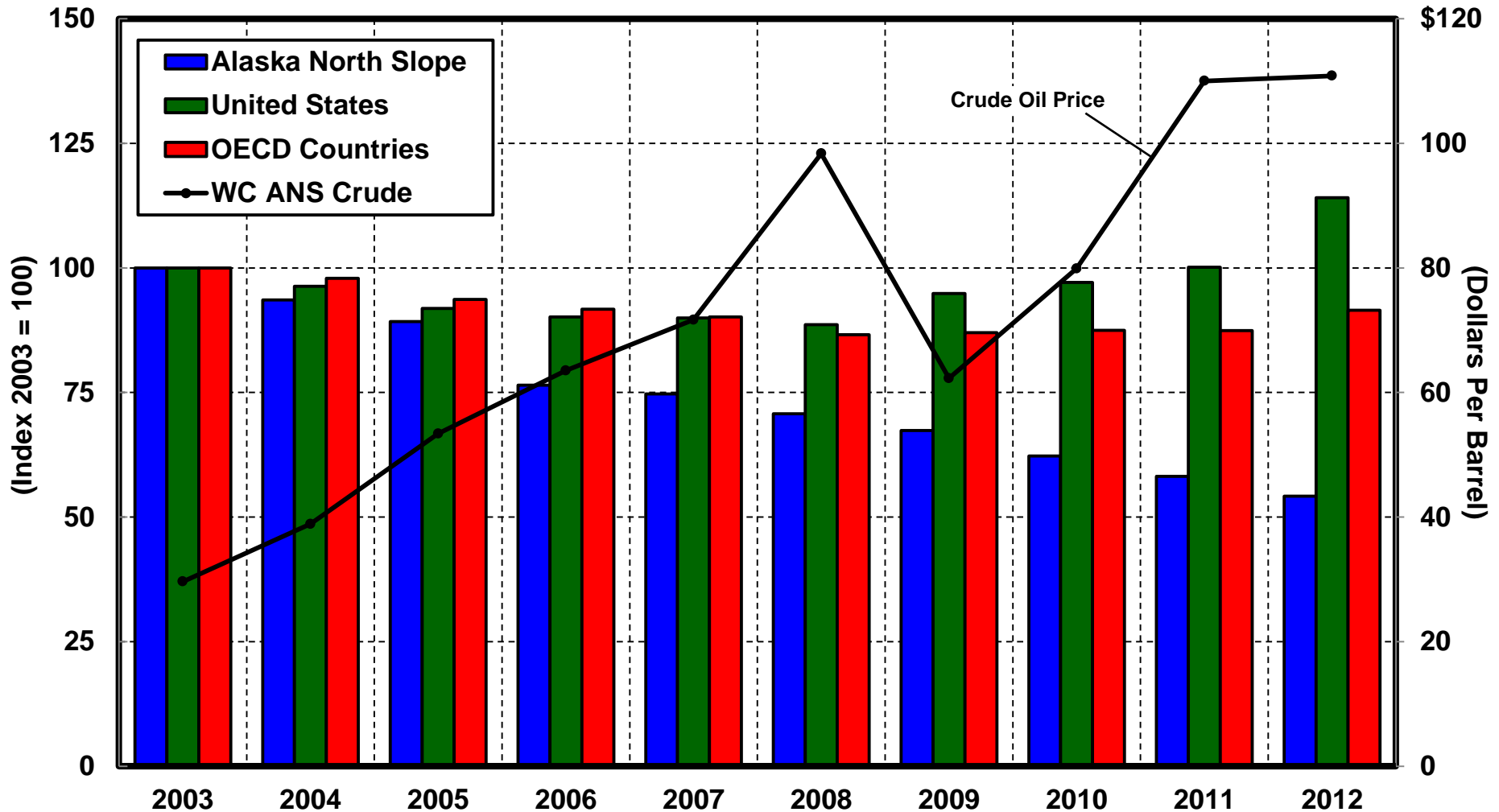
Drilling / Development Activity



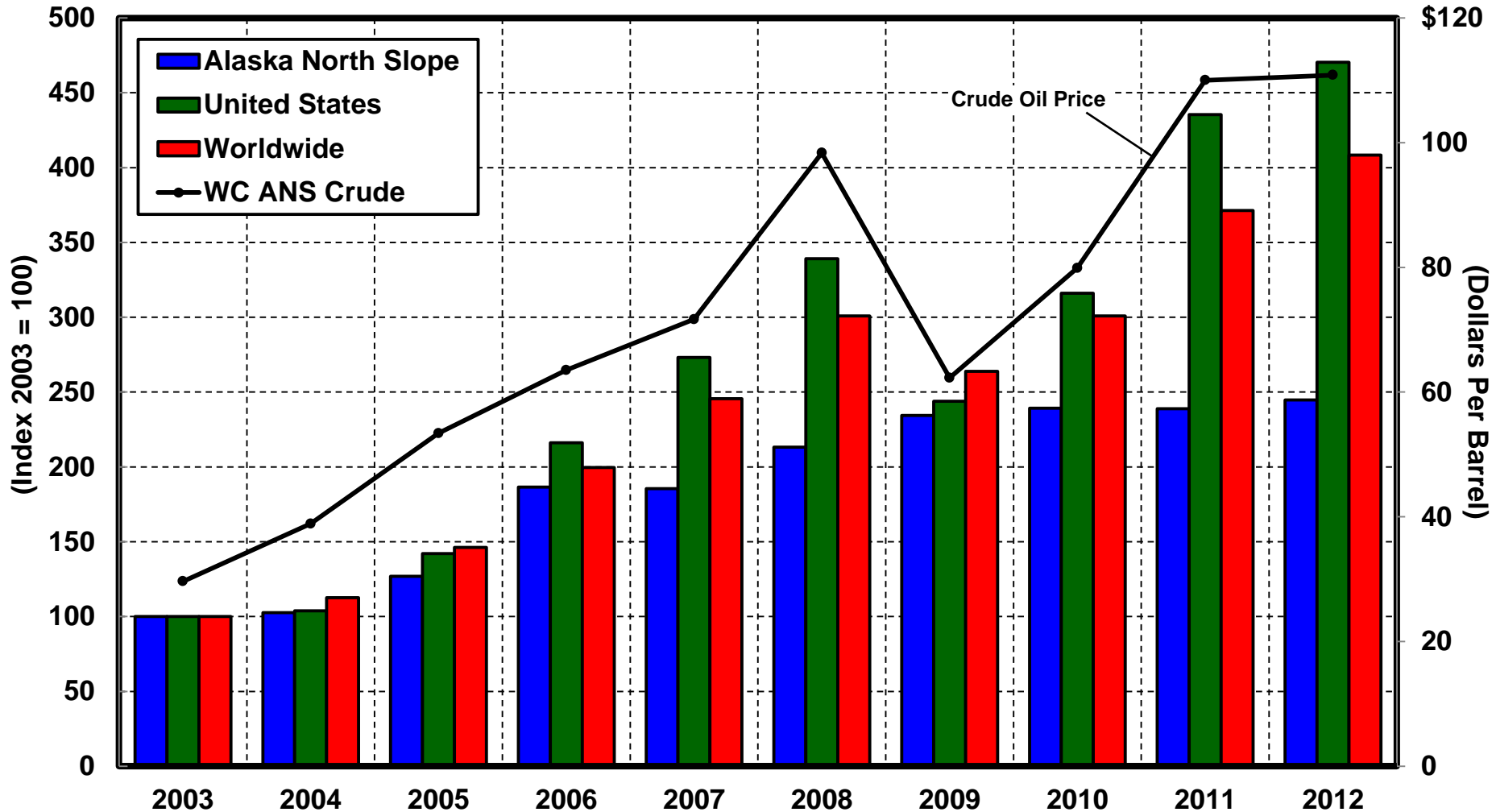
Crude Oil Production

Alaska North Slope vs. United States and OECD Countries

2003 - 2012



Estimated Capital Spending for Exploration and Development Alaska North Slope vs. United States and Worldwide Spending* 2003 - 2012



* North Slope based on tax return information; U.S. based on top 50 public companies; worldwide based on top 75 public companies

Fundamentals of ACES Calculation

How ACES Works

- **Tax is Calculated on “Net Value” of Taxable Production**
 - Taxable Production is Total Production Less Royalties
 - Net Value is Gross Wellhead Value Less Cost of Production
 - Costs of Production are Capital Expenses, Operating Expenses and Property Tax Payments
 - **Base Tax Rate of 25%**
 - **Progressive Tax Rate of 0.4% Per \$1/Barrel (4% Per \$10/Barrel) Increase Over \$30/Barrel Net Value and 0.1% Per \$1/Barrel (1% Per \$10/Barrel) Over \$92.50, Capped at 50% Total**
 - **Example: Taxable Value = \$100/Barrel “Production Tax Value”**
 - Base Rate = 25%
 - Progressive Rate = $(\$92.50 - \$30) \times 0.4\% + (\$100 - \$92.50) \times 0.1\% = 25.75\%$
 - Total Rate = $25\% + 25.75\% = 50.75\%$
 - **Credit of 20% for Capital Expenditures (Taken Over 2 Years)**
 - **Small Producer Credit of \$12 Million Per Year (Phased Out for Production over 50 MBD)**
 - **State Purchases Credits and Net Operating Losses (NOLs) From Companies Without Tax Obligation**
 - Equals 45% of Capital Expenditures and 25% of Operating Expenditures
-

Calculation of ACES Tax: Varying Prices

Annual Taxable Production (Bbls)		50,000,000	50,000,000	50,000,000
West Coast ANS Price (\$/Bbl)		\$80.00	\$100.00	\$120.00
Transportation Costs (\$/Bbl)	-	10.00	10.00	10.00
Wellhead Value (\$/Bbl)	=	\$70.00	\$90.00	\$110.00
Operating Costs (\$/Bbl)	-	\$15.00	\$15.00	\$15.00
Capital Expenditures (\$/Bbl)	-	15.00	15.00	15.00
Taxable Value (\$/Bbl)	=	\$40.00	\$60.00	\$80.00
ACES Base Tax Rate (%)		25.0%	25.0%	25.0%
ACES Progressive Tax (%)	+	4.0%	12.0%	20.0%
Total Tax Rate (%)	=	29.0%	37.0%	45.0%
Total Wellhead Value (\$)		\$3,500,000,000	\$4,500,000,000	\$5,500,000,000
Operating Expenditures (\$)	-	750,000,000	750,000,000	750,000,000
Capital Expenditures (\$)	-	750,000,000	750,000,000	750,000,000
Production Tax Value (\$)	=	\$2,000,000,000	\$3,000,000,000	\$4,000,000,000
Production Tax Before Credits (PTV x Total Tax Rate) (\$)		\$580,000,000	\$1,110,000,000	\$1,800,000,000
Capital Credits (20% x Capital Expenditures) (\$)	-	150,000,000	150,000,000	150,000,000
Production Tax After Credits (\$)	=	\$430,000,000	\$960,000,000	\$1,650,000,000
Effective Tax Rate After Credits (%)		21.5%	32.0%	41.3%

Calculation of ACES Tax: Varying Costs

\$100 West Coast ANS Price

Annual Taxable Production (Bbls)		50,000,000	50,000,000	50,000,000
West Coast ANS Price (\$/Bbl)		\$100.00	\$100.00	\$100.00
Transportation Costs (\$/Bbl)	-	10.00	10.00	10.00
Wellhead Value (\$/Bbl)	=	\$90.00	\$90.00	\$90.00
Operating Costs (\$/Bbl)	-	\$10.00	\$20.00	\$30.00
Capital Expenditures (\$/Bbl)	-	10.00	15.00	20.00
Taxable Value (\$/Bbl)	=	\$70.00	\$55.00	\$40.00
ACES Base Tax Rate (%)		25.0%	25.0%	25.0%
ACES Progressive Tax (%)	+	16.0%	10.0%	4.0%
Total Tax Rate (%)	=	41.0%	35.0%	29.0%
Total Wellhead Value (\$)		\$4,500,000,000	\$4,500,000,000	\$4,500,000,000
Operating Expenditures (\$)	-	500,000,000	1,000,000,000	1,500,000,000
Capital Expenditures (\$)	-	500,000,000	750,000,000	1,000,000,000
Production Tax Value (\$)	=	\$3,500,000,000	\$2,750,000,000	\$2,000,000,000
Production Tax Before Credits (PTV x Total Tax Rate) (\$)		\$1,435,000,000	\$962,500,000	\$580,000,000
Capital Credits (20% x Capital Expenditures) (\$)	-	100,000,000	150,000,000	200,000,000
Production Tax After Credits (\$)	=	\$1,335,000,000	\$812,500,000	\$380,000,000
Effective Tax Rate After Credits (%)		38.1%	29.5%	19.0%

Calculation of ACES Tax: Varying Costs

\$80 West Coast ANS Price

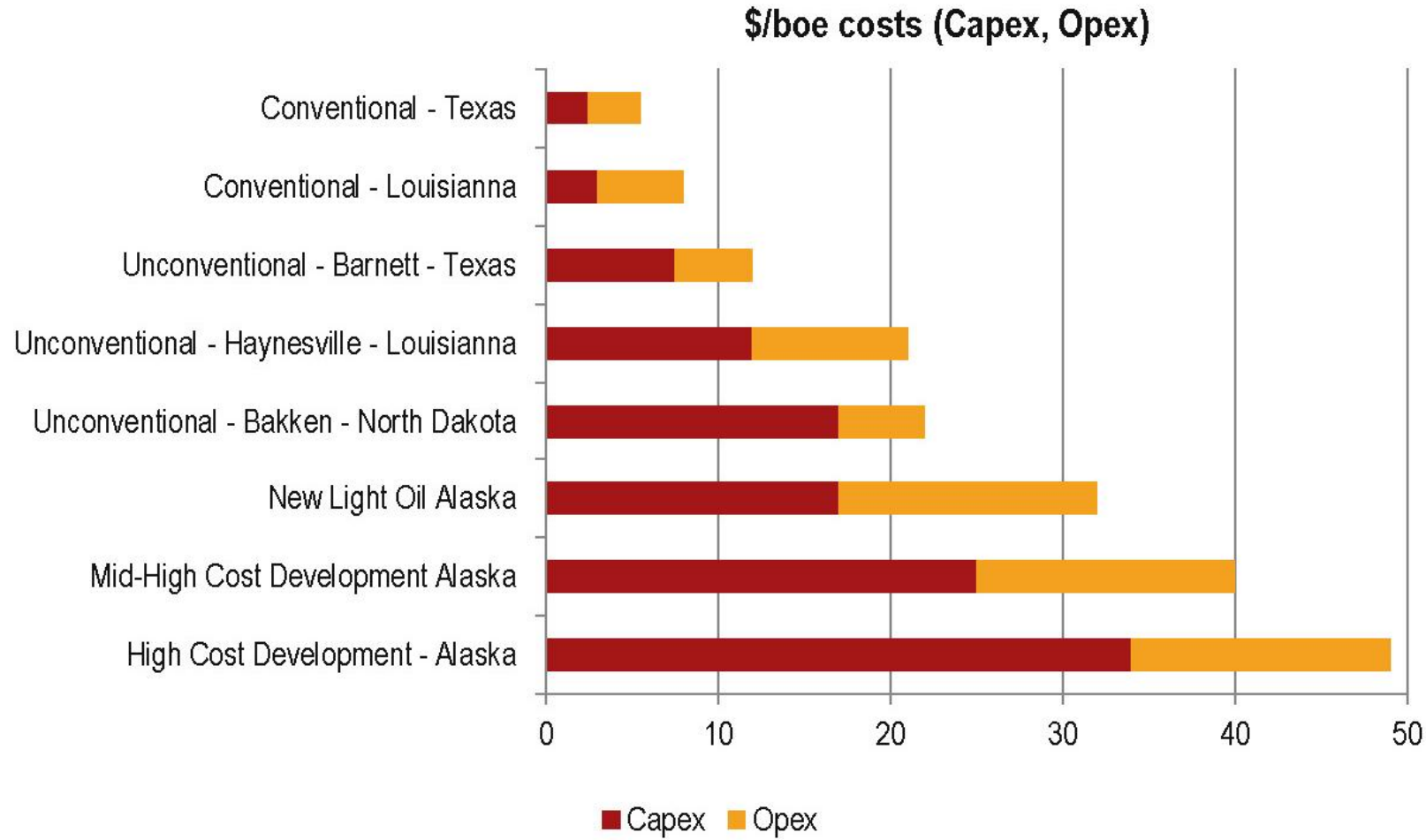
Annual Taxable Production (Bbls)		50,000,000	50,000,000	50,000,000
West Coast ANS Price (\$/Bbl)		\$80.00	\$80.00	\$80.00
Transportation Costs (\$/Bbl)	-	10.00	10.00	10.00
Wellhead Value (\$/Bbl)	=	\$70.00	\$70.00	\$70.00
Operating Costs (\$/Bbl)	-	\$10.00	\$20.00	\$30.00
Capital Expenditures (\$/Bbl)	-	10.00	15.00	20.00
Taxable Value (\$/Bbl)	=	\$50.00	\$35.00	\$20.00
ACES Base Tax Rate (%)		25.0%	25.0%	25.0%
ACES Progressive Tax (%)	+	8.0%	2.0%	0.0%
Total Tax Rate (%)	=	33.0%	27.0%	25.0%
Total Wellhead Value (\$)		\$3,500,000,000	\$3,500,000,000	\$3,500,000,000
Operating Expenditures (\$)	-	500,000,000	1,000,000,000	1,500,000,000
Capital Expenditures (\$)	-	500,000,000	750,000,000	1,000,000,000
Production Tax Value (\$)	=	\$2,500,000,000	\$1,750,000,000	\$1,000,000,000
Production Tax Before Credits (PTV x Total Tax Rate) (\$)		\$825,000,000	\$472,500,000	\$250,000,000
Capital Credits (20% x Capital Expenditures) (\$)	-	100,000,000	150,000,000	200,000,000
Production Tax After Credits (\$)	=	\$725,000,000	\$322,500,000	\$50,000,000
Effective Tax Rate After Credits (%)		29.0%	18.4%	5.0%

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%

PFC Costs

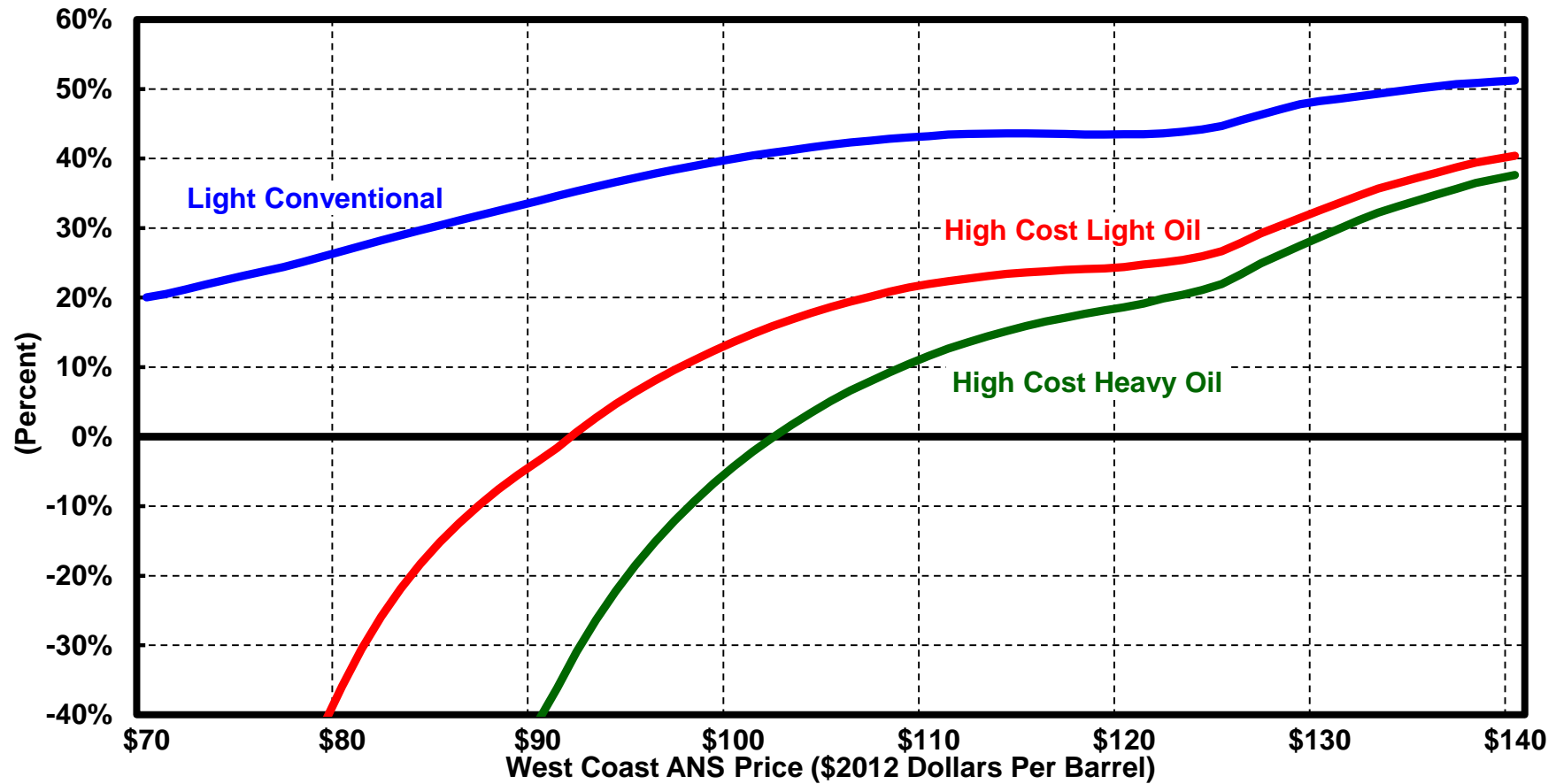
Various Projects



Source: Excerpted from January 31, 2013 PFC Presentation to Senate TAPS Throughput Committee.

Effective Tax Rates For New Development Under ACES

Additional Tax as % of Production Tax Value: Incumbent Producer



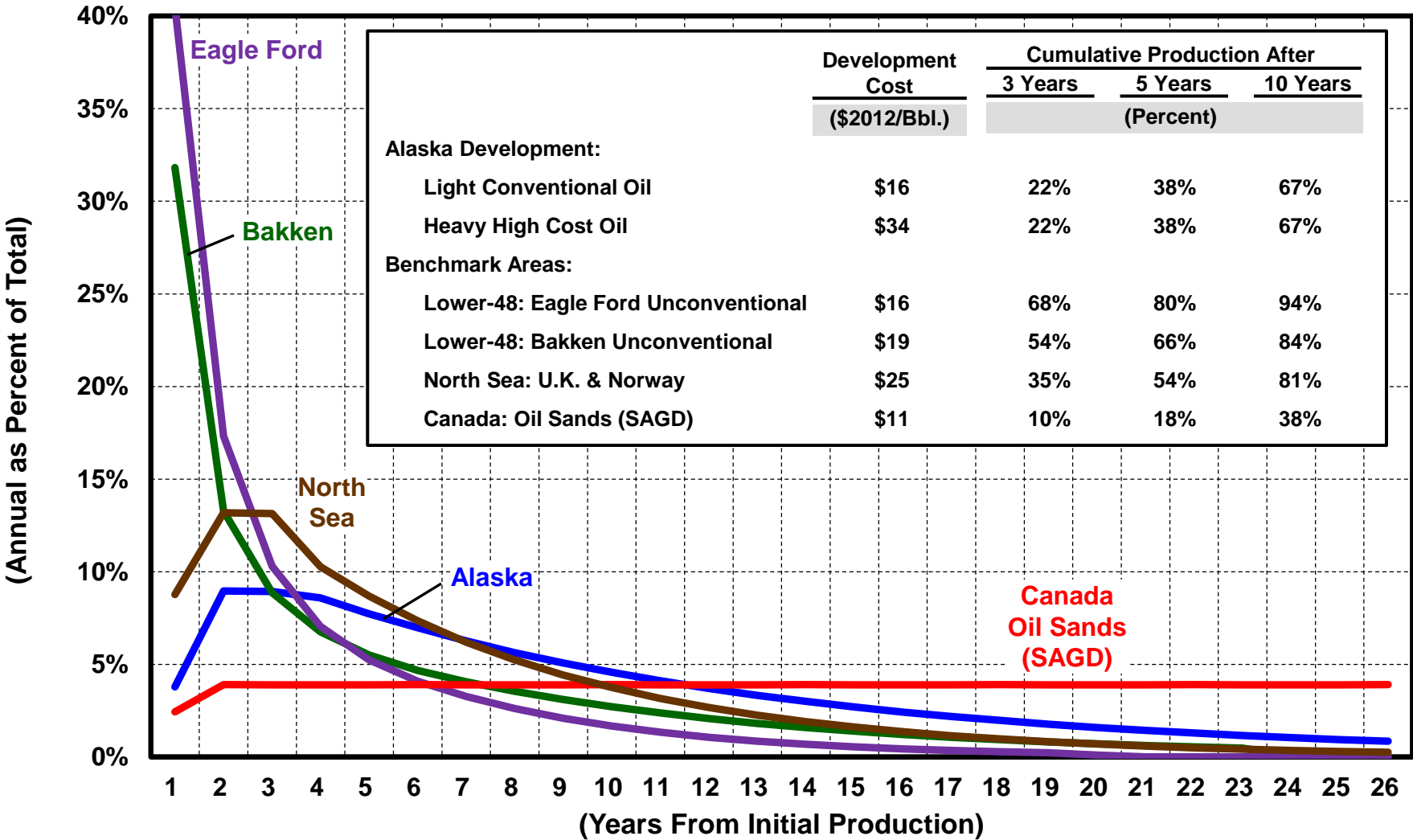
Light Conventional Oil: \$16 Per Barrel Development Capex; \$14 Per Barrel Opex; 16.67% Royalty Rate; 50 MMBO New Development by Existing Owner With Initial Ongoing Production of Approximately 100 MBD and Costs Consistent with Prudhoe Bay/Kuparuk River Units

High Cost Light Oil: \$34 Per Barrel Development Capex; \$19 Per Barrel Opex; 16.67% Royalty Rate; 50 MMBO New Development by Existing Owner With Initial Ongoing Production of Approximately 100 MBD and Costs Consistent with Prudhoe Bay/Kuparuk River Units

High Cost Heavy Oil: \$34 Per Barrel Development Capex; \$19 Per Barrel Opex; 12.5% Royalty Rate; \$10 Below Stream Price; 50 MMBO New Development by Existing Owner With Initial Ongoing Production of Approximately 100 MBD and Costs Consistent with Prudhoe Bay/Kuparuk River Units

Analysis of Potential Investments In Alaska Under ACES Versus Other Areas

Summary of Production Profiles Examined For Alaska and Benchmark Developments



Investment Measures Analyzed

- **Producer NPV-12 Per BOE**
- **Internal Rate of Return (IRR)**
- **5-Year Cash Margins**
- **Profitability Index-12**
- **Government Take**
- **State NPV-12 Per BOE**

Summary of Investment Measures

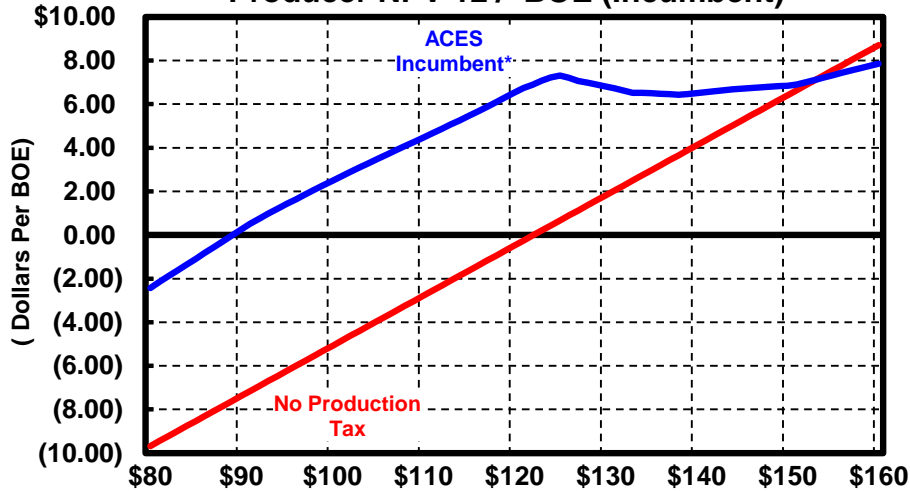
West Coast ANS Price	Alaska 50 MMBO				U.K. Development & Fiscal System							
	Light Conventional Oil		Heavy High Cost Oil		Unconventional Lower-48		Canada Oil Sands	Norway	Pre-1993 w/ Brownfield		Post-1993 w/ Brownfield	
	New Participant	Incumbent Participant	New Participant	Incumbent Participant	Eagle Ford	Bakken	SAGD		Pre-1993	Allowance*	Post-1993	Allowance*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Producer NPV-12 / BOE (Dollars Per BOE)												
\$80	\$2.55	\$3.71	(\$4.51)	(\$2.43)	\$3.61	\$0.67	(\$0.93)	\$0.24	\$1.20	\$4.81	\$2.41	\$4.62
\$100	\$3.85	\$6.14	(\$2.45)	\$2.48	\$6.75	\$4.29	\$0.46	\$2.34	\$3.02	\$7.09	\$6.04	\$8.25
\$120	\$5.48	\$8.82	(\$1.09)	\$6.53	\$11.17	\$9.16	\$2.01	\$4.44	\$4.83	\$9.09	\$9.67	\$11.88
Profitability Index-12												
\$80	1.19	1.28	0.84	0.91	1.25	1.04	0.88	1.01	1.06	1.22	1.11	1.21
\$100	1.29	1.46	0.91	1.09	1.47	1.28	1.06	1.14	1.14	1.33	1.28	1.38
\$120	1.41	1.67	0.96	1.23	1.78	1.60	1.26	1.27	1.22	1.42	1.45	1.55
IRR (Percent)												
\$80	19.7%	26.2%	4.3%	7.1%	29.9%	13.6%	9.7%	12.4%	18.4%	34.5%	18.4%	24.7%
\$100	23.4%	41.1%	8.1%	18.2%	46.3%	22.7%	13.1%	16.0%	27.0%	45.2%	27.0%	32.9%
\$120	27.6%	65.3%	10.3%	33.6%	73.6%	37.0%	16.3%	19.3%	34.6%	53.5%	34.6%	40.2%
5-Year (2017-2021) Cash Margins (Dollars Per BOE)												
\$80	\$25.84	\$24.26	\$27.58	\$25.52	\$23.39	\$28.39	\$26.07	\$34.51	\$12.45	\$22.94	\$24.91	\$29.35
\$100	\$28.84	\$27.22	\$32.42	\$30.33	\$29.99	\$36.48	\$29.14	\$39.42	\$16.69	\$28.85	\$33.38	\$37.82
\$120	\$33.13	\$31.18	\$35.48	\$33.41	\$36.87	\$44.91	\$33.37	\$44.32	\$20.93	\$31.29	\$41.86	\$46.30
Government Take (Percent)												
\$80	70.8%	68.9%	61.5%	45.0%	71.7%	77.1%	63.4%	67.8%	81.0%	61.0%	62.0%	52.0%
\$100	75.8%	73.0%	71.6%	58.3%	67.9%	72.1%	63.5%	71.7%	81.0%	68.6%	62.0%	55.8%
\$120	77.2%	73.8%	76.8%	63.4%	65.1%	68.7%	63.0%	73.4%	81.0%	72.0%	62.0%	57.5%
State/Municipal NPV-12/BOE (Dollars Per BOE)												
\$80	\$6.67	\$4.88	(\$4.61)	(\$7.81)	-	-	-	-	-	-	-	-
\$100	\$13.32	\$9.79	\$0.86	(\$6.73)	-	-	-	-	-	-	-	-
\$120	\$19.46	\$14.31	\$7.41	(\$4.31)	-	-	-	-	-	-	-	-

* Brownfield Allowance applied to 100 MMBOE development.

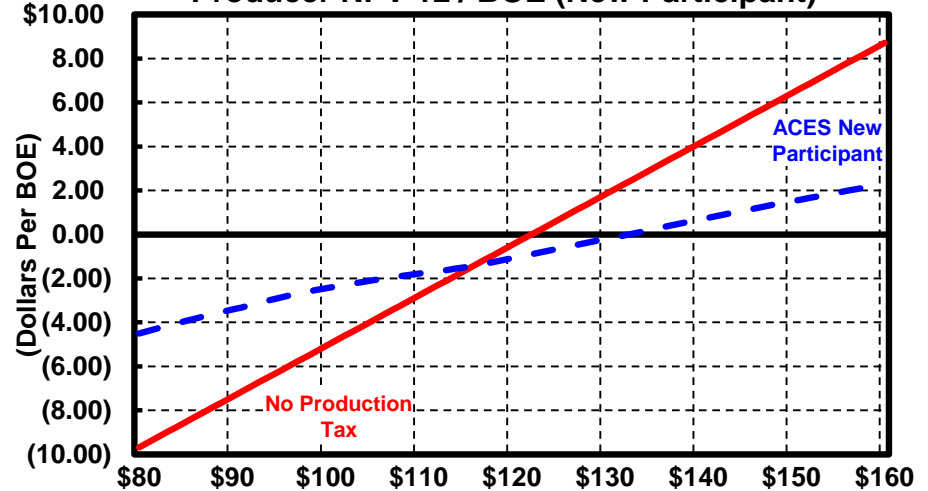
Note: Analysis of incumbent production includes "buy-down" impact for reduced taxes on existing production.

The Economics of High Cost Heavy Oil Development

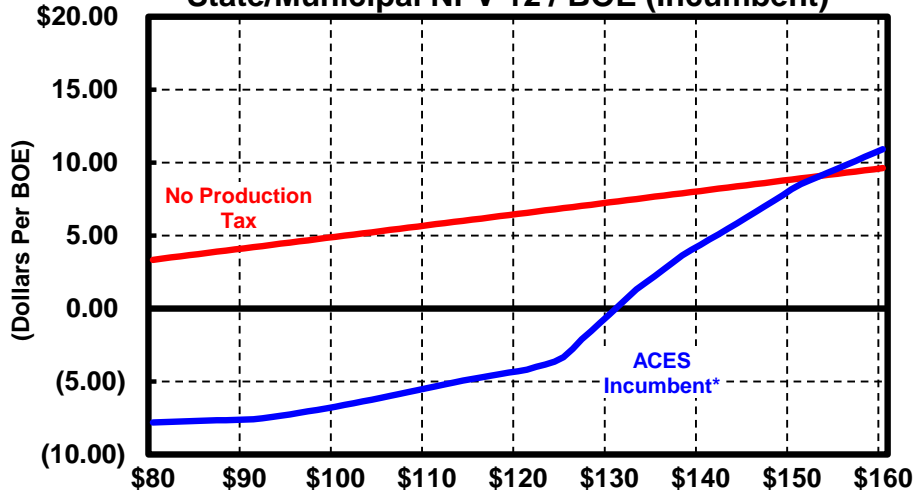
Producer NPV-12 / BOE (Incumbent)



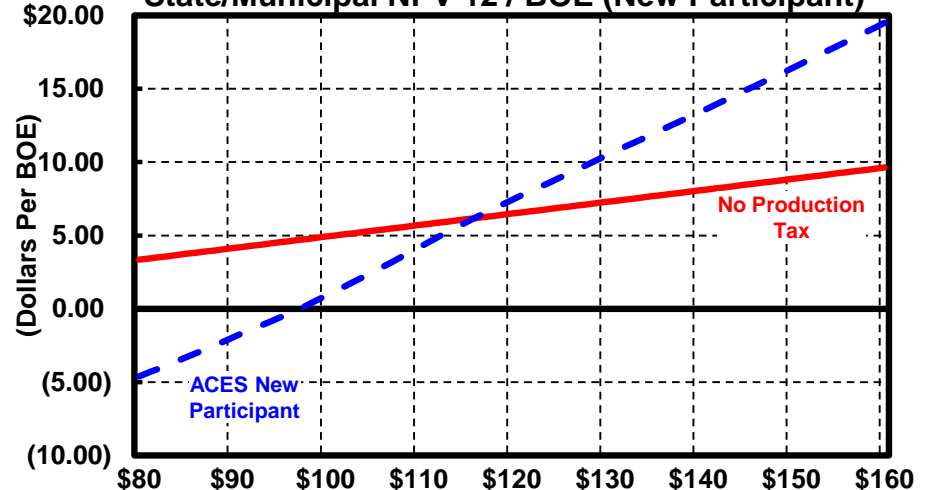
Producer NPV-12 / BOE (New Participant)



State/Municipal NPV-12 / BOE (Incumbent)



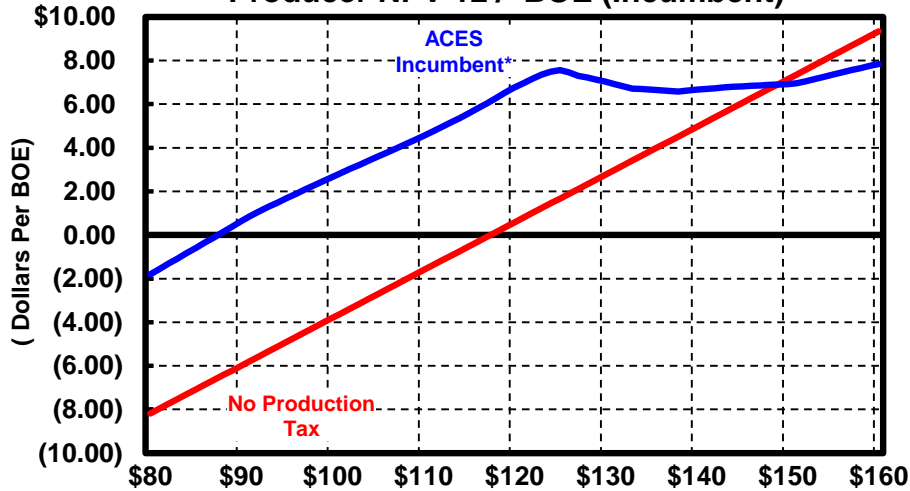
State/Municipal NPV-12 / BOE (New Participant)



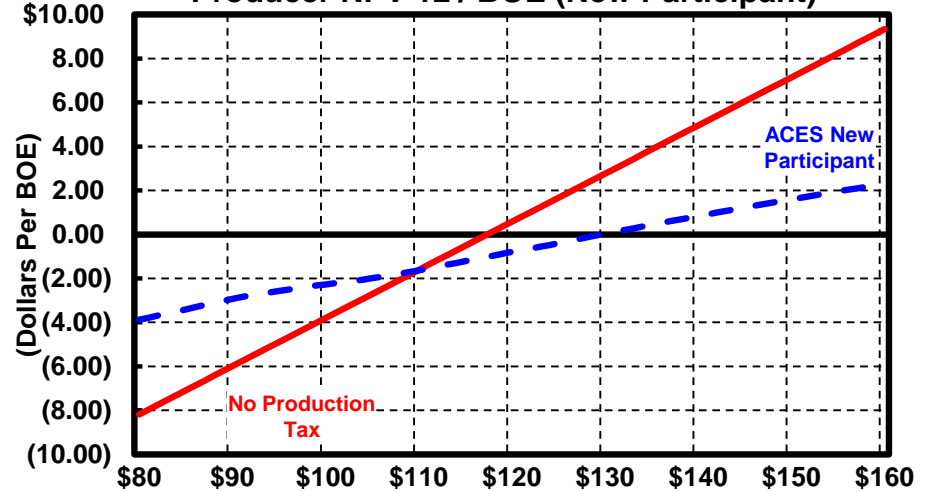
* Analysis of incumbent production includes "buy-down" impact for reduced taxes on existing production.

The Economics of High Cost Light Oil Development

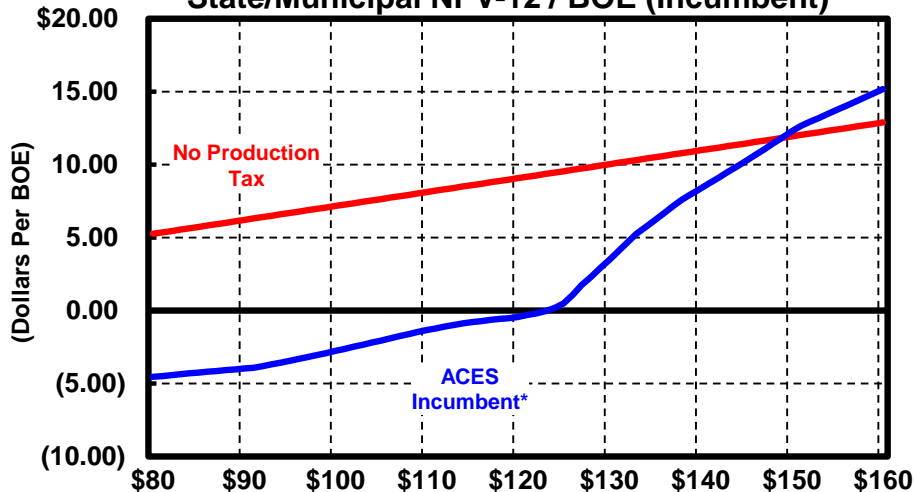
Producer NPV-12 / BOE (Incumbent)



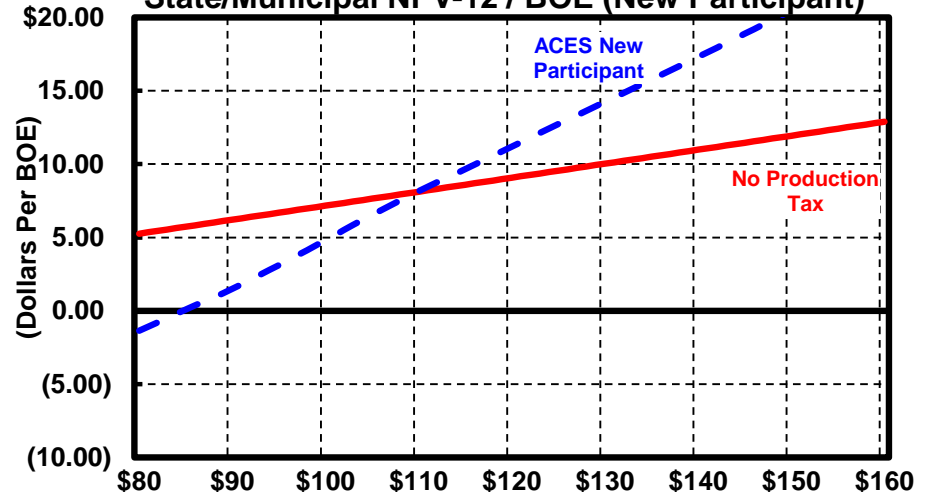
Producer NPV-12 / BOE (New Participant)



State/Municipal NPV-12 / BOE (Incumbent)

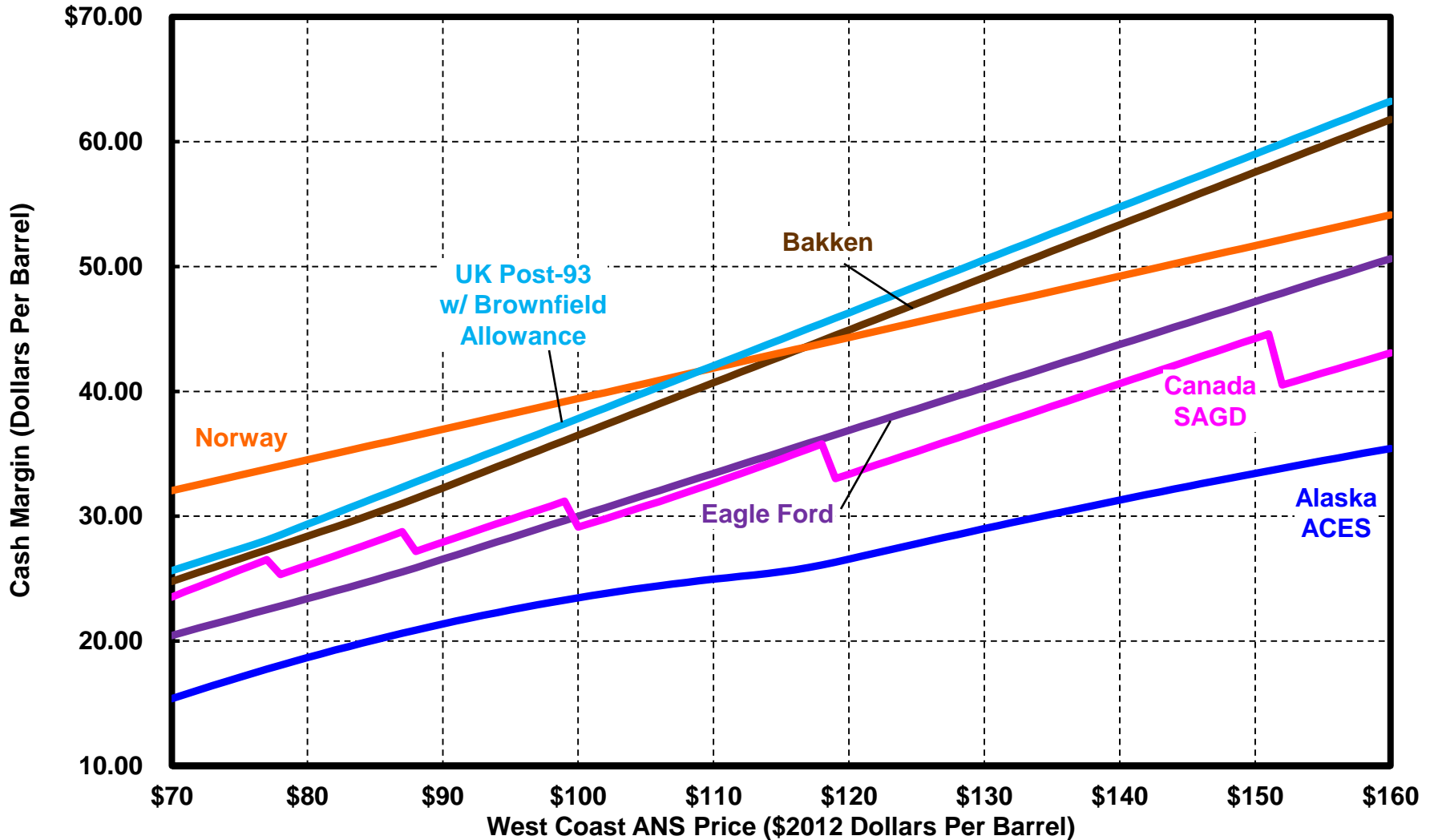


State/Municipal NPV-12 / BOE (New Participant)



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

Projected Cash Generation From Ongoing North Slope Production (2017-2021) Under ACES and Other Jurisdictions



IHS CERA 2011 Report to the U.S. Department of Interior

22. UNITED STATES—ALASKA: STATE LANDS

Table II-LVI: Alaska State Lands Assumed Terms

FISCAL SYSTEM	Alaska—State Lands Concessionary Terms
BONUSES	Fixed or biddable signature bonus; US\$0.5 million assumed
OTHER PAYMENTS	Production rental: US\$1–\$3 per acre
STATE PARTICIPATION	None
ROYALTY	12.5 percent of gross revenue
PROFIT TAX	ACES production tax: profit based tax levied between 25 to 75 percent.
PROPERTY TAX	2 percent of accumulated capital expenditure less accumulated depreciation
INCOME TAX	State Income Tax levied on gross revenue less deductions and depreciation. The state income tax rate is in the range 1.0 to 9.4 percent Federal income tax levied on gross revenue less deductions and depreciation. The federal income tax rate is 35 percent
OTHER TAXES	Property tax: 2 percent of accumulated capital expenditure less accumulated depreciation State conservation surcharges: US\$0.005 per barrel on crude oil and US\$0.0083 per Mcf on natural gas

BONUSES AND OTHER PAYMENTS

The cash bonus may be fixed in advance or subject to bidding. In the latter case, the minimum cash bonus that will be accepted in any lease sale is prescribed. US\$5 to US\$10 per acre is typical, although higher minimums may apply to highly prospective blocks. A signature bonus of US\$0.5 million has been assumed.

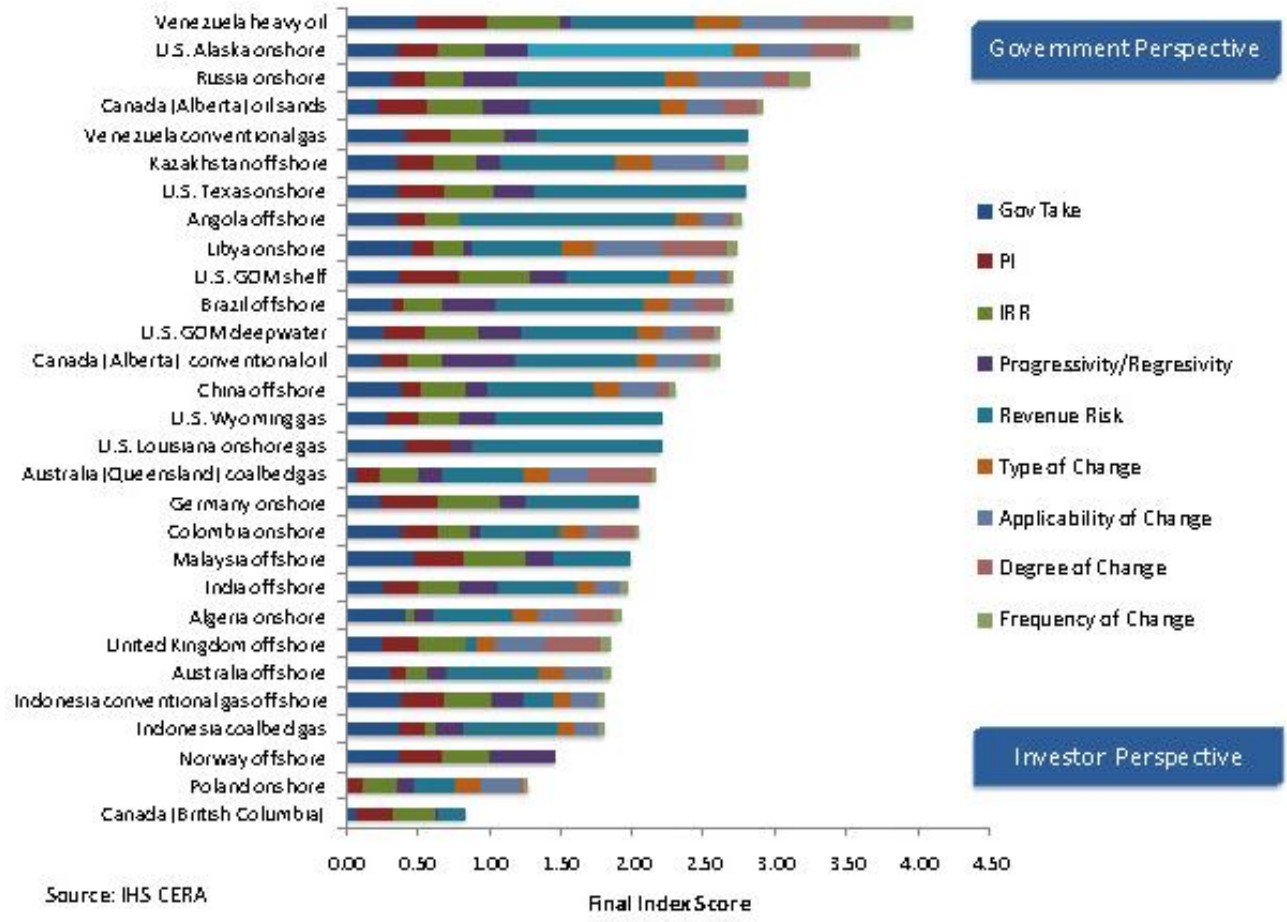
Rental

Rentals range between US\$1 and US\$3 per acre as follows:

Source: Excerpted from page 225 of IHS CERA Report.

IHS CERA 2011 Report to the U.S. Department of Interior (cont'd)

Figure 15: Composite Index—Global Rating and Ranking



Source: IHS CERA

Source: Excerpted from page 24 of IHS CERA Report.

The Administration's Proposed Changes SB21/HB72

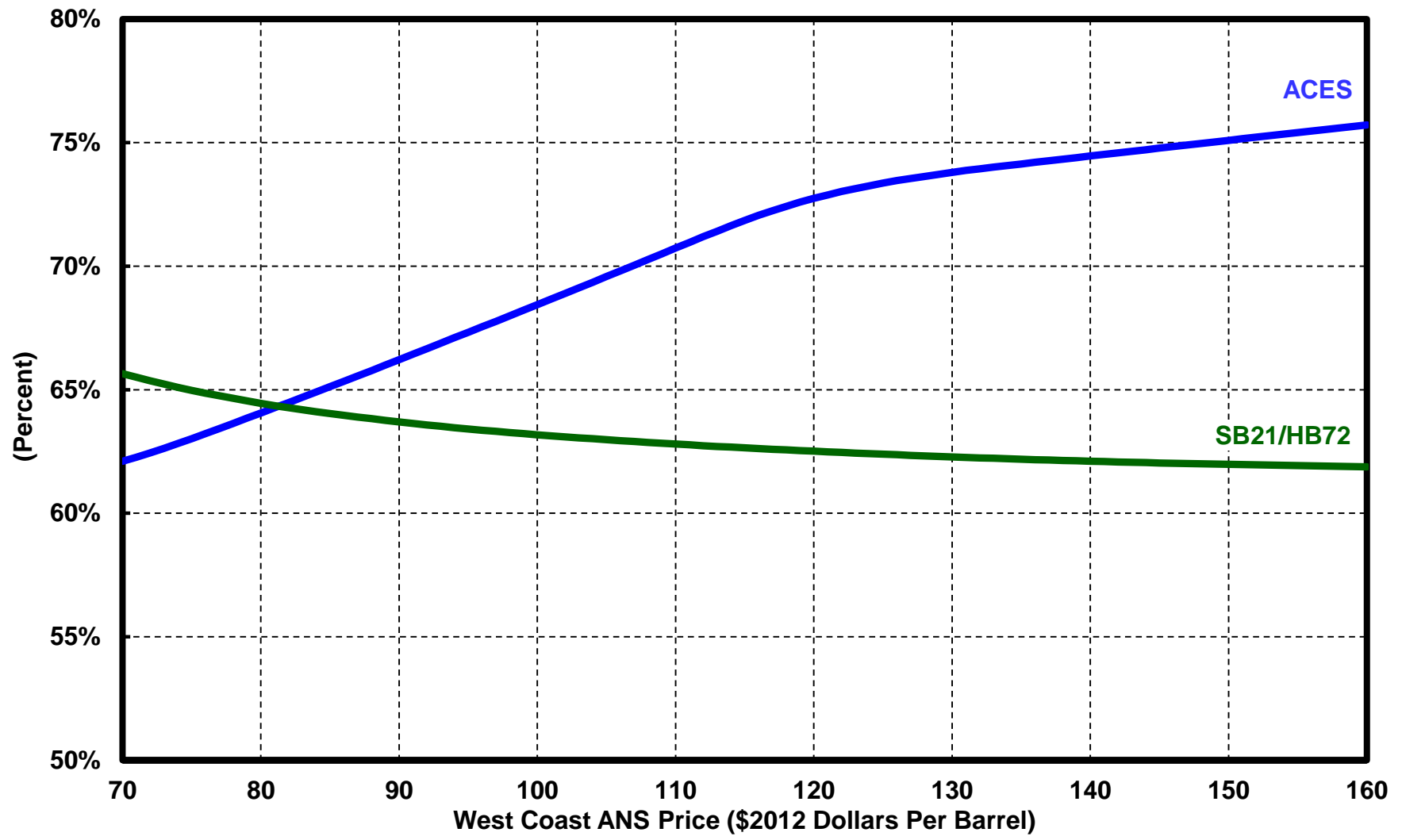
Key Aspects of Administration's Proposal

- **Establishes 25% Flat Net Tax Rate; No Progressivity**
- **Eliminates Capital Credit and State Purchase of Losses**
- **Establishes 20% Gross Revenue Exclusion (GRE) to Incent Production of New Oil**
- **Losses May be Carried Forward and Applied Against Tax Obligation When Production Occurs**
- **Extends New Entrant Credits Through 2022**
- **No Change Outside of North Slope**

Key Aspects of Administration's Proposal (cont'd)

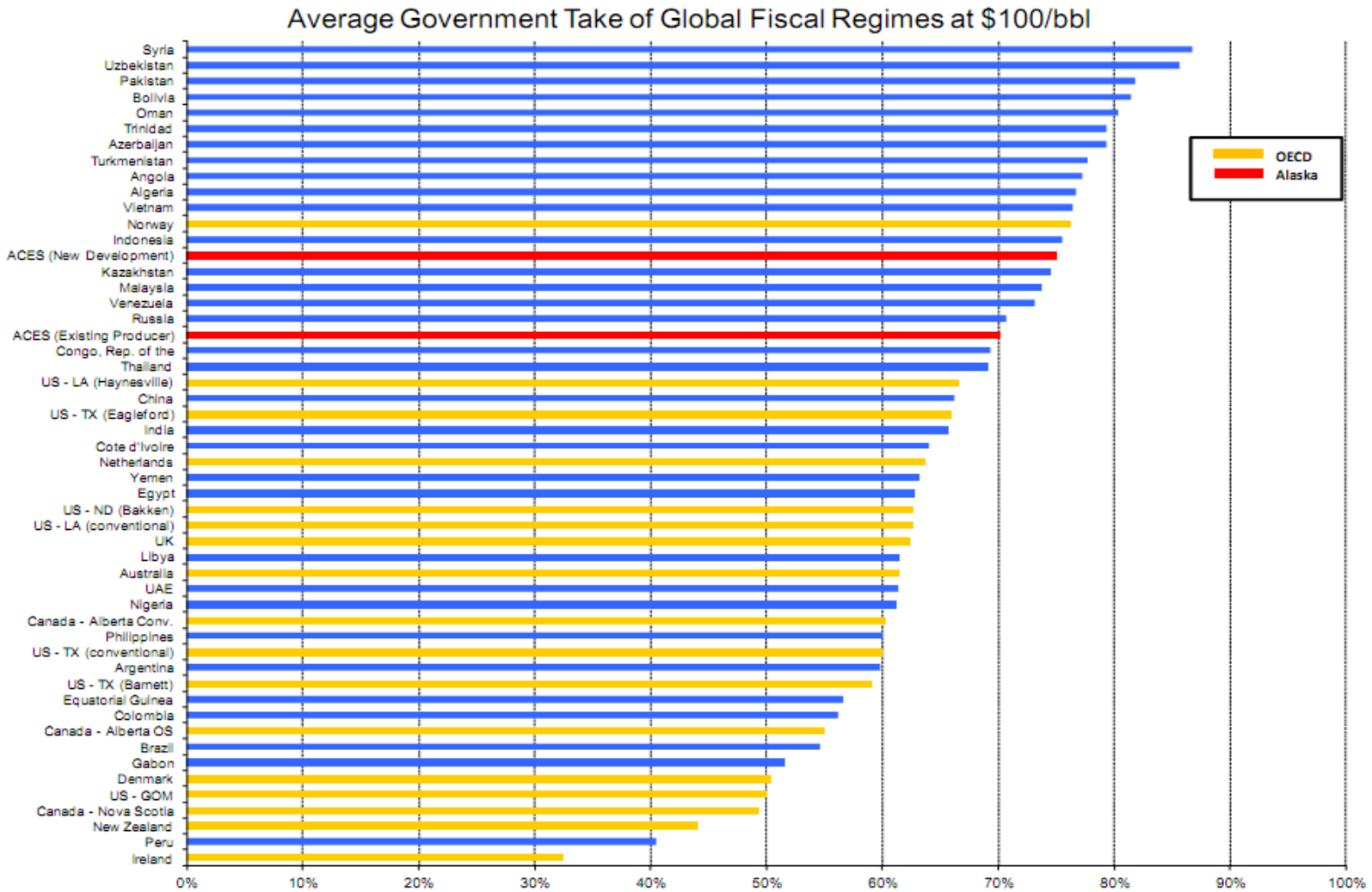
- **Provides Balance Between State and Producers**
 - **Reduction of Tax Rates at High Prices, Balanced with Elimination of Credits**
 - **State Continues to Receive Largest Percentage of Oil Production Revenues at Any Price**
 - **Provides Tax Relief and Higher Margins in Sustainable Price Ranges**
 - **Simplifies Tax System and Provides Clarity for Planning**
 - **Eliminates Question of Marginal Tax Rate / Take for Investment Planning**
 - **Eliminates Incentives for “Gold Plating” Caused by High Marginal Rates**
 - **Maintains Alignment Between State and Producer Incentives**
 - **Net Tax Allows for Deduction of Costs Against Tax**
 - **Provides Incentive for Development of New Resources Without Taxing State Treasury**
 - **GRE Provides Lower Effective Tax Rate for New Development**
 - **New Developers can Recover Costs of Development Once Production Begins**
 - **Does Not Require State to Fund Development Costs Through Potentially Expensive Credit Purchases**
 - **Extremely Positive Message to Potential Investors**
 - **Will Encourage Broader Participation in Development of Alaska's North Slope**
 - **Economics of New Participants Closer to Incumbents'**
-

Average Government Take ACES v. SB21/HB72 for All Existing Producers (FY2015-FY2019)



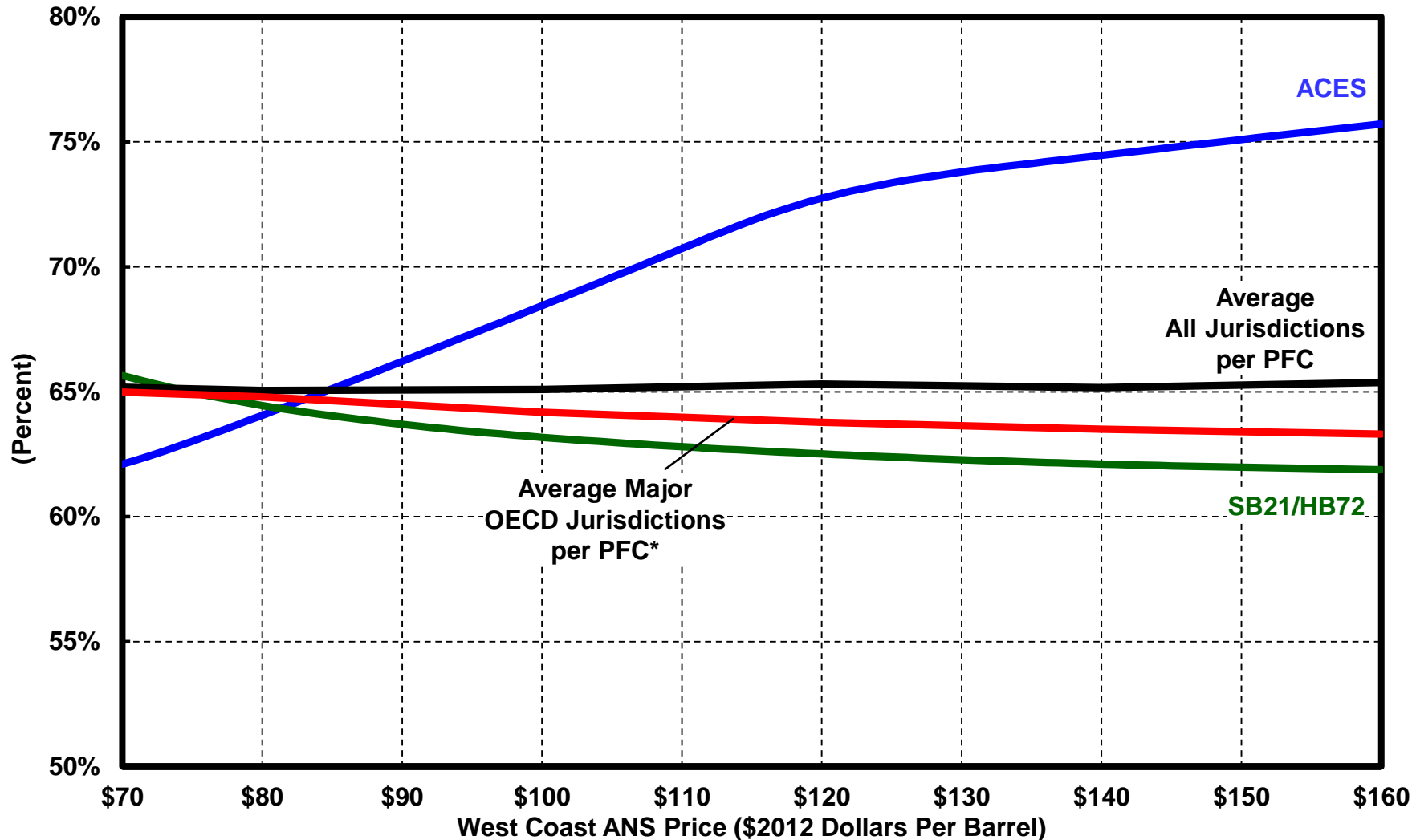
Average Government Take at \$100 Per Barrel

Other Jurisdictions



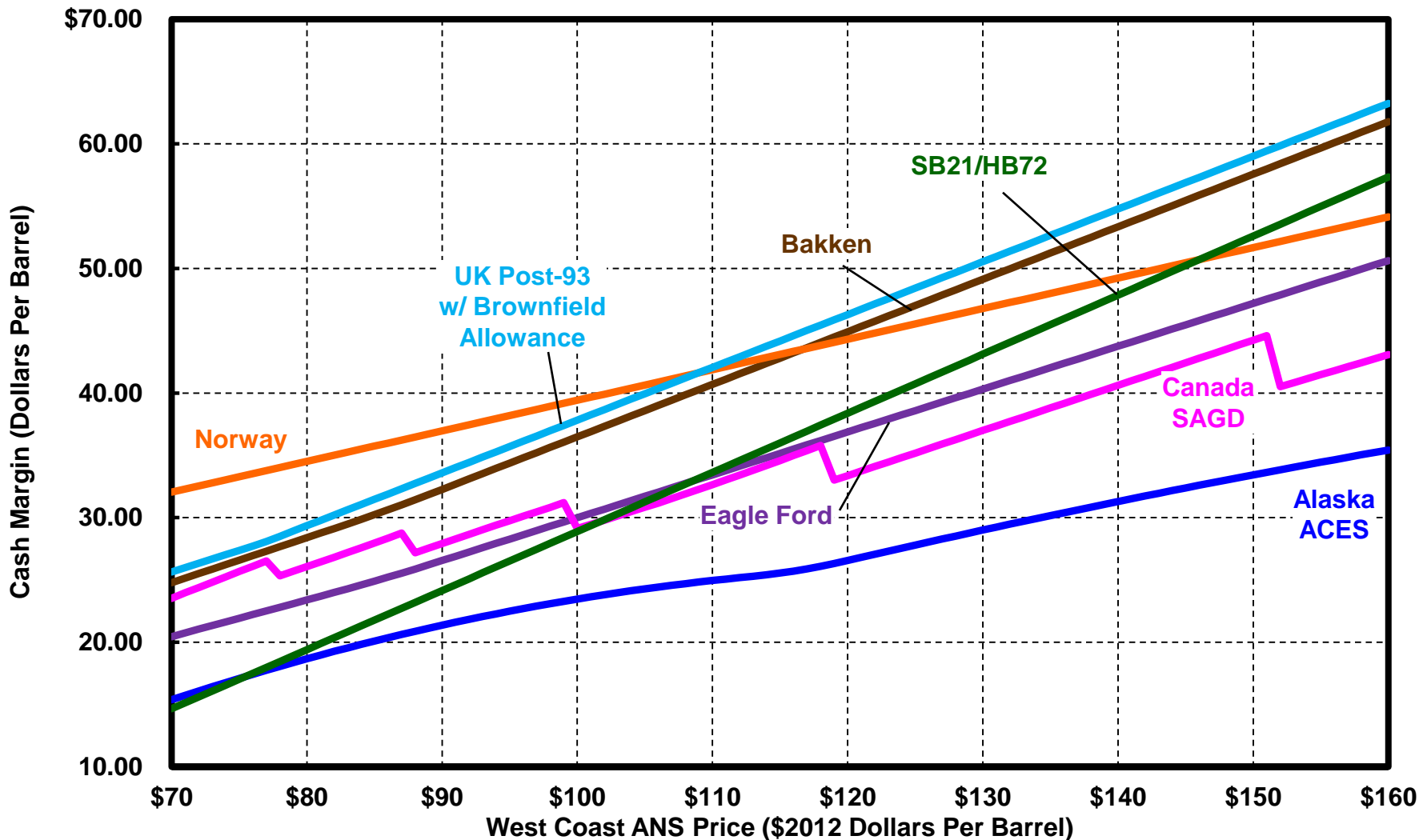
Source: PFC Energy.

Average Government Take ACES v. SB21/HB72 for All Existing Producers (FY2015-FY2019) and Other Jurisdictions



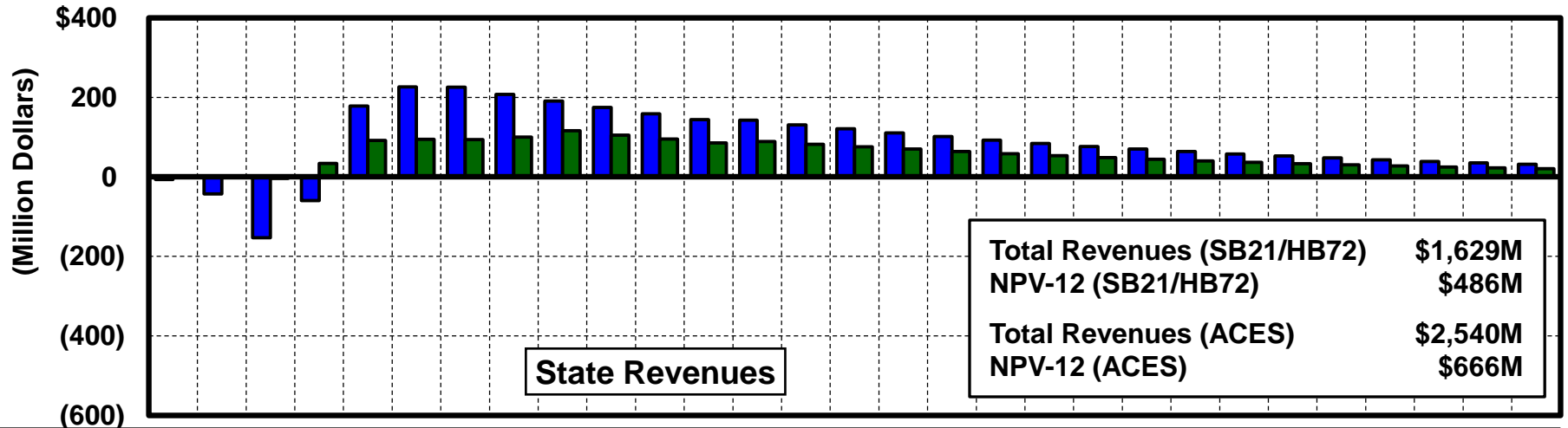
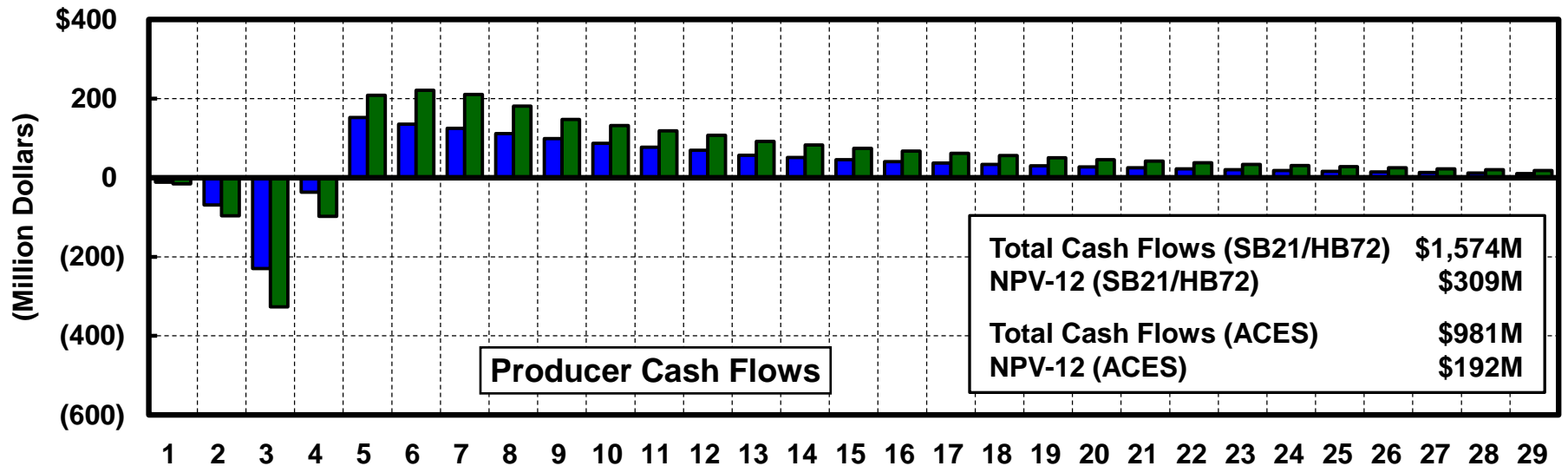
* Australia, Canada (Alberta Conventional), Norway, United Kingdom and United States.

Projected Cash Generation From Ongoing North Slope Production (2017-2021) Under ACES v. SB21/HB72 and Other Jurisdictions



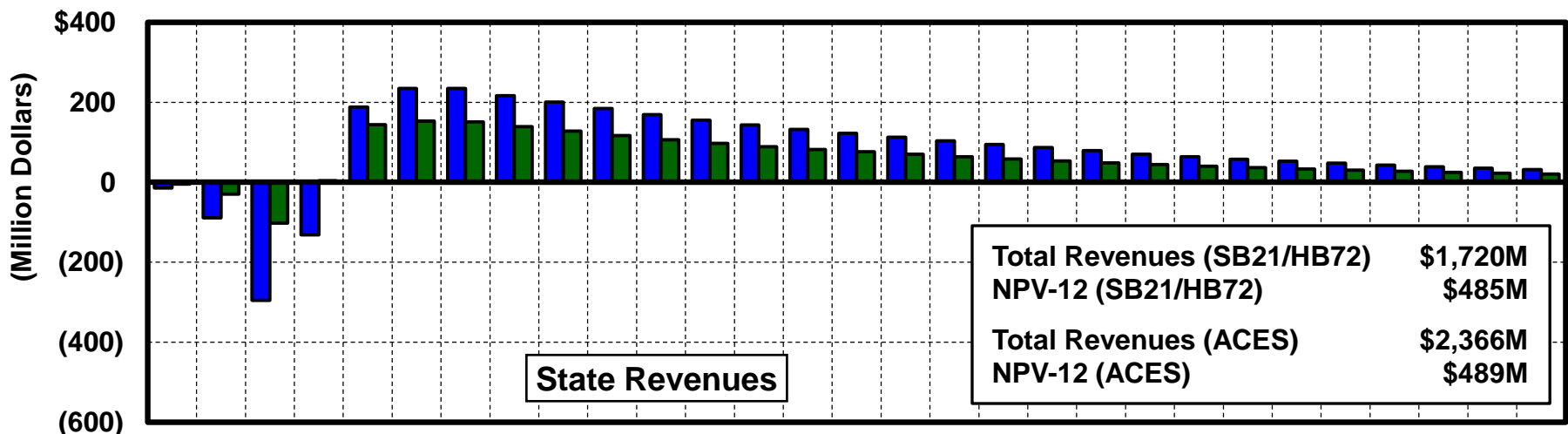
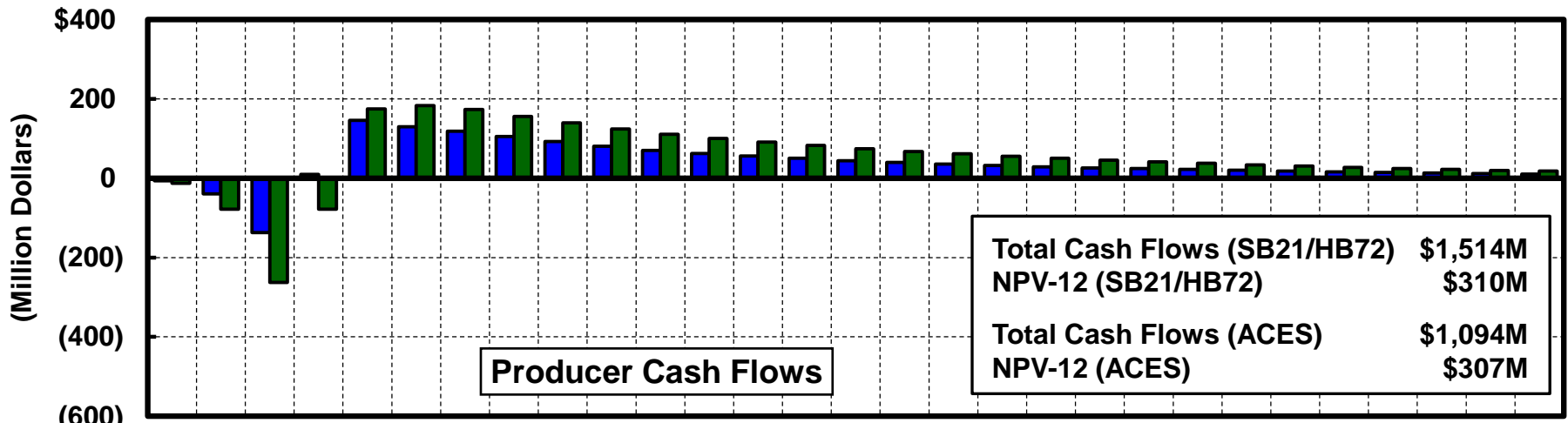
Annual State Revenues and Producer Cash Flows at \$100 West Coast ANS Light Conventional Oil Alaska Development New Participant in Alaska

ACES █ SB21/HB72 █



Annual State Revenues and Producer Cash Flows at \$100 West Coast ANS Light Conventional Oil Alaska Development Incumbent Participant in Alaska

ACES █ SB21/HB72 █



Summary of Investment Measures for New Participant Light Conventional Oil Alaska Development ACES and SB21/HB72 v. Benchmark Areas



West Coast ANS Price	ACES	SB21/HB72		Unconventional Lower-48		Canada Oil Sands	Norway	U.K. Development & Fiscal System			
		With GRE	Without GRE	Eagle Ford	Bakken	SAGD		Pre-1993	Pre-1993 w/ Brownfield Allowance*	Post-1993	Post-1993 w/ Brownfield Allowance*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Producer NPV-12 / BOE (Dollars Per BOE)											
\$80	\$2.55	\$2.54	\$1.94	\$3.61	\$0.67	(\$0.93)	\$0.24	\$1.20	\$4.81	\$2.41	\$4.62
\$100	\$3.85	\$6.18	\$5.34	\$6.75	\$4.29	\$0.46	\$2.34	\$3.02	\$7.09	\$6.04	\$8.25
\$120	\$5.48	\$9.74	\$8.71	\$11.17	\$9.16	\$2.01	\$4.44	\$4.83	\$9.09	\$9.67	\$11.88
Profitability Index-12											
\$80	1.19	1.19	1.15	1.25	1.04	0.88	1.01	1.06	1.22	1.11	1.21
\$100	1.29	1.47	1.40	1.47	1.28	1.06	1.14	1.14	1.33	1.28	1.38
\$120	1.41	1.74	1.66	1.78	1.60	1.26	1.27	1.22	1.42	1.45	1.55
IRR (Percent)											
\$80	19.7%	17.1%	16.1%	29.9%	13.6%	9.7%	12.4%	18.4%	34.5%	18.4%	24.7%
\$100	23.4%	23.9%	22.6%	46.3%	22.7%	13.1%	16.0%	27.0%	45.2%	27.0%	32.9%
\$120	27.6%	30.0%	28.6%	73.6%	37.0%	16.3%	19.3%	34.6%	53.5%	34.6%	40.2%
5-Year (2017-2021) Cash Margins (Dollars Per BOE)											
\$80	\$25.84	\$36.94	\$34.44	\$23.39	\$28.39	\$26.07	\$34.51	\$12.45	\$22.94	\$24.91	\$29.35
\$100	\$28.84	\$45.89	\$42.59	\$29.99	\$36.48	\$29.14	\$39.42	\$16.69	\$28.85	\$33.38	\$37.82
\$120	\$33.13	\$54.69	\$50.89	\$36.87	\$44.91	\$33.37	\$44.32	\$20.93	\$31.29	\$41.86	\$46.30
Government Take (Percent)											
\$80	70.8%	61.9%	66.0%	71.7%	77.1%	63.4%	67.8%	81.0%	61.0%	62.0%	52.0%
\$100	75.8%	61.1%	64.7%	67.9%	72.1%	63.5%	71.7%	81.0%	68.6%	62.0%	55.8%
\$120	77.2%	60.8%	64.0%	65.1%	68.7%	63.0%	73.4%	81.0%	72.0%	62.0%	57.5%
State/Municipal NPV-12/BOE (Dollars Per BOE)											
\$80	\$6.67	\$6.68	\$7.60	-	-	-	-	-	-	-	-
\$100	\$13.32	\$9.72	\$11.02	-	-	-	-	-	-	-	-
\$120	\$19.46	\$12.89	\$14.48	-	-	-	-	-	-	-	-

* Brownfield Allowance applied to 100 MMBOE development.

Summary of Investment Measures for Incumbent Light Conventional Oil Alaska Development ACES and SB21/HB72 v. Benchmark Areas



West Coast ANS Price	SB21/HB72			Unconventional Lower-48		Canada Oil Sands	Norway	U.K. Development & Fiscal System			
	ACES	With GRE	Without GRE	Eagle Ford	Bakken	SAGD		Pre-1993	Pre-1993 w/ Brownfield Allowance*	Post-1993	Post-1993 w/ Brownfield Allowance*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Producer NPV-12 / BOE (Dollars Per BOE)											
\$80	\$3.71	\$2.71	\$2.02	\$3.61	\$0.67	(\$0.93)	\$0.24	\$1.20	\$4.81	\$2.41	\$4.62
\$100	\$6.14	\$6.20	\$5.30	\$6.75	\$4.29	\$0.46	\$2.34	\$3.02	\$7.09	\$6.04	\$8.25
\$120	\$8.82	\$9.69	\$8.58	\$11.17	\$9.16	\$2.01	\$4.44	\$4.83	\$9.09	\$9.67	\$11.88
Profitability Index-12											
\$80	1.28	1.20	1.15	1.25	1.04	0.88	1.01	1.06	1.22	1.11	1.21
\$100	1.46	1.47	1.40	1.47	1.28	1.06	1.14	1.14	1.33	1.28	1.38
\$120	1.67	1.73	1.65	1.78	1.60	1.26	1.27	1.22	1.42	1.45	1.55
IRR (Percent)											
\$80	26.2%	18.5%	16.9%	29.9%	13.6%	9.7%	12.4%	18.4%	34.5%	18.4%	24.7%
\$100	41.1%	25.8%	24.1%	46.3%	22.7%	13.1%	16.0%	27.0%	45.2%	27.0%	32.9%
\$120	65.3%	32.5%	30.6%	73.6%	37.0%	16.3%	19.3%	34.6%	53.5%	34.6%	40.2%
5-Year (2017-2021) Cash Margins (Dollars Per BOE)											
\$80	\$24.26	\$30.63	\$28.57	\$23.39	\$28.39	\$26.07	\$34.51	\$12.45	\$22.94	\$24.91	\$29.35
\$100	\$27.22	\$40.27	\$37.61	\$29.99	\$36.48	\$29.14	\$39.42	\$16.69	\$28.85	\$33.38	\$37.82
\$120	\$31.18	\$49.90	\$46.65	\$36.87	\$44.91	\$33.37	\$44.32	\$20.93	\$31.29	\$41.86	\$46.30
Government Take (Percent)											
\$80	68.9%	64.1%	68.1%	71.7%	77.1%	63.4%	67.8%	81.0%	61.0%	62.0%	52.0%
\$100	73.0%	62.6%	66.1%	67.9%	72.1%	63.5%	71.7%	81.0%	68.6%	62.0%	55.8%
\$120	73.8%	61.9%	65.1%	65.1%	68.7%	63.0%	73.4%	81.0%	72.0%	62.0%	57.5%
State/Municipal NPV-12/BOE (Dollars Per BOE)											
\$80	\$4.88	\$6.42	\$7.49	-	-	-	-	-	-	-	-
\$100	\$9.79	\$9.70	\$11.08	-	-	-	-	-	-	-	-
\$120	\$14.31	\$12.98	\$14.67	-	-	-	-	-	-	-	-

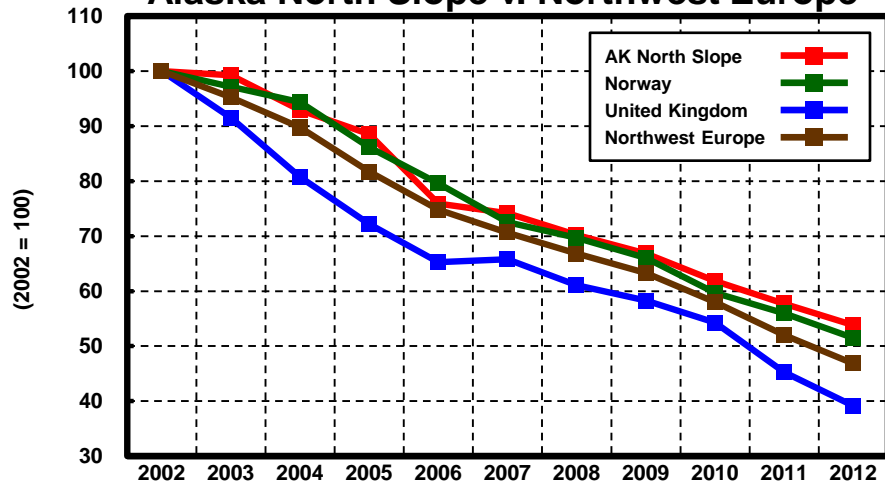
* Brownfield Allowance applied to 100 MMBOE development.

Note: Analysis of incumbent production includes "buy-down" impact for reduced taxes on existing production.

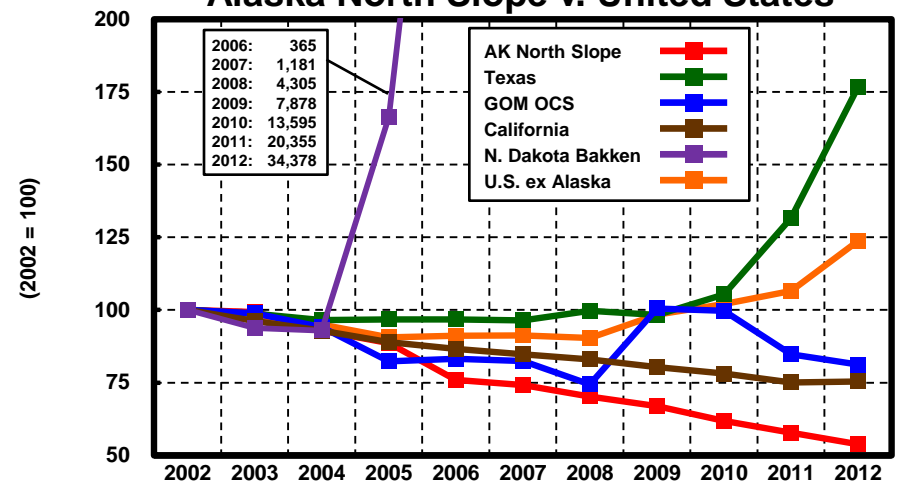
Appendix

Crude Oil Production Comparisons to Alaska

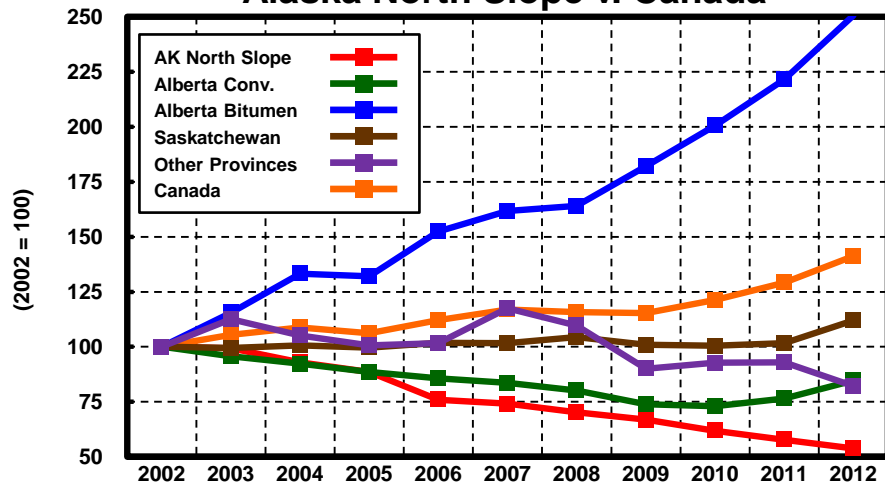
Alaska North Slope v. Northwest Europe



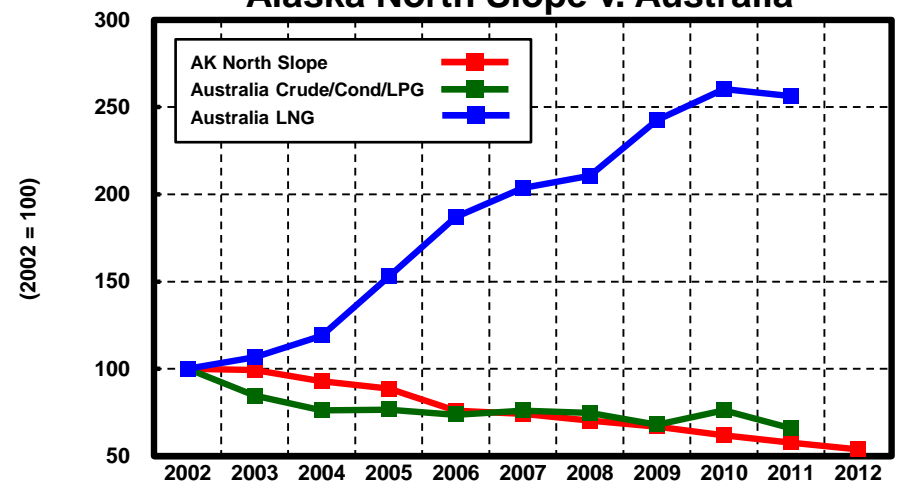
Alaska North Slope v. United States



Alaska North Slope v. Canada

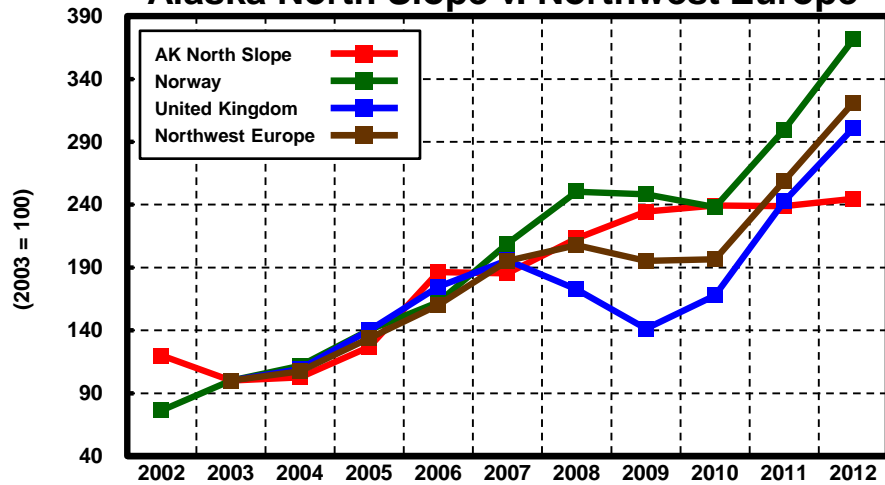


Alaska North Slope v. Australia

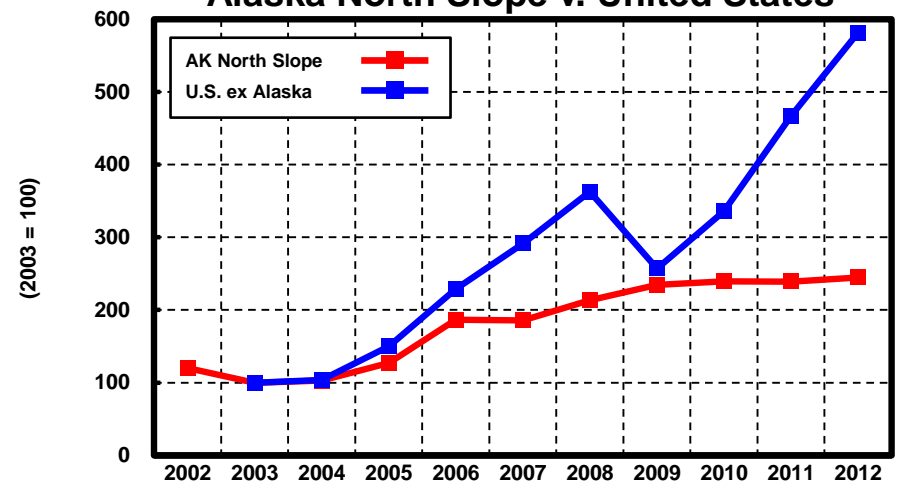


Capital Spending Comparisons to Alaska

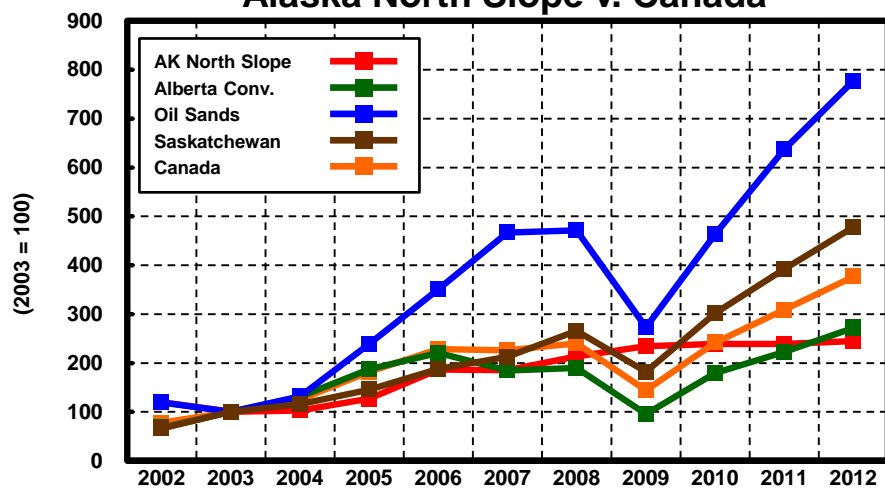
Alaska North Slope v. Northwest Europe



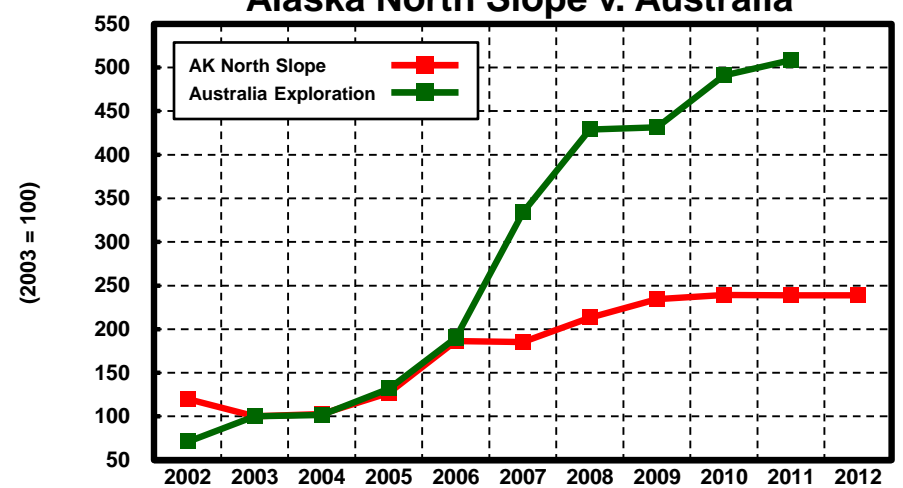
Alaska North Slope v. United States



Alaska North Slope v. Canada

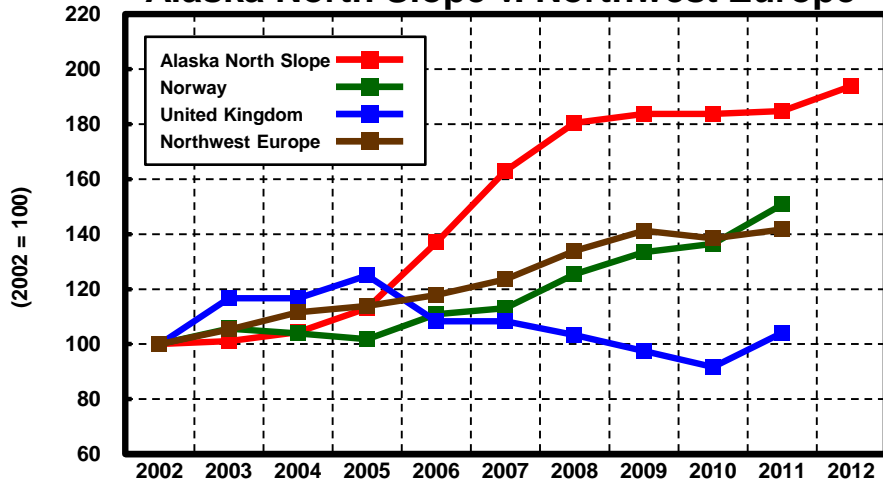


Alaska North Slope v. Australia

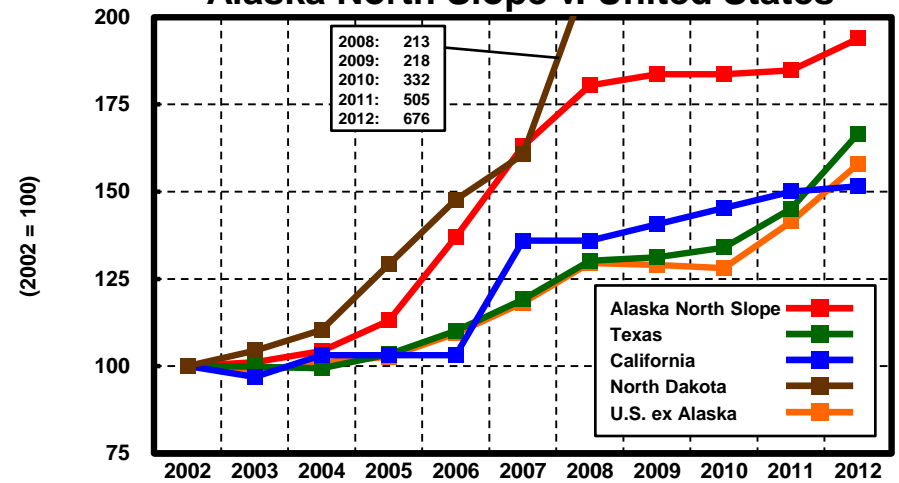


Employment Comparisons to Alaska

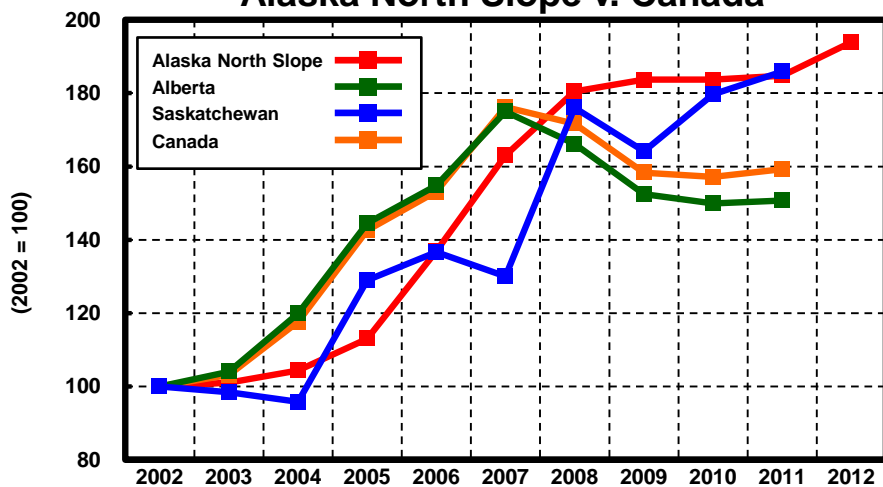
Alaska North Slope v. Northwest Europe



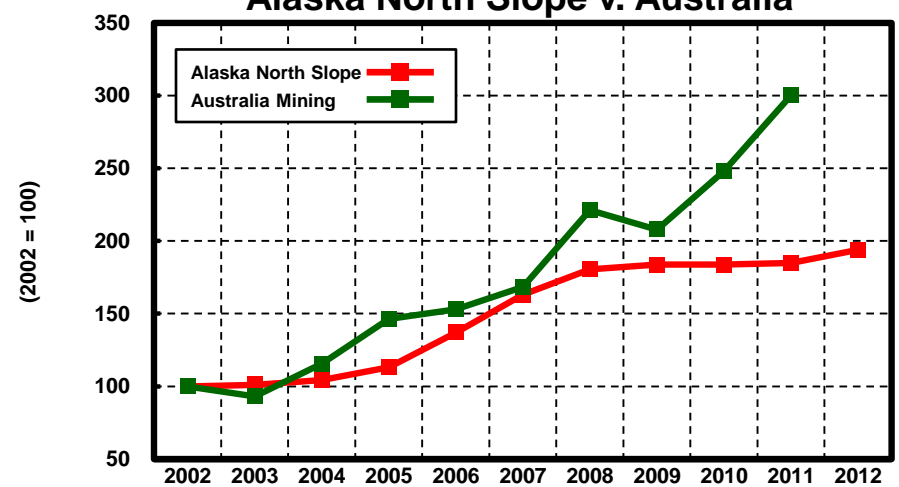
Alaska North Slope v. United States



Alaska North Slope v. Canada

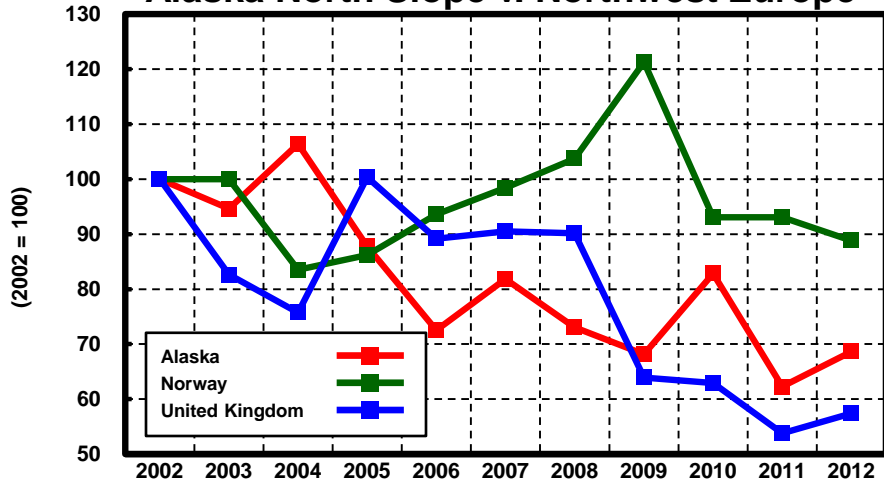


Alaska North Slope v. Australia

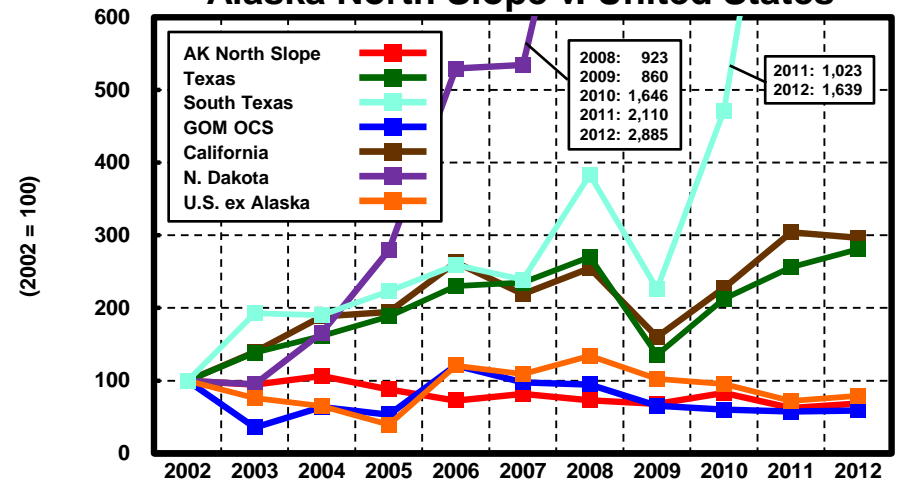


Drilling / Development Activity Comparisons to Alaska

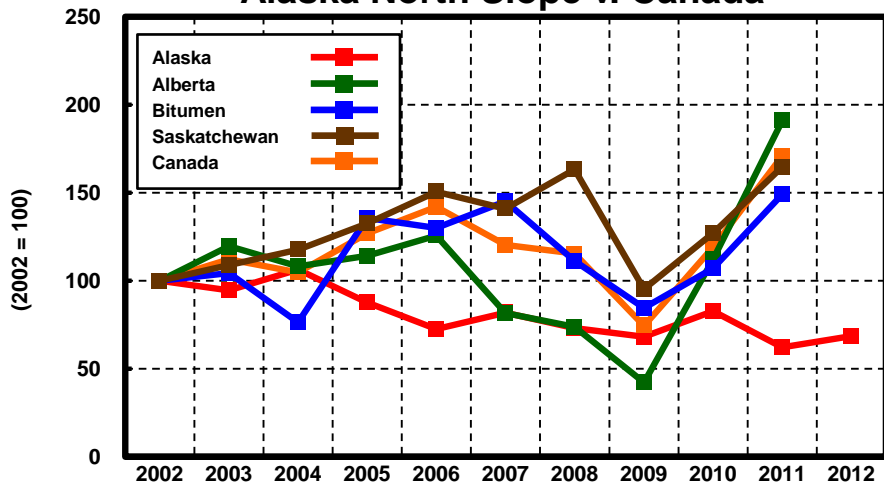
Alaska North Slope v. Northwest Europe



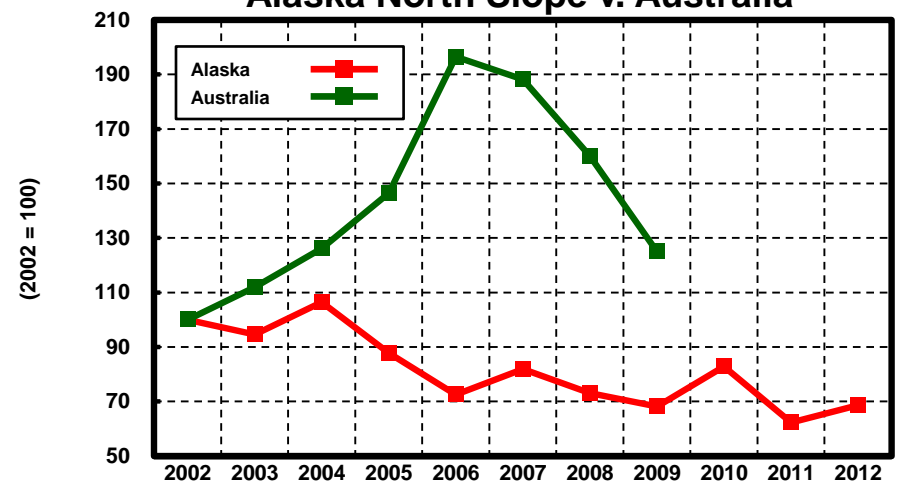
Alaska North Slope v. United States



Alaska North Slope v. Canada



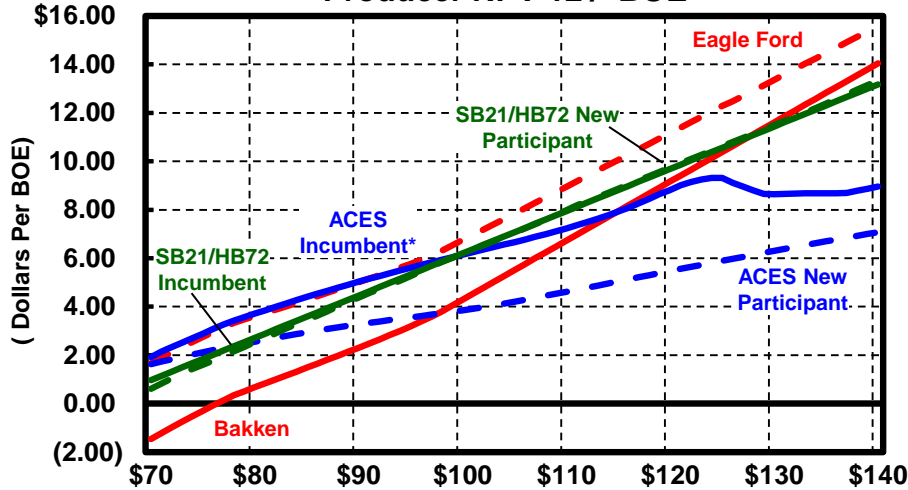
Alaska North Slope v. Australia



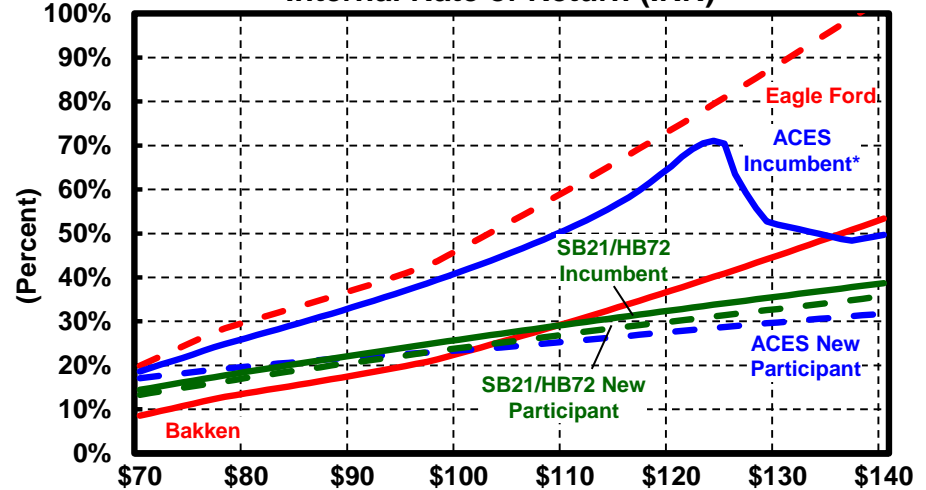
Investment Measures

Light Conventional Oil Alaska Development v. Unconventional Lower-48

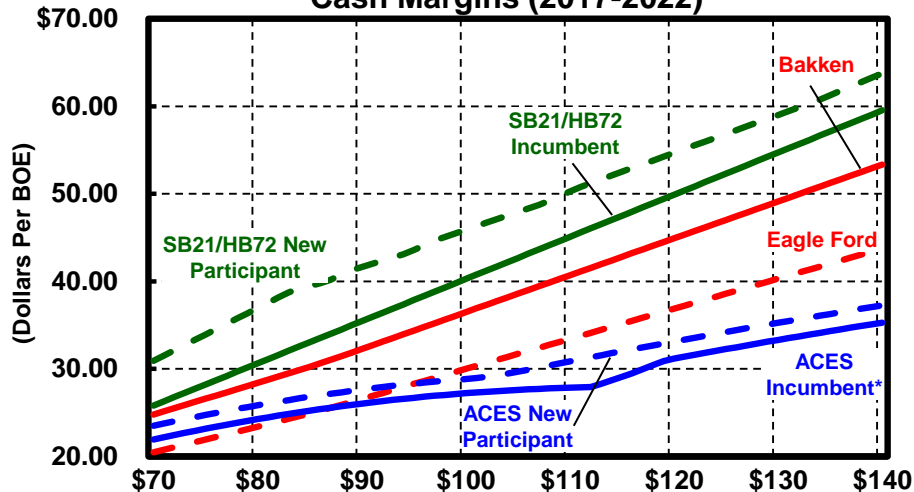
Producer NPV-12 / BOE



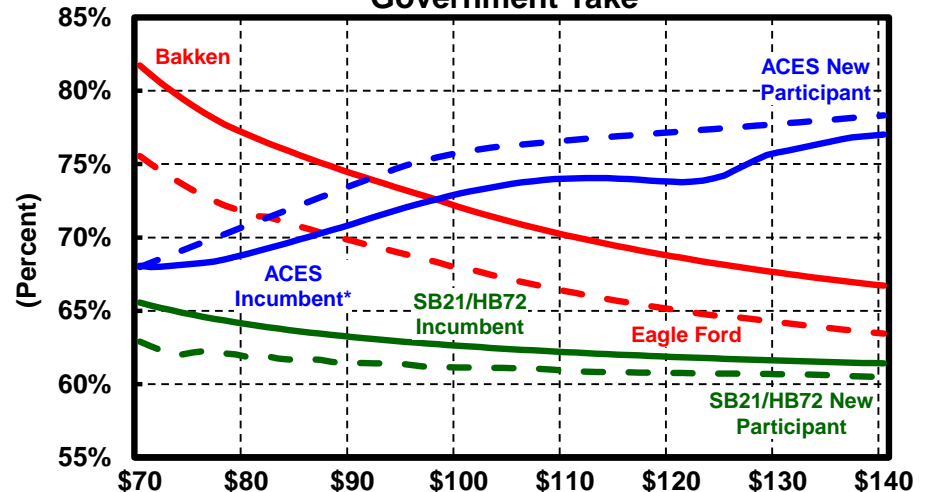
Internal Rate of Return (IRR)



Cash Margins (2017-2022)



Government Take

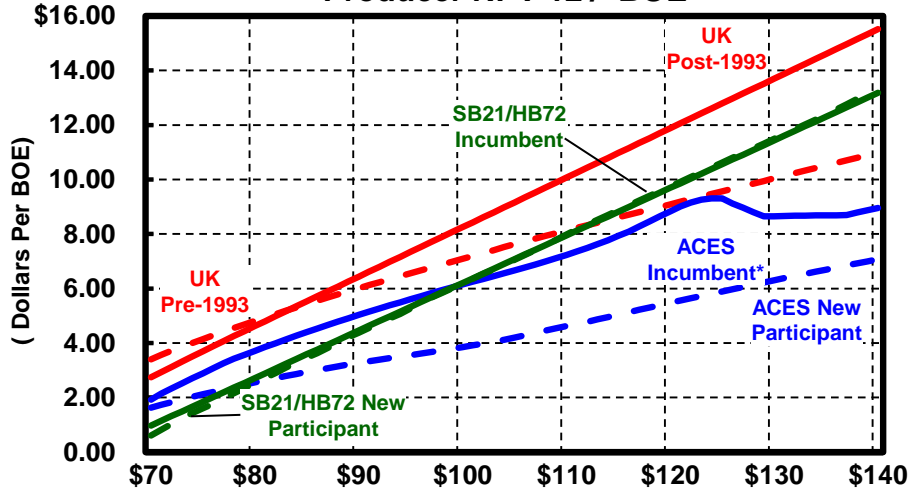


* Analysis of incumbent production includes "buy-down" impact for reduced taxes on existing production.

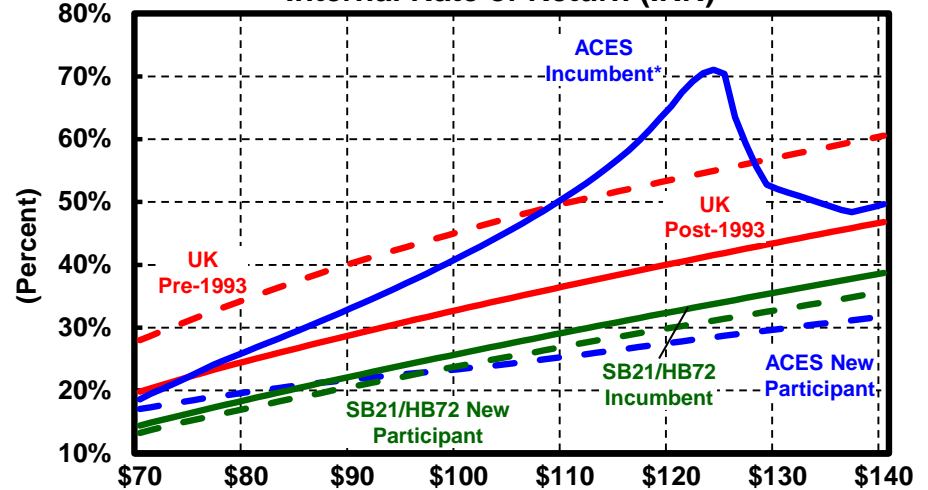
Investment Metrics

Light Conventional Oil Alaska Development v. North Sea (United Kingdom with Brownfield Allowance)

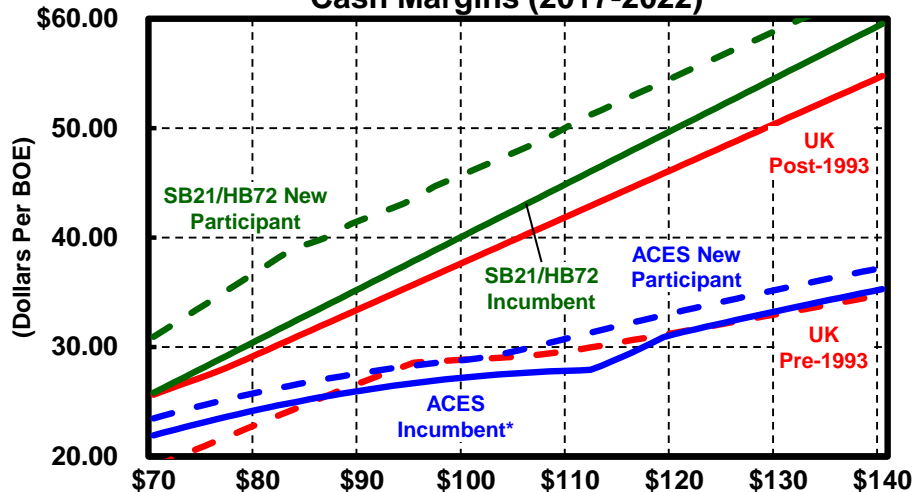
Producer NPV-12 / BOE



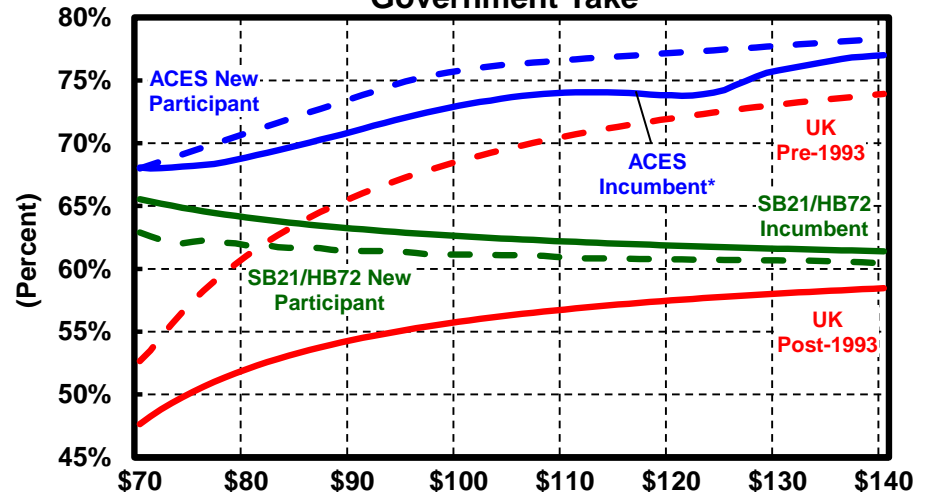
Internal Rate of Return (IRR)



Cash Margins (2017-2022)



Government Take

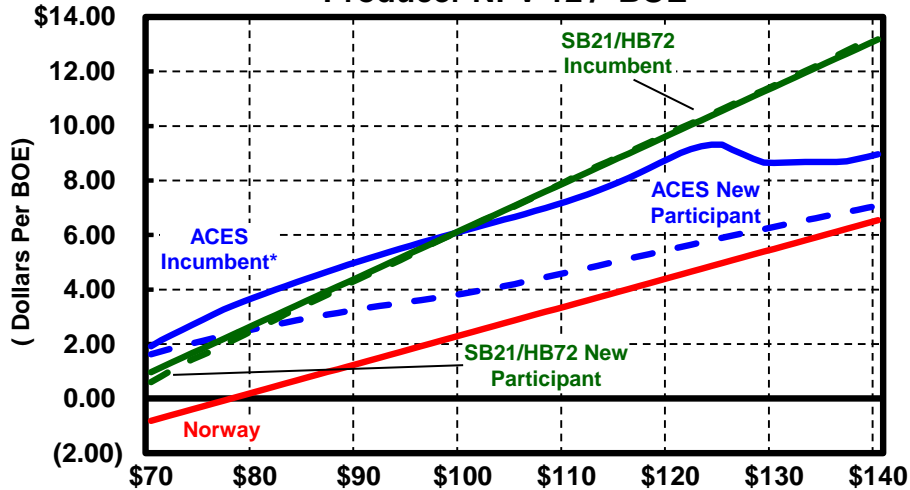


* Analysis of incumbent production includes "buy-down" impact for reduced taxes on existing production.

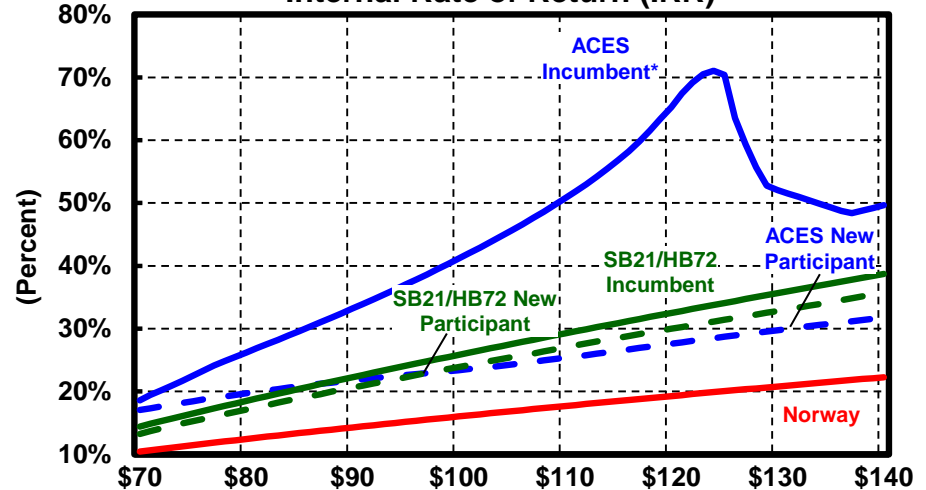
Investment Metrics

Light Conventional Oil Alaska Development v. North Sea (Norway)

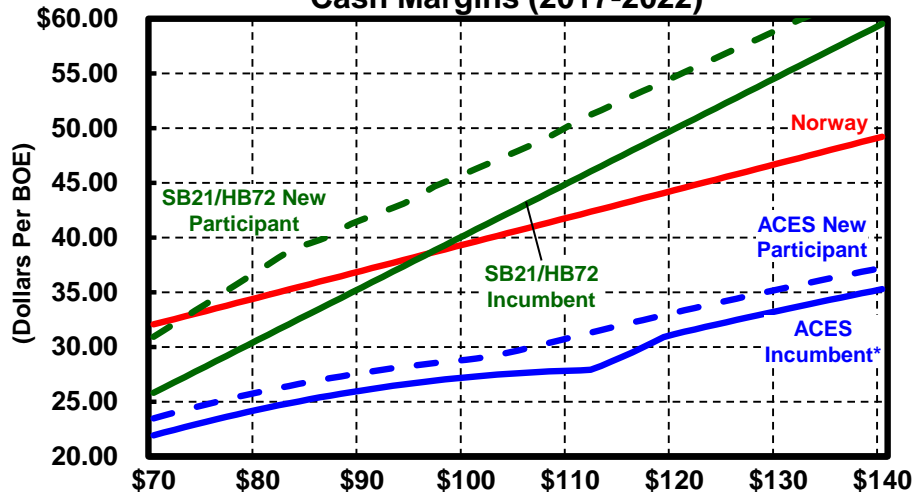
Producer NPV-12 / BOE



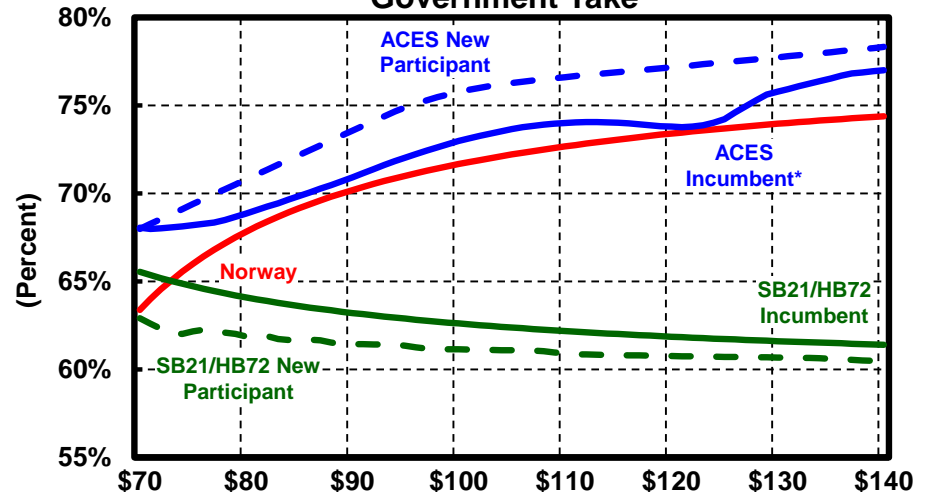
Internal Rate of Return (IRR)



Cash Margins (2017-2022)



Government Take

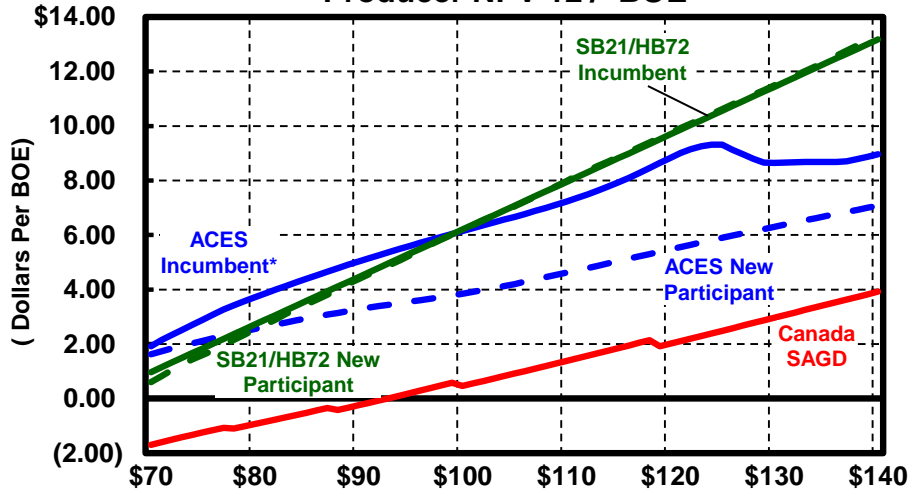


* Analysis of incumbent production includes "buy-down" impact for reduced taxes on existing production.

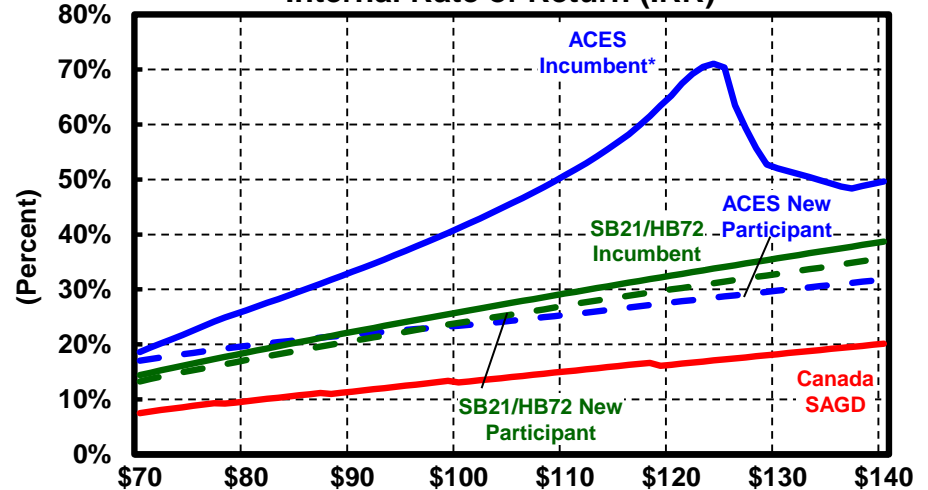
Investment Metrics

Light Conventional Oil Alaska Development v. Canada Oil Sands (SAGD)

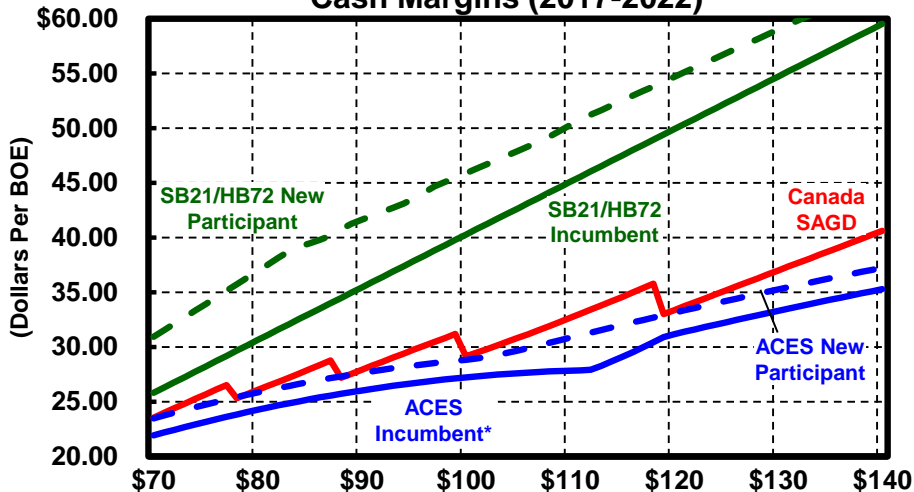
Producer NPV-12 / BOE



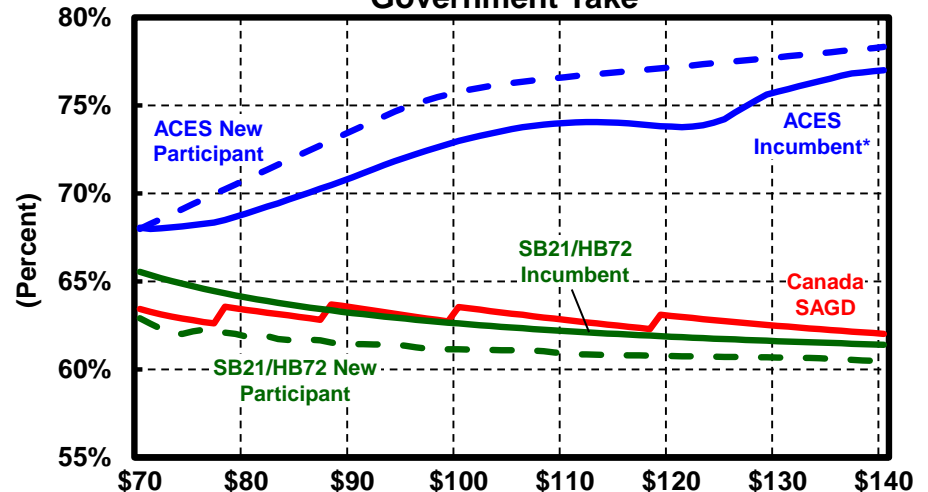
Internal Rate of Return (IRR)



Cash Margins (2017-2022)



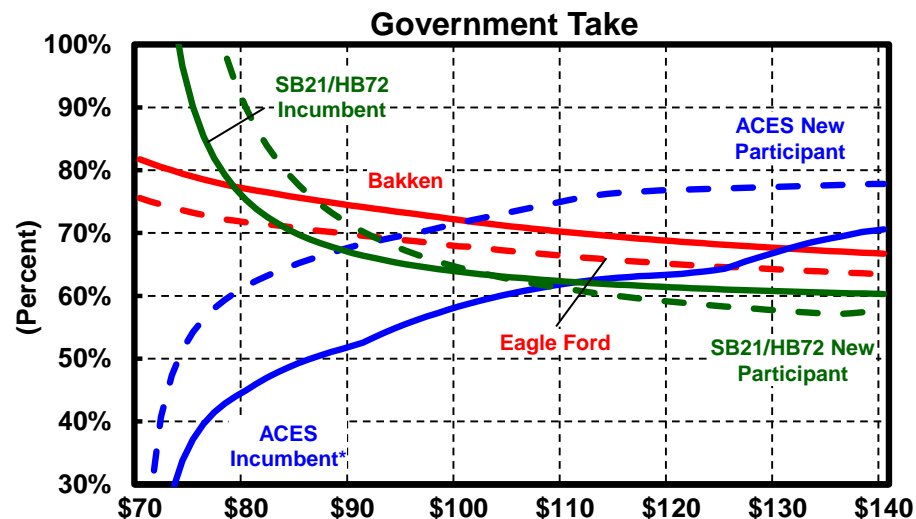
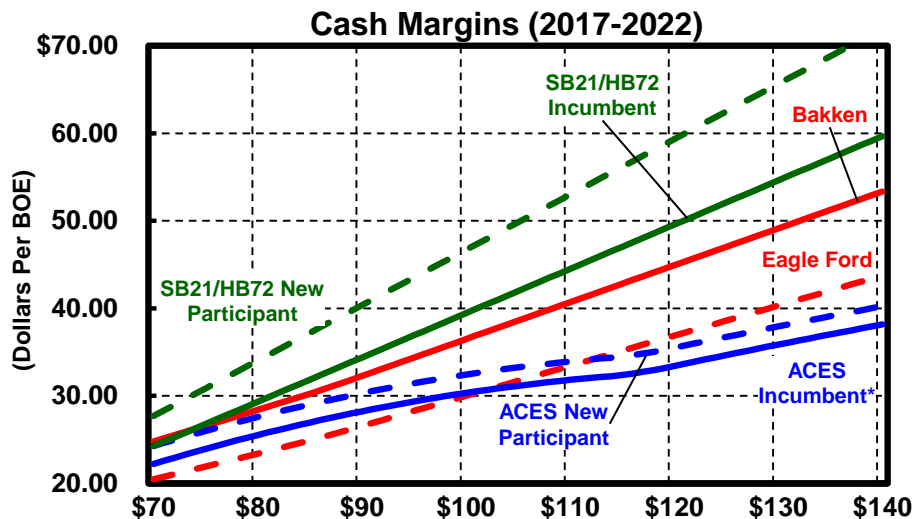
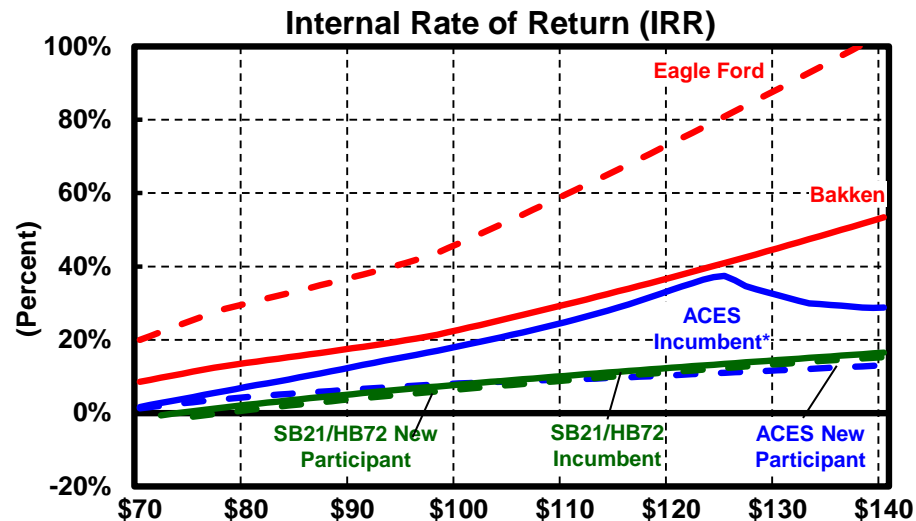
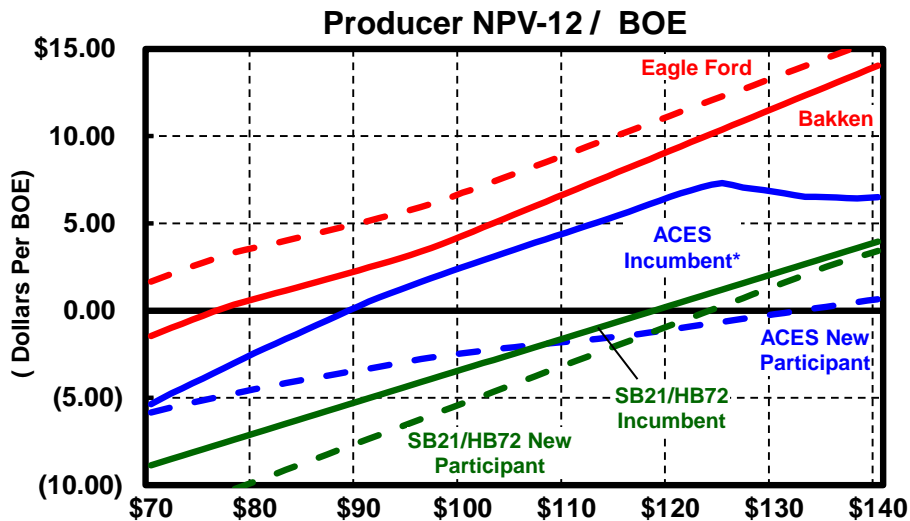
Government Take



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

Investment Measures

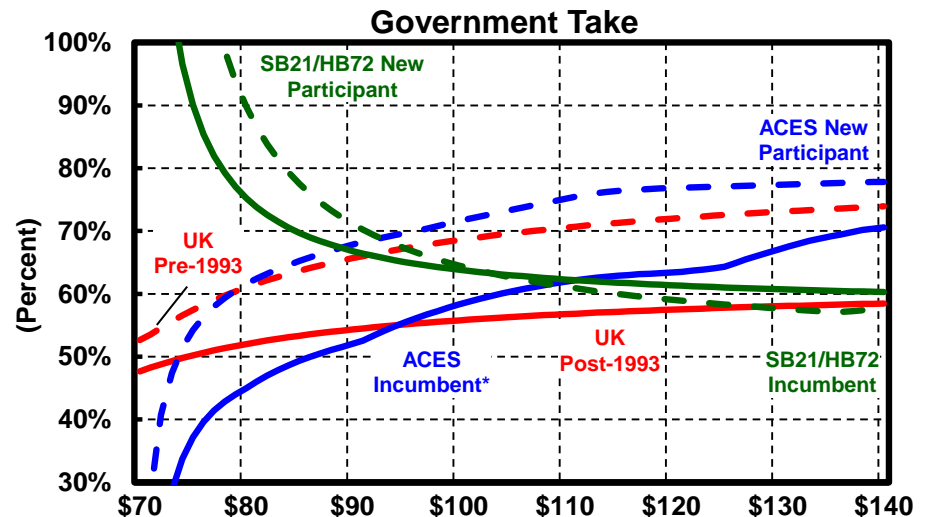
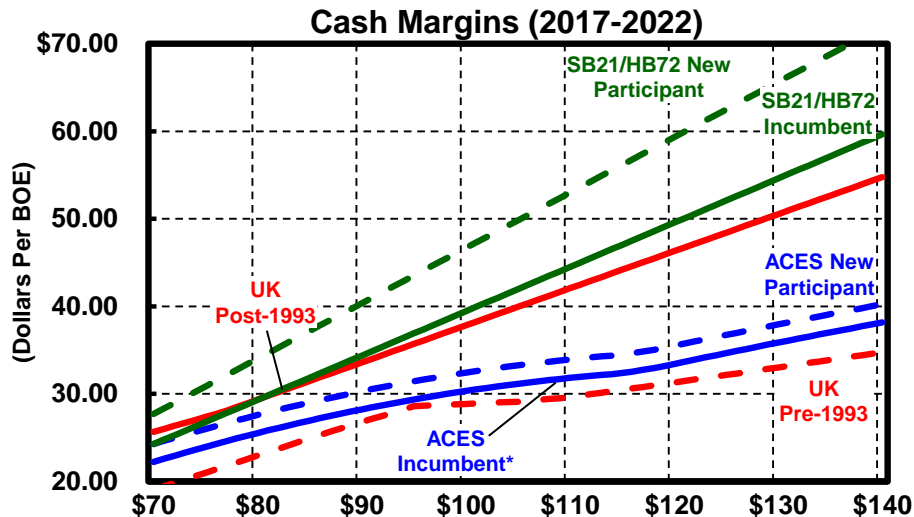
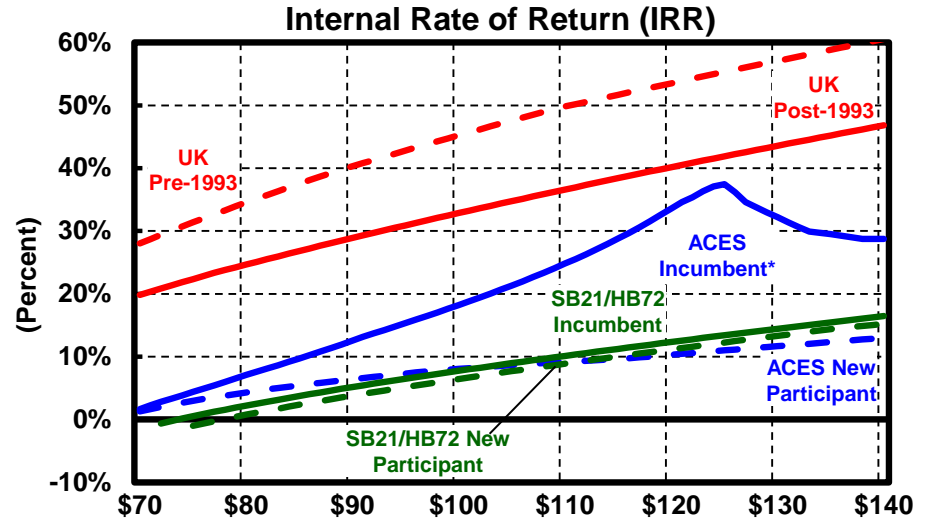
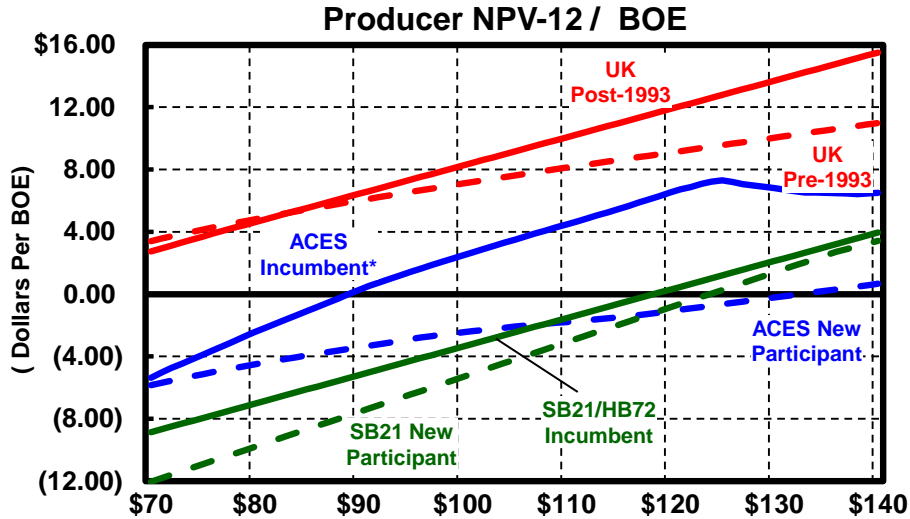
Heavy High Cost Oil Alaska Development v. Unconventional Lower-48



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

Investment Metrics

Heavy High Cost Oil Alaska Development v. North Sea (United Kingdom with Brownfield Allowance)

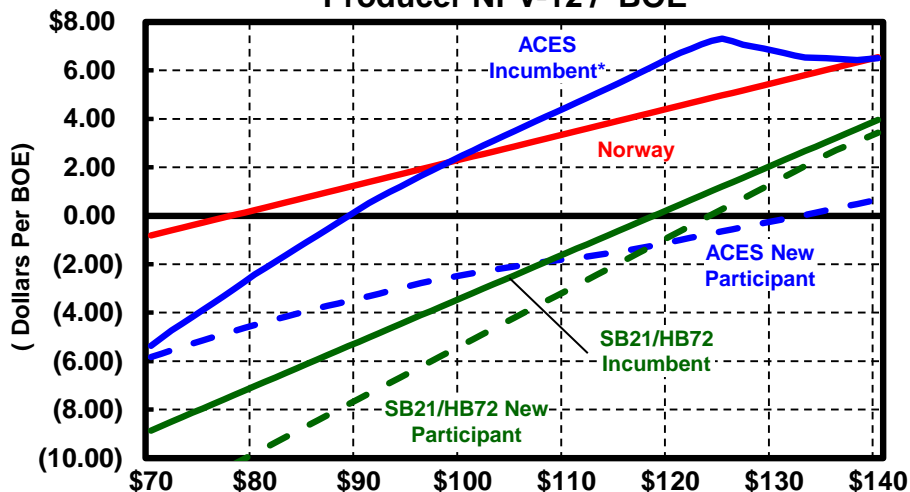


* Analysis of incumbent production includes "buy-down" impact for reduced taxes on existing production.

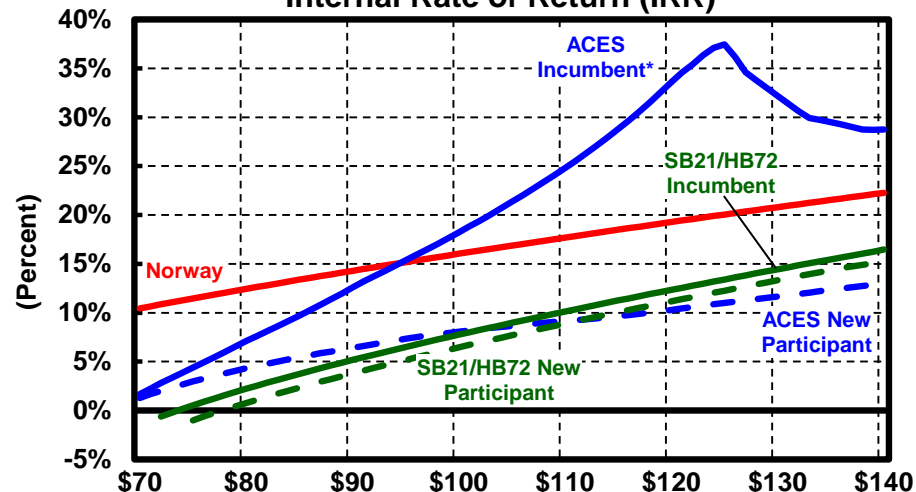
Investment Metrics

Heavy High Cost Oil Alaska Development v. North Sea (Norway)

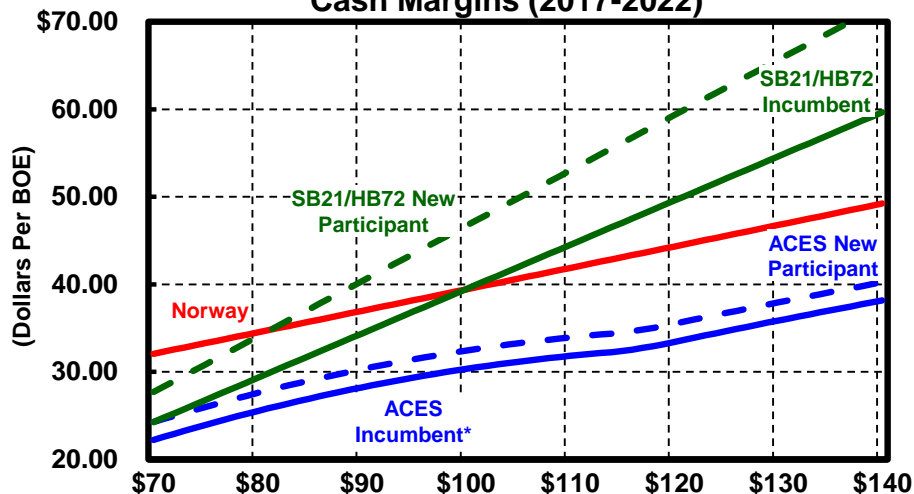
Producer NPV-12 / BOE



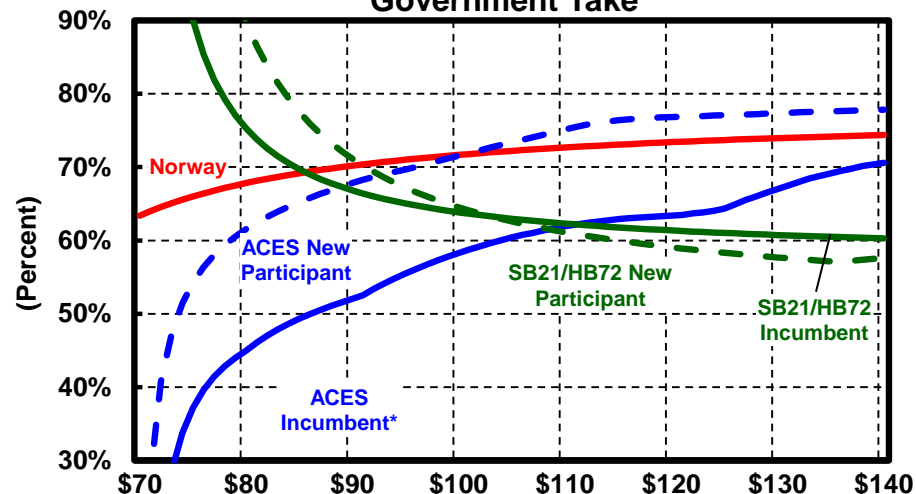
Internal Rate of Return (IRR)



Cash Margins (2017-2022)



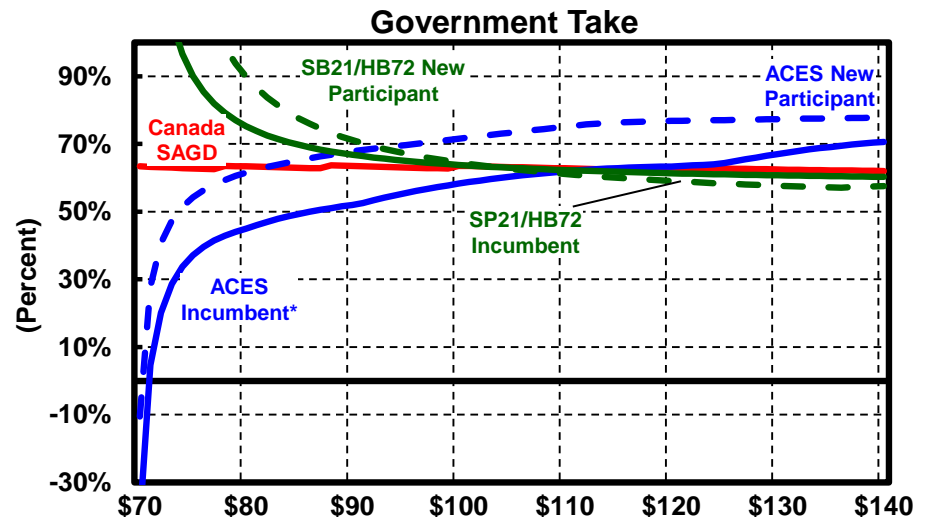
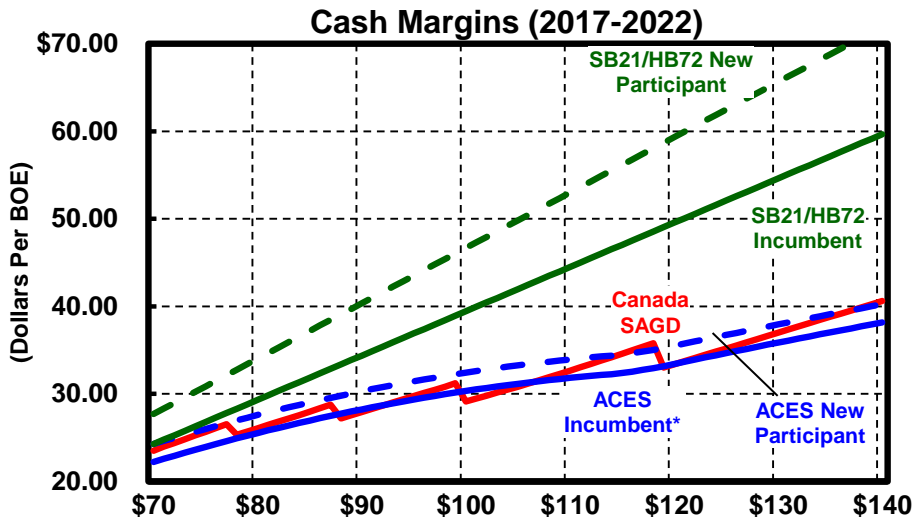
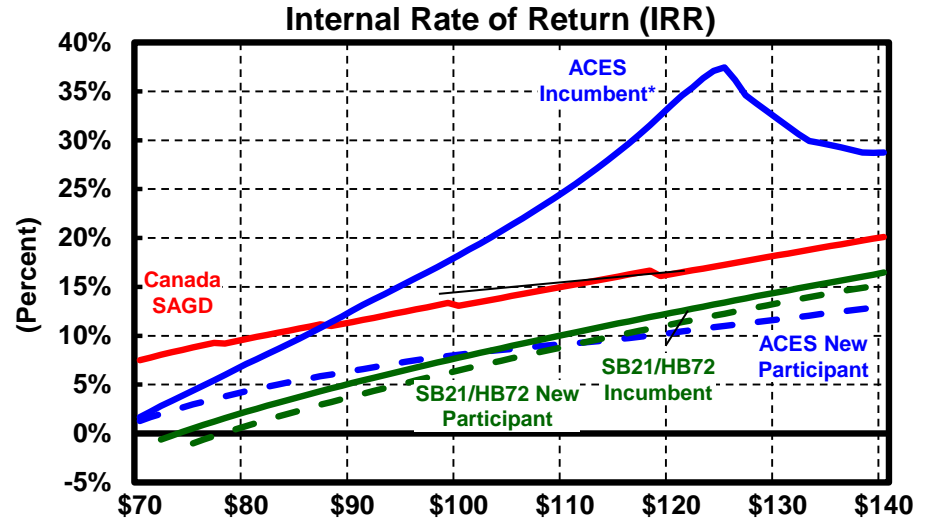
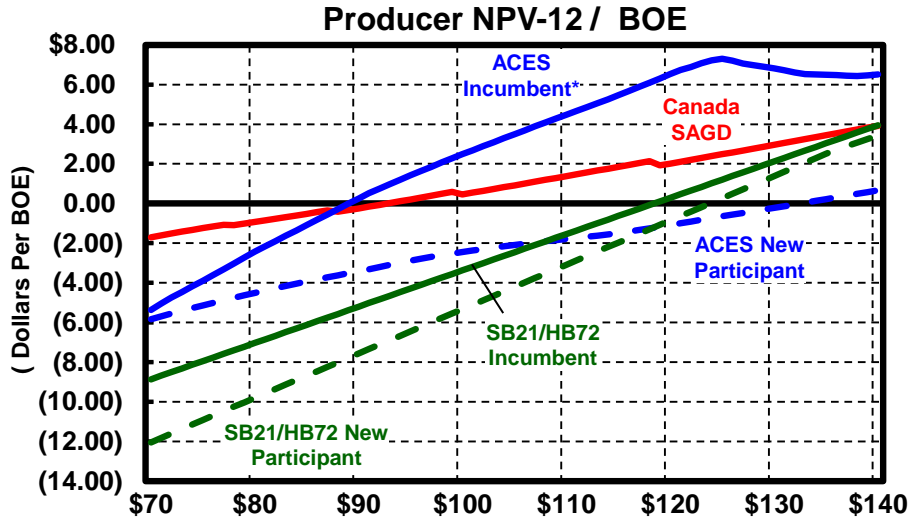
Government Take



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

Investment Metrics

Heavy High Cost Oil Alaska Development v. Canada Oil Sands (SAGD)



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

Summary of Investment Measures for New Participant Heavy High Cost Oil Alaska Development ACES and SB21/HB72 v. Benchmark Areas



West Coast ANS Price	ACES	SB21/HB72		Unconventional Lower-48		Canada Oil Sands	Norway	U.K. Development & Fiscal System			
		With GRE	Without GRE	Eagle Ford	Bakken	SAGD		Pre-1993	Pre-1993 w/ Brownfield Allowance*	Post-1993	Post-1993 w/ Brownfield Allowance*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Producer NPV-12 / BOE (Dollars Per BOE)											
\$80	(\$4.51)	(\$9.80)	(\$9.89)	\$3.61	\$0.67	(\$0.93)	\$0.24	\$1.20	\$4.81	\$2.41	\$4.62
\$100	(\$2.45)	(\$5.33)	(\$5.45)	\$6.75	\$4.29	\$0.46	\$2.34	\$3.02	\$7.09	\$6.04	\$8.25
\$120	(\$1.09)	(\$0.85)	(\$1.29)	\$11.17	\$9.16	\$2.01	\$4.44	\$4.83	\$9.09	\$9.67	\$11.88
Profitability Index-12											
\$80	0.84	0.65	0.65	1.25	1.04	0.88	1.01	1.06	1.22	1.11	1.21
\$100	0.91	0.81	0.81	1.47	1.28	1.06	1.14	1.14	1.33	1.28	1.38
\$120	0.96	0.97	0.95	1.78	1.60	1.26	1.27	1.22	1.42	1.45	1.55
IRR (Percent)											
\$80	4.3%	0.8%	0.4%	29.9%	13.6%	9.7%	12.4%	18.4%	34.5%	18.4%	24.7%
\$100	8.1%	6.5%	6.2%	46.3%	22.7%	13.1%	16.0%	27.0%	45.2%	27.0%	32.9%
\$120	10.3%	11.2%	10.7%	73.6%	37.0%	16.3%	19.3%	34.6%	53.5%	34.6%	40.2%
5-Year (2017-2021) Cash Margins (Dollars Per BOE)											
\$80	\$27.58	\$34.02	\$34.02	\$23.39	\$28.39	\$26.07	\$34.51	\$12.45	\$22.94	\$24.91	\$29.35
\$100	\$32.42	\$46.67	\$46.67	\$29.99	\$36.48	\$29.14	\$39.42	\$16.69	\$28.85	\$33.38	\$37.82
\$120	\$35.48	\$59.32	\$59.32	\$36.87	\$44.91	\$33.37	\$44.32	\$20.93	\$31.29	\$41.86	\$46.30
Government Take (Percent)											
\$80	61.5%	89.9%	94.6%	71.7%	77.1%	63.4%	67.8%	81.0%	61.0%	62.0%	52.0%
\$100	71.6%	64.5%	66.8%	67.9%	72.1%	63.5%	71.7%	81.0%	68.6%	62.0%	55.8%
\$120	76.8%	59.1%	62.6%	65.1%	68.7%	63.0%	73.4%	81.0%	72.0%	62.0%	57.5%
State/Municipal NPV-12/BOE (Dollars Per BOE)											
\$80	(\$4.61)	\$3.53	\$3.66	-	-	-	-	-	-	-	-
\$100	\$0.86	\$5.29	\$5.47	-	-	-	-	-	-	-	-
\$120	\$7.41	\$7.05	\$7.72	-	-	-	-	-	-	-	-

* Brownfield Allowance applied to 100 MMBOE development.

Summary of Investment Measures for Incumbent Heavy High Cost Oil Alaska Development ACES and SB21/HB72 v. Benchmark Areas



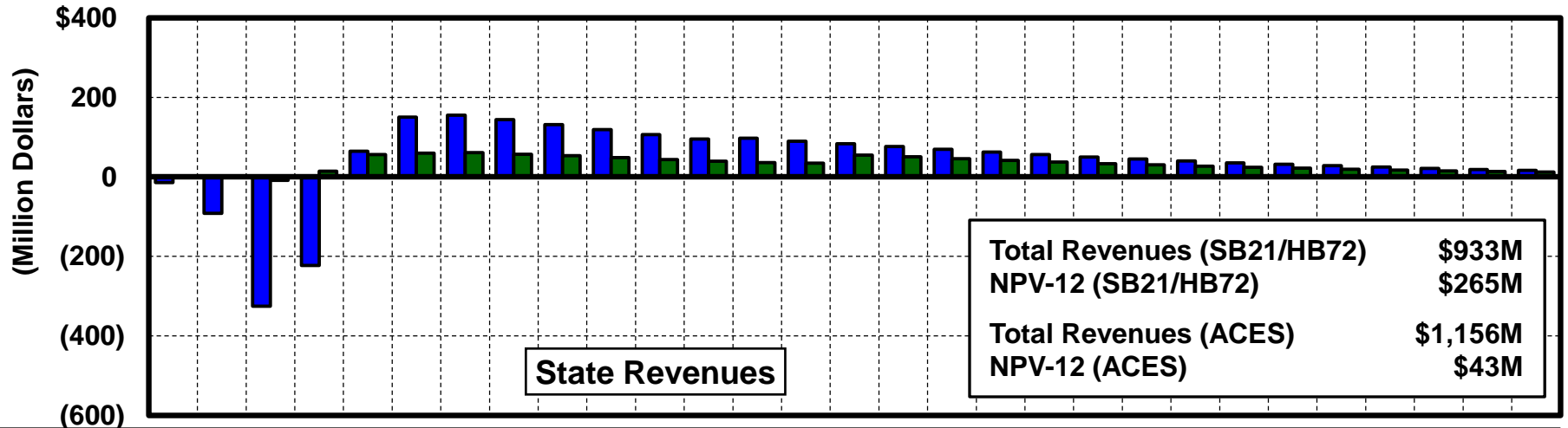
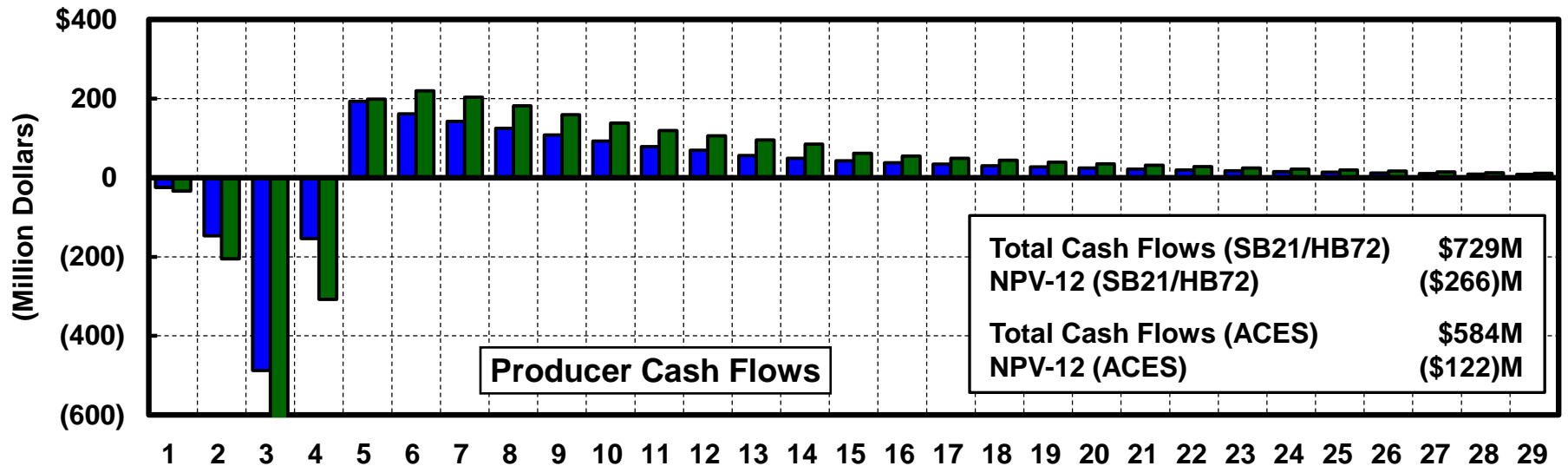
West Coast ANS Price	ACES	SB21/HB72		Unconventional Lower-48		Canada Oil Sands	Norway	U.K. Development & Fiscal System			
		With GRE	Without GRE	Eagle Ford	Bakken	SAGD		Pre-1993	Pre-1993 w/ Brownfield Allowance*	Post-1993	Post-1993 w/ Brownfield Allowance*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Producer NPV-12 / BOE (Dollars Per BOE)											
\$80	(\$2.43)	(\$7.04)	(\$7.66)	\$3.61	\$0.67	(\$0.93)	\$0.24	\$1.20	\$4.81	\$2.41	\$4.62
\$100	\$2.48	(\$3.37)	(\$4.21)	\$6.75	\$4.29	\$0.46	\$2.34	\$3.02	\$7.09	\$6.04	\$8.25
\$120	\$6.53	\$0.29	(\$0.77)	\$11.17	\$9.16	\$2.01	\$4.44	\$4.83	\$9.09	\$9.67	\$11.88
Profitability Index-12											
\$80	0.91	0.75	0.73	1.25	1.04	0.88	1.01	1.06	1.22	1.11	1.21
\$100	1.09	0.88	0.85	1.47	1.28	1.06	1.14	1.14	1.33	1.28	1.38
\$120	1.23	1.01	0.97	1.78	1.60	1.26	1.27	1.22	1.42	1.45	1.55
IRR (Percent)											
\$80	7.1%	2.2%	1.1%	29.9%	13.6%	9.7%	12.4%	18.4%	34.5%	18.4%	24.7%
\$100	18.2%	7.8%	6.6%	46.3%	22.7%	13.1%	16.0%	27.0%	45.2%	27.0%	32.9%
\$120	33.6%	12.3%	11.1%	73.6%	37.0%	16.3%	19.3%	34.6%	53.5%	34.6%	40.2%
5-Year (2017-2021) Cash Margins (Dollars Per BOE)											
\$80	\$25.52	\$29.32	\$27.46	\$23.39	\$28.39	\$26.07	\$34.51	\$12.45	\$22.94	\$24.91	\$29.35
\$100	\$30.33	\$39.44	\$36.95	\$29.99	\$36.48	\$29.14	\$39.42	\$16.69	\$28.85	\$33.38	\$37.82
\$120	\$33.41	\$49.56	\$46.44	\$36.87	\$44.91	\$33.37	\$44.32	\$20.93	\$31.29	\$41.86	\$46.30
Government Take (Percent)											
\$80	45.0%	75.3%	88.7%	71.7%	77.1%	63.4%	67.8%	81.0%	61.0%	62.0%	52.0%
\$100	58.3%	63.8%	70.3%	67.9%	72.1%	63.5%	71.7%	81.0%	68.6%	62.0%	55.8%
\$120	63.4%	61.4%	66.3%	65.1%	68.7%	63.0%	73.4%	81.0%	72.0%	62.0%	57.5%
State/Municipal NPV-12/BOE (Dollars Per BOE)											
\$80	(\$7.81)	(\$0.73)	\$0.23	-	-	-	-	-	-	-	-
\$100	(\$6.73)	\$2.28	\$3.57	-	-	-	-	-	-	-	-
\$120	(\$4.31)	\$5.29	\$6.91	-	-	-	-	-	-	-	-

* Brownfield Allowance applied to 100 MMBOE development.

Note: Analysis of incumbent production includes "buy-down" impact for reduced taxes on existing production.

Annual State Revenues and Producer Cash Flows at \$100 West Coast ANS Heavy High Cost Oil Alaska Development New Participant in Alaska

ACES █ SB21/HB72 █



Annual State Revenues and Producer Cash Flows at \$100 West Coast ANS Heavy High Cost Oil Alaska Development Incumbent Participant in Alaska

ACES █ SB21/HB72 █

