Analysis of Alaska’s Tax System, North Slope Investment and The Administration’s Proposal

Econ One Research, Inc.

January 24, 2013
Presentation Structure

I. Introduction

II. The Petroleum Industry in Alaska

III. History of North Slope Production, Development and Tax Systems

IV. North Slope Activity Over The Past Decade

V. Benchmarking North Slope Activity Against Other Areas

VI. Attractiveness of Investments Under ACES

VII. The Administration’s Proposed Changes
I. Introduction
Econ One: Who We Are

- Economic Research and Consulting Firm
  - Offices in Los Angeles, Houston, Sacramento and Washington D.C.
  - Provide Economic Analysis In Energy and Other Industries
- The Econ One Team Is Led By Barry Pulliam
  - Includes Washington Lem, Lisa McGuff, Tasha Reese and Dr. Anthony Finizza
- 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
  - Producers, Refiners, Pipelines and Chemical Companies
Overview of Analysis

- North Slope Development, Production, and Resources
- Evolution of Alaska’s Fiscal and Tax System
  - Gross Tax (ELF), Net Tax (PPT, ACES)
- Examination of North Slope Activity Over The Past Decade
  - Production, Employment, Spending, Drilling
- Benchmarking the North Slope Against Other Areas
  - Key Producing Areas in OECD Countries
  - Lower-48, Canada, North Sea, Australia
- Examination of North Slope Investment Opportunities
  - Across Alaska’s Gross and Net Tax Systems
  - Relative to Benchmark Areas
- Examination of Proposed Changes to Tax System
  - Rationale and Implications
  - Impact on Investment Opportunities
II. The Petroleum Industry in Alaska
Impact of Petroleum on State Revenues
Total State Revenues Excluding Federal and Investment
FY2003 - FY2012

- Petroleum Industry is Largest Contributor to State Economy
- Industry Accounted For 92% of Unrestricted Revenues and 86% of Restricted and Unrestricted Revenues Over the Past Decade
- Production Taxes Accounted for 61% of Petroleum Revenues
  In FY2012, Up From 27% Prior to FY2007
Alaska North Slope: An Overview

- The North Slope has produced approximately 16 billion barrels of crude oil since 1977.

- The vast majority of North Slope production has come from two giant “Legacy” fields, Prudhoe Bay and Kuparuk, discovered in the 1960s. Production from these two fields is naturally declining over time, though the decline has been partially offset by the addition of smaller discoveries.

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**Pie Chart:**

- Prudhoe Bay Unit (76.0%)
- Kuparuk River Unit (15.4%)
- Colville River Unit (2.7%)
- Nikaitchuq & Oooguruk (0.1%)
- Milne Point Unit (1.9%)
- Duck Island Unit (2.9%)
- All Other (1.0%)
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.
While the Potential is Great, These Remaining Resources are Not “Low-Hanging” Fruit

• The Exploration and Development Costs on the North Slope are High Relative to Much of the Rest of the World
• The North Slope is a Physically Challenging Environment, With Much of the Remaining Resources Located Offshore
• And Much of the Remaining Resources are Located on Federal Properties, Where Development Has Been and May Continue to be Delayed Due to Legal Challenges and Changing Federal Policies and Requirements

In Addition, the North Slope has Significant Natural Gas Resources That Have Yet to be Commercialized
## Estimated Undiscovered Conventional Oil Resources on Alaska North Slope

| 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. |  |

<table>
<thead>
<tr>
<th></th>
<th>Technically Recoverable Resources</th>
<th>Economically Recoverable @ $90/bbl</th>
<th>Expected Typical Field Size</th>
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<td><strong>Total</strong></td>
<td><strong>38,300</strong></td>
<td><strong>29,100</strong></td>
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</table>
Estimated Undeveloped Unconventional Oil Resources on Alaska North Slope

**Shale**
(Mean Estimated Technically Recoverable Barrels)
*(USGS, 2012)*

~ 1 Billion Bbls

**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**
*(Hartz, et al., 2007; AOGCC)*

24 - 27 Billion Bbls

**Economically Recoverable**
*(Assuming 15% Average Recovery)*

3.6 - 5.6 Billion Bbls
Current and Potential ANS Producers

- Three Large Producers Account for Most of the State’s Current Production. However, in Recent Years, Alaska Has Attracted a Number of New Participants, With Several Developing and Operating Fields on Their Own

### The Majors
- BP
- ConocoPhillips
- Exxon Mobil
- Chevron

### Other Producers
- Anadarko
- Pioneer
- ENI
- Savant

### Explorers
- Armstrong
- Brooks Range
- Great Bear Petroleum
- Linc Energy
- Repsol
- Shell
- Statoil

### Producer Shares
- ConocoPhillips (42.1%)
- BP (28.4%)
- ExxonMobil (21.1%)
- Anadarko (3.0%)
- ENI (2.0%)
- Chevron (1.9%)
- Pioneer (1.0%)
- All Others (0.5%)
Current and Potential ANS Producers
The Majors

- Account for Approximately 9.5 Million BOED of Production Worldwide
- Account for More Than 90% of North Slope Production, About 0.4 Million BOED Net in Alaska

Activity in Alaska
- BP: Developing Resources From Existing Fields; Facility Renewal; Liberty Suspended
- ConocoPhillips: Developing Kuparuk, Colville River and Expansion
- ExxonMobil: Developing Point Thomson
- Not Actively Exploring Outside These Areas

Outside of Alaska
- BP: High Margin Areas: Angola, Azerbaijan, Gulf of Mexico, North Sea
- ConocoPhillips: High Margin Areas: Unconventional Lower-48, North Sea, Canada, Asia Pacific
- ExxonMobil: Russia; Recent Offshore Discoveries in Gulf of Mexico (Hadrian) and Newfoundland (Hebron)
Current and Potential ANS Producers
Other Producers / Explorers

- Pioneer and ENI Operating and Continuing to Develop Oooguruk and Nikaitchuq, Respectively
  - First Operators on North Slope Other Than Majors
  - Combined Resource Potential Greater Than 250 Million BOE
- Anadarko is Fourth Largest Interest Owner on North Slope; Acquired Additional Foothill Leases This Year
- Repsol Partnering With Affiliate of Armstrong Oil and Gas
  - Announced $768 Million Multi-Year Budget; Drilled 3 Exploration Wells in 2012
- Brooks Range Developing Mustang: Estimated P2 Reserves Between 40 and 50 Million BOE
  - Working With AIEDA on Initial Financing
- Great Bear Exploring Shale Potential
- Linc Energy Exploring Umiat in NPRA
- Savant Operating and Developing Badami; Took Over From BP in 2011
Current and Potential ANS Producers
Offshore Explorers

- Shell Spent $2.1 Billion to Acquire Chukchi and Beaufort Sea Leases in 2008
  - Estimated Spending of $4.5 Billion to Date
  - First Drilling in 2012
- ConocoPhillips Spent $500 Million on Chukchi Leases
  - Plans Drilling Activity in 2014
- Statoil Spent $23 Million on Offshore Leases
  - Watching Shell for Now
III. History of North Slope Production, Development and Tax Systems
Historical Volumes by Year and Field
1977 - 2012

Source: AOGCC.

* Badami and Northstar.
Historical Volumes by Year and Field
2007 - 2012

Daily Production

<table>
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<th>Field</th>
<th>2007</th>
<th>2012</th>
<th>% Decline 2007-12</th>
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<td>Nikaitchuq &amp; Oooguruk</td>
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<td>Other North Slope*</td>
<td>38.6</td>
<td>9.5</td>
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<td>Duck Island Unit</td>
<td>12.6</td>
<td>8.6</td>
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<tr>
<td>Milne Point Unit</td>
<td>33.6</td>
<td>17.4</td>
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<tr>
<td>Colville River Unit</td>
<td>124.6</td>
<td>70.6</td>
<td>43%</td>
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<tr>
<td>Kuparuk River Unit</td>
<td>157.3</td>
<td>112.3</td>
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<tr>
<td>Prudhoe Bay Unit</td>
<td>340.5</td>
<td>279.4</td>
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<tr>
<td>Total North Slope</td>
<td>707.1</td>
<td>513.1</td>
<td>27%</td>
</tr>
</tbody>
</table>

* Badami and Northstar.
Source: AOGCC.
Alaska North Slope Estimated Ultimate Oil Recovery (EUR) by Discovery Year (1969 – 2010)

EUR by Discovery Period (MMBO)

- Pre-1970: 19,470
- 1971 - 1990: 1,129
- 1991 - 2000: 845
- 2001 - 2010: 379
- Total: 21,823

Endicott (585)
Pt. McIntyre (583)
Alpine (465)

Source: DNR: The Historical Resource and Recovery Growth in Developed Fields, Arctic Slope of Alaska, 2004; DOE/PETL-2009/1385; AOGCC.
A History of Alaska’s Production Tax System: North Slope

- **1977**
  - Gross Tax System
  - Max Rate 12.25%
  - ELF Introduced

- **1981**
  - Maximum Rate Increased to 15%
  - New Fields at 12.25% for Five Years

- **1989**
  - ELF Modified to Include Field Size Factor

- **2003**
  - Exploration Credits 20-40% Introduced

- **2005**
  - Prudhoe Bay Fields Aggregated For Calculating ELF

- **2006**
  - PPT Introduced

- **2007**
  - PPT Amended in Nov 2007; Effective Jul 2007
  - 25% Base Net Tax Rate, Increasing at 0.4% Per $1 Over $30 Net, 0.1% Per $1 Over $92.50 Net
  - Maximum Rate Set at 75%
Estimated Production Tax Revenue (Assuming No Production Changes Across Systems)
FY2007 - FY2012

Note: ACES figures are actual amount collected; figures for PPT and Gross are estimated based on application of terms under these tax systems to actual production and prices.

Source: DOR.
IV. North Slope Activity Over the Past Decade
Alaska North Slope Production by Unit
2001 - 2012

* Comprised of Prudhoe Bay, Kuparuk, Colville River, Badami, Northstar, Duck Island, Milne Point
Source: AOGCC.
Reported Capital Spending for Alaska North Slope
CY2001 - CY2012*

* Does not include expenditures associated with offshore federal properties.; 2012 estimated from preliminary data.
Source: DOR.
Reported Capital Spending by Alaska North Slope Producers
CY2007 - CY2012*

As a Percent of Total Spending:
Large Producers: 70%
All Others: 30%

Reported Capital Spending by Alaska North Slope Producers
CY2007 - CY2012*

* Does not include expenditures associated with offshore federal properties.; 2012 estimated from preliminary data.

Source: DOR.
Reported Capital Spending by Alaska North Slope Producers by Unit CY2007 - CY2012*

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<th>Year</th>
<th>Mature Units (In Production Prior to 2003)**</th>
<th>New Units (Not in Production as of 2003)</th>
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<td>1,827</td>
<td>426</td>
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<td>2008</td>
<td>2,101</td>
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<td>2009</td>
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<td>2010</td>
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<tr>
<td>2011</td>
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<tr>
<td>2012</td>
<td>2,410</td>
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</table>

As a Percent of Total Spending:
- Mature Units: 63%
- New Units: 37%

* Does not include expenditures associated with offshore federal properties.; 2012 estimated from preliminary data.
** Comprised of Prudhoe Bay, Kuparuk, Colville River, Badami, Northstar, Duck Island, Milne Point

Source: DOR.
Alaska North Slope Oil and Gas Industry Employment
1990 - 2012

Source: Alaska Department of Labor.
Alaska North Slope Wells Drilled
2002 - 2012

Source: 2002-2010: DNR; 2011-2012: AOGCC.

Econ One Research
# Drilling Activity in Alaska North Slope: By Well Completed Date
## January 2005 - December 2012

![Graph](image.png)

### Development

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<tr>
<th>Company</th>
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### Exploratory

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### Total

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<td>127</td>
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* Development includes service wells.
Source: AOGCC.
Timeline of Significant Events on Alaska North Slope Since 2005

2005
- ELF aggregation decision for Prudhoe Bay
- Conoco applies for CD-5 permit

2006
- ACES introduced (↑ tax rate)

2007
- Conoco re-submits CD-5 permit, after local agreement over bridge location

2008
- FERC overturns TSM reduces TAPS rates
- Oooguruk begins producing

2009
- Gulf Horizon delays offshore Alaska activity; Federal offshore drilling moratorium
- BP suspends Liberty; cites rig problems
- USACE denies CD-5 permit (early 2010)

2010
- Ugnu PA test well @ Milne Point initial flow
- Pt. Thomson development begins
- Nikiahtchuq production begins
- Conoco fed. permits @ W. Alpine in NPRA

2011
- Chukchi and Beaufort drilling begins (Shell)
- Great Bear drills shale test well
- 11 Wells drilled
- Statoil delays Chukchi drilling to 2015 (+1 yr); Cites Shell delays

2012
- PPT introduced (April 1)
- BP discovers Prudhoe Bay transit line corrosion. Begins multi-year facility renewal
- Est. Production Loss of ~35 MMBO
- Alpine satellites begin production
V. Benchmarking North Slope Activity 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, Such as Price and General Economic Conditions
- No Two Producing Areas are Exactly Alike. Mindful of This, We Attempt to Choose Locations That Share a Number of Similar Characteristics, Allowing for the Most Meaningful Comparisons
- We Benchmark the North Slope Against Several Areas Located 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 Share Many of the Same, Characteristics With the 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

Petroleum Sector Employment

Capital Spending

Drilling / Development Activity

Econ One Research
Country/Area Profile
Northwest Europe (North Sea)

Crude Oil Production

Petroleum Sector Employment

Capital Spending

Drilling / Development Activity

Note: 2012 figures are preliminary.
Country/Area Profile
United States Excluding Alaska North Slope

Crude Oil Production

- GOM OCS
- California
- North Dakota
- Other States
- Texas

Petroleum Sector Employment

- Texas
- North Dakota
- California
- GOM OCS

Capital Spending

- Exploration and Development

Drilling / Development Activity

- Texas
- California
- South Texas
- GOM OCS
- North Dakota

Note: 2012 figures are preliminary.
Country/Area Profile
Canada

Crude Oil Production

Petroleum Sector Employment

Capital Spending

Drilling / Development Activity

Note: 2012 figures are preliminary.
Country/Area Profile
Australia

<table>
<thead>
<tr>
<th>Production</th>
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<tbody>
<tr>
<td>Crude/Condensate/LPG</td>
<td>Exploration</td>
</tr>
<tr>
<td>LNG</td>
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- **Production**
  - Crude/Condensate/LPG
  - LNG

- **Capital Spending**
  - Exploration

- **Petroleum Sector Employment**
  - Mining

- **Drilling / Development Activity**
  - Exploration and Development
## Comparisons Across Locations: Indexing

<table>
<thead>
<tr>
<th>Year</th>
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<th>California</th>
<th>Texas</th>
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<tr>
<td></td>
<td>Daily Production</td>
<td>(Thousand Barrels Per Day)</td>
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<td>2002</td>
<td>954</td>
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<td>= (954/954)*100</td>
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<td>2006</td>
<td>724</td>
<td>612</td>
<td>1,075</td>
<td>76</td>
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<td>= (724/954)*100</td>
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<td>513</td>
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<td>= (513/954)*100</td>
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(2002 = 100)
Crude Oil Production Comparisons to Alaska

Alaska North Slope v. Northwest Europe

- AK North Slope
- Norway
- United Kingdom
- Northwest Europe

2002: 100
2003: 90
2004: 80
2005: 70
2006: 60
2007: 50
2008: 40
2009: 30
2010: 20
2011: 10
2012: 0

Alaska North Slope v. United States

- AK North Slope
- Texas
- GOM OCS
- California
- N. Dakota Bakken
- U.S. ex Alaska

2002: 2006: 365
2007: 1,181
2008: 4,305
2009: 7,878
2010: 13,595
2011: 20,355
2012: 34,378

Alaska North Slope v. Canada

- AK North Slope
- Alberta Conv.
- Alberta Bitumen
- Saskatchewan
- Other Provinces
- Canada

2002: 50
2003: 75
2004: 100
2005: 125
2006: 150
2007: 175
2008: 200
2009: 225
2010: 250
2011: 300
2012: 350

Alaska North Slope v. Australia

- AK North Slope
- Australia Crude/Cond/LPG
- Australia LNG

2002: 50
2003: 75
2004: 100
2005: 125
2006: 150
2007: 175
2008: 200
2009: 225
2010: 250
2011: 300
2012: 350
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
Estimated Capital Spending for Exploration and Development
Alaska North Slope vs. U.S. 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
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

Econ One Research
VI. Attractiveness of Investments Under ACES
Crude Oil Prices Used for Analysis

- Likely Long Term Sustainable Range Between $80/Bbl and $130/Bbl Real
- Prices May Move Out of This Range for Periods of Time
- Sustained Prices Below Range Makes Many Projects Uneconomic; Supplies Reduced
- Sustained Prices Above Range Starts to Attract More Oil Supply, Reduces Demand for Petroleum Products (e.g., Gasoline Prices Above $5/Gal.) and Encourages Substitutes
- Producers Will “Stress Test” Projects Near Lower End of Range
Summary of Production Profiles Examined For Alaska and Benchmark Developments

Alaska Development:
- 50 MMBO Conventional Oil: $16, 22% 38% 67%

Benchmark Areas:
- Lower-48: Eagle Ford Unconventional: $16, 68% 80% 94%
- Lower-48: Bakken Unconventional: $19, 54% 66% 84%
- North Sea: U.K. & Norway: $25, 35% 54% 81%
- Canada: Oil Sands (SAGD): $11, 10% 18% 38%

(Annual as Percent of Total)
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
Investment Measures
Development of Conventional Oil Reserves

* Analysis of incumbent production includes “buy-down” impact for reduced taxes on existing production.
Investment Measures
Conventional Oil Alaska Development
v. Unconventional Lower-48

Producer NPV-12 / BOE

Eagle Ford

ACES Incumbent*

ACES New Participant

Bakken

Internal Rate of Return (IRR)

ACES Incumbent*

Eagle Ford

ACES New Participant

Cash Margins (2017-2022)

Bakken

Eagle Ford

ACES Incumbent*

ACES New Participant

Government Take

Bakken

ACES Incumbent*

ACES New Participant

Eagle Ford

* Analysis of incumbent production includes “buy-down” impact for reduced taxes on existing production.
Investment Metrics
Conventional 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
Conventional Oil Alaska Development v. North Sea (Norway)

Producer NPV-12 / BOE

Norway

ACES Incumbent*

ACES New Participant

Internal Rate of Return (IRR)

Norway

ACES Incumbent*

ACES New Participant

Cash Margins (2017-2022)

Norway

ACES New Participant

ACES Incumbent*

Government Take

ACES New Participant

ACES Incumbent*

Norway

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

Econ One Research
Investment Metrics
Conventional Oil Alaska Development v. Canada Oil Sands (SAGD)

Producer NPV-12 / BOE

Internal Rate of Return (IRR)

Cash Margins (2017-2022)

Government Take

ACES Incumbent*
ACES New Participant
Canada SAGD

ACES Incumbent*
ACES New Participant
Canada SAGD

(2.00) 0.00 2.00 4.00 6.00 8.00

(Percent)

( Dollars Per BOE)

(2.00) 0.00 2.00 4.00 6.00 8.00

(Percent)

(Dollars Per BOE)

(2.00) 0.00 2.00 4.00 6.00 8.00

(Percent)

(Dollars Per BOE)

*$ Analysis of incumbent production includes “buy-down” impact for reduced taxes on existing production.
### Summary of Investment Measures

#### Alaska 50 MMBO

<table>
<thead>
<tr>
<th>U.K. Development &amp; Fiscal System</th>
<th>Pre-1993 Allowance*</th>
<th>Post-1993 Allowance*</th>
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<td></td>
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<tr>
<td>ANS Price</td>
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<tr>
<td>Incumbent Participant</td>
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<table>
<thead>
<tr>
<th>Producer NPV-12 / BOE (Dollars Per BOE)</th>
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</thead>
<tbody>
<tr>
<td>$80</td>
</tr>
<tr>
<td>$100</td>
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<table>
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<th>IRR (Percent)</th>
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<td>$120</td>
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<table>
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<tr>
<th>5-Year (2017-2021) Cash Margins (Dollars Per BOE)</th>
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<tr>
<td>$80</td>
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<tr>
<td>$100</td>
</tr>
<tr>
<td>$120</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Government Take (Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$80</td>
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<tr>
<td>$100</td>
</tr>
<tr>
<td>$120</td>
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<table>
<thead>
<tr>
<th>State NPV-12/BOE (Dollars Per BOE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$80</td>
</tr>
<tr>
<td>$100</td>
</tr>
<tr>
<td>$120</td>
</tr>
</tbody>
</table>

* Brownfield Allowance applied to 100 MMBOE development.
Note: Analysis of incumbent production includes “buy-down” impact for reduced taxes on existing production.
VII. The Administration’s Proposed Changes
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’
Key Aspects of Administration’s Proposal (cont’d)

- Average Government Take Moves From Progressive to Relatively Neutral Under Proposal

![Graph showing the change in average government take from progressive to relatively neutral under the proposal from FY2014 to FY2018. The graph is labeled FY2014-FY2018.](image-url)
Annual State Revenues and Producer Cash Flows at $100 West Coast ANS 50 MMBO Conventional Oil Alaska Development Incumbent Participant in Alaska

### Total Revenues
- **(ACES):** $2,264M
- **(Proposal):** $1,612M

### Total Cash Flows
- **(ACES):** $1,120M
- **(Proposal):** $1,544M

### NPV-12
- **(ACES):** $322M
- **(Proposal):** $319M

---

**State Revenues**
- Total Revenues (ACES): $2,264M
- Total Revenues (Proposal): $1,612M

**Producer Cash Flows**
- Total Cash Flows (ACES): $1,120M
- Total Cash Flows (Proposal): $1,544M

---

Econ One Research
Annual State Revenues and Producer Cash Flows at $100 West Coast ANS 50 MMBO Conventional Oil Alaska Development New Participant in Alaska

### Total Cash Flows
- **ACES**:
  - Total Cash Flows (ACES) = $998M
  - NPV-12 (ACES) = $203M

- **Proposal**:
  - Total Cash Flows (Proposal) = $1,603M
  - NPV-12 (Proposal) = $318M

### Total Revenues
- **ACES**:
  - Total Revenues (ACES) = $2,452M
  - NPV-12 (ACES) = $627M

- **Proposal**:
  - Total Revenues (Proposal) = $1,521M
  - NPV-12 (Proposal) = $451M
Summary of State Revenues and Producer Cash Flows Totals and NPV-12
50 MMBO Conventional Oil Alaska Development

<table>
<thead>
<tr>
<th>West Coast ANS Price</th>
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<th>Incumbent Participant</th>
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**Producer Cash Flows (Million Dollars)**

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<th>Incumbent Participant</th>
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<td>$120</td>
<td>$287</td>
<td>$500</td>
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**Producer NPV-12 (Million Dollars)**

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**State Revenues (Million Dollars)**

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Investment Measures
Development of Conventional Oil Reserves

Producer NPV-12 / BOE

Cash Margins (2017-2022)

Government Take

Internal Rate of Return (IRR)

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

Econ One Research
Investment Metrics
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
Conventional Oil Alaska Development
v. North Sea (Norway)

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

### Conventional Oil Alaska Development

**ACES and Proposal v. Benchmark Areas**

- **Brownfield Allowance** applied to 100 MMBOE development.

<table>
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<tr>
<th>West Coast ANS Price</th>
<th>ACES</th>
<th>Proposal With GRE</th>
<th>Proposal Without GRE</th>
<th>Unconventional Oil Sands Lower-48</th>
<th>Canada Oil Sands SAGD</th>
<th>Norway</th>
<th>U.K. Development &amp; Fiscal System Pre-1993</th>
<th>Post-1993 w/ Brownfield Allowance*</th>
<th>Post-1993 w/ Brownfield Allowance*</th>
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<td>$4.44</td>
<td>$4.83</td>
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### Producer NPV-12 / BOE (Dollars Per BOE)

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<td>$2.73</td>
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<td>$5.74</td>
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### Profitability Index-12

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<td>1.15</td>
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### IRR (Percent)

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<tr>
<td>$80</td>
<td>20.6%</td>
<td>17.2%</td>
<td>16.2%</td>
</tr>
<tr>
<td>$100</td>
<td>24.6%</td>
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<td>22.8%</td>
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<tr>
<td>$120</td>
<td>29.1%</td>
<td>30.3%</td>
<td>28.9%</td>
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### 5-Year (2017-2021) Cash Margins (Dollars Per BOE)

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<th>$100</th>
<th>$120</th>
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<td>$25.85</td>
<td>$37.22</td>
<td>$34.68</td>
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<tr>
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<td>$28.95</td>
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<td>$120</td>
<td>$33.35</td>
<td>$55.53</td>
<td>$51.62</td>
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</table>

### Government Take (Percent)

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<td>75.0%</td>
<td>59.8%</td>
<td>63.5%</td>
</tr>
<tr>
<td>$120</td>
<td>76.5%</td>
<td>59.5%</td>
<td>62.8%</td>
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### State NPV-12/BOE (Dollars Per BOE)

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<th>$100</th>
<th>$120</th>
</tr>
</thead>
<tbody>
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<td>$12.54</td>
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<tr>
<td>$120</td>
<td>$18.61</td>
<td>$12.04</td>
<td>$13.67</td>
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</table>

* Brownfield Allowance applied to 100 MMBOE development.
## Summary of Investment Measures for Incumbent Conventional Oil Alaska Development

**ACES and Proposal v. Benchmark Areas**

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

<table>
<thead>
<tr>
<th>West Coast</th>
<th>Proposal</th>
<th>Unconventional</th>
<th>Canada Oil Sands</th>
<th>Norway</th>
<th>U.K. Development &amp; Fiscal System</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANS Price</td>
<td>With GRE</td>
<td>Lower-48</td>
<td>SAGD</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Without GRE</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>$80</td>
<td>$3.93</td>
<td>$2.80</td>
<td>$2.09</td>
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<tr>
<td>$100</td>
<td>$6.45</td>
<td>$6.38</td>
<td>$5.46</td>
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<tr>
<td>$120</td>
<td>$9.17</td>
<td>$9.96</td>
<td>$8.83</td>
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</tbody>
</table>

### Producer NPV-12 / BOE (Dollars Per BOE)

<table>
<thead>
<tr>
<th>ANS Price</th>
<th>Pre-1993 w/ Brownfield Allowance*</th>
<th>Post-1993 w/ Brownfield Allowance*</th>
</tr>
</thead>
<tbody>
<tr>
<td>$80</td>
<td>$1.20</td>
<td>$2.41</td>
</tr>
<tr>
<td>$100</td>
<td>$4.81</td>
<td>$8.25</td>
</tr>
<tr>
<td>$120</td>
<td>$9.67</td>
<td>$11.88</td>
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</table>

### Profitability Index-12

<table>
<thead>
<tr>
<th>ANS Price</th>
<th>Pre-1993 w/ Brownfield Allowance*</th>
<th>Post-1993 w/ Brownfield Allowance*</th>
</tr>
</thead>
<tbody>
<tr>
<td>$80</td>
<td>1.06</td>
<td>1.11</td>
</tr>
<tr>
<td>$100</td>
<td>1.33</td>
<td>1.28</td>
</tr>
<tr>
<td>$120</td>
<td>1.42</td>
<td>1.45</td>
</tr>
</tbody>
</table>

### IRR (Percent)

<table>
<thead>
<tr>
<th>ANS Price</th>
<th>Pre-1993 w/ Brownfield Allowance*</th>
<th>Post-1993 w/ Brownfield Allowance*</th>
</tr>
</thead>
<tbody>
<tr>
<td>$80</td>
<td>18.4%</td>
<td>18.4%</td>
</tr>
<tr>
<td>$100</td>
<td>27.0%</td>
<td>27.0%</td>
</tr>
<tr>
<td>$120</td>
<td>34.6%</td>
<td>34.6%</td>
</tr>
</tbody>
</table>

### 5-Year (2017-2021) Cash Margins (Dollars Per BOE)

<table>
<thead>
<tr>
<th>ANS Price</th>
<th>Pre-1993 w/ Brownfield Allowance*</th>
<th>Post-1993 w/ Brownfield Allowance*</th>
</tr>
</thead>
<tbody>
<tr>
<td>$80</td>
<td>$12.45</td>
<td>$24.91</td>
</tr>
<tr>
<td>$100</td>
<td>$28.85</td>
<td>$37.82</td>
</tr>
<tr>
<td>$120</td>
<td>$31.29</td>
<td>$46.30</td>
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</tbody>
</table>

### Government Take (Percent)

<table>
<thead>
<tr>
<th>ANS Price</th>
<th>Pre-1993 w/ Brownfield Allowance*</th>
<th>Post-1993 w/ Brownfield Allowance*</th>
</tr>
</thead>
<tbody>
<tr>
<td>$80</td>
<td>61.0%</td>
<td>62.0%</td>
</tr>
<tr>
<td>$100</td>
<td>68.6%</td>
<td>62.0%</td>
</tr>
<tr>
<td>$120</td>
<td>72.0%</td>
<td>62.0%</td>
</tr>
</tbody>
</table>

### State NPV-12/BOE (Dollars Per BOE)

<table>
<thead>
<tr>
<th>ANS Price</th>
<th>Pre-1993 w/ Brownfield Allowance*</th>
<th>Post-1993 w/ Brownfield Allowance*</th>
</tr>
</thead>
<tbody>
<tr>
<td>$80</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$100</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$120</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

* Brownfield Allowance applied to 100 MMBOE development.

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