Oil & Gas 103

# Petroleum Fiscal Systems

February 2020

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# INTRODUCTION

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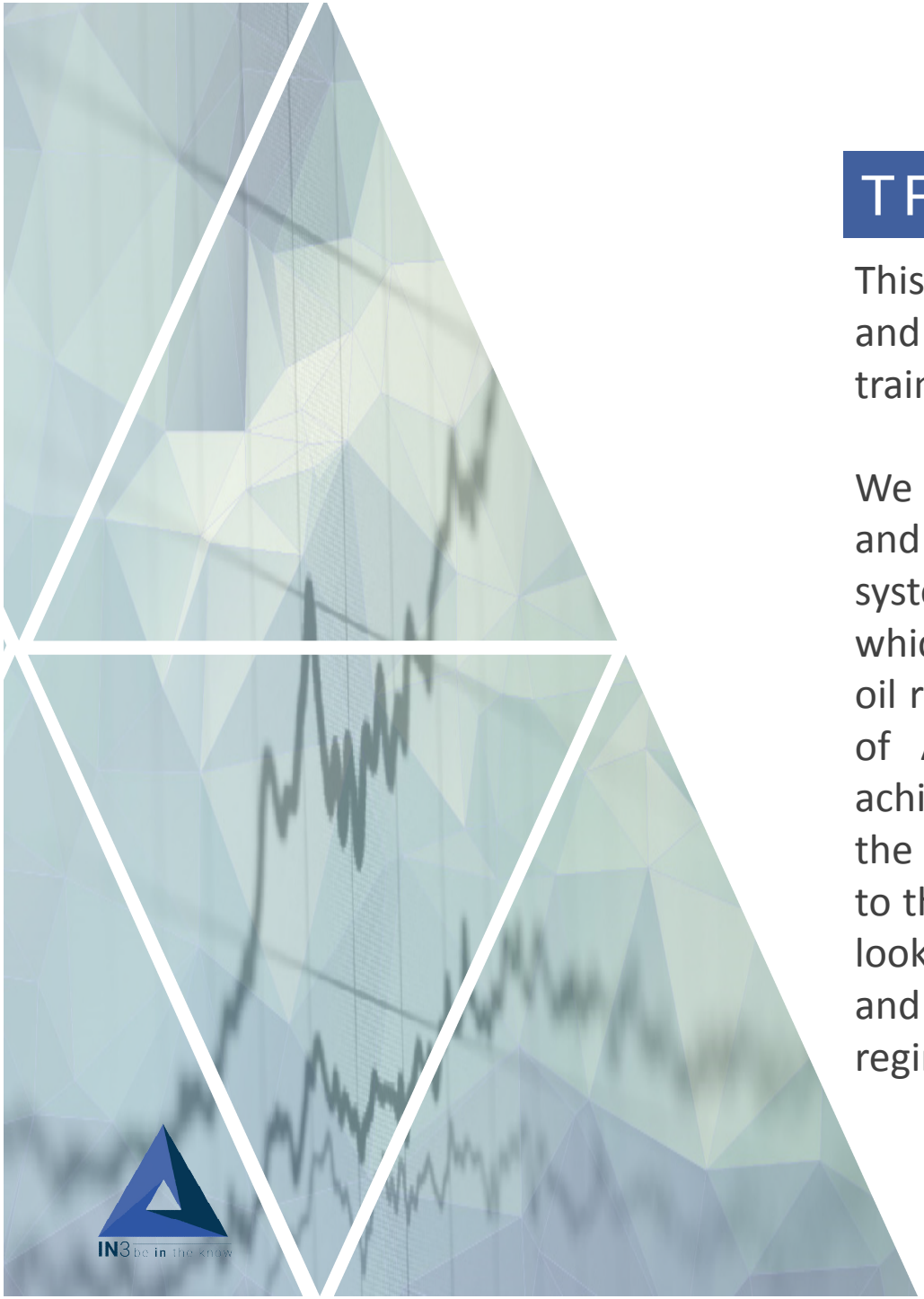

# TRAINING SUMMARY

This 3-hour workshop is the third installment and a continuation of the LB&A sponsored training on petroleum fiscal systems.

We will take a deeper look into the structures and mechanisms of Alaska's petroleum tax system, specifically focusing on the North Slope which produces the vast majority of the state's oil revenue. Topics include reviewing a timeline of Alaska's tax changes and whether they achieved intended results, looking in detail at the order of operations and how that compares to the lower 48 and other select regimes, and a look at how producers run project economics and project based mechanisms that other regimes use to successfully attract capital.

# EXPECTATIONS FOR THE 103 WORKSHOP

FISCAL DESIGN 103

- This is a training and information sharing session
- Our intent is to provide background and context on petroleum fiscal policy design and **not to discuss specific bills or regulations**
- We will not be offering opinions today on what to do – but can go over some of the pros and cons of certain actions or issues you may be considering or want to discuss
- This is for your benefit as the better informed you are the better prepared you will be for whatever proposed oil and gas taxation issue comes before you
- Please do not hesitate to ask questions anytime during the presentation
- We are available today through Tuesday for individual or small group follow up sessions to answer questions or provide additional detail

# OIL AND GAS 101 OVERVIEW

## INTRODUCTION TO FISCAL POLICY DESIGN

- This was the first installment in our ongoing series of training on petroleum fiscal systems

- At a very basic level we covered:
  - Nomenclature
  - Resource versus reserve
  - Why all oil and gas are not equal
  - Global competition for producer capital
  - The theory behind the sharing of petroleum profits
  - Introduction to Alaska's production tax system for the North Slope

# OIL AND GAS 102 OVERVIEW

FISCAL POLICY DESIGN TOOL KIT

- This was the second installment in our ongoing series of training on petroleum fiscal systems

- Main topic areas covered
  - Competing for oil company capital
  - Types of fiscal regimes
  - Components of the fiscal toolbox
  - Different petroleum structures
  - Importance of time in producer economics
  - The large project cashflow “hockey stick”

- We will be delving deeper into a few of these topics today

# OIL AND GAS 103

## AGENDA

- History of Alaska oil and gas tax legislation
- Key concepts background
- Alaska's production tax deep dive
- Economics and viewpoints from the producer perspective

# TAX TIMELINE

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# HISTORY OF ALASKA OIL AND GAS TAXES

**1955**
- HB7: 1% gross tax on the value of production
- No capex or opex deductions

**1960s**
- Major discoveries in the Cook Inlet
- LNG plant built

**1967**
- 1% temporary "emergency" tax to help Fairbanks flood victims
  - 1% general
  - 1% emergency

**1968**
- Prudhoe Bay discovered
- Increased general tax by 2%, to a total of 3%


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# HISTORY OF ALASKA OIL AND GAS TAXES

**1969**
- Introduced HB75 to create a progressive gross rate structure

**1970**
- 1st Progressive Tax
  - 3% on 1st 300 bbls
  - 5% on next 700
  - 6% on next 1500
  - 8% above 2500
- Applied to GVPP

**1972**
- Added a minimum tax as cents per barrel

**1973**
- Revised progressive stair steps to lower trigger values

# HISTORY OF ALASKA OIL AND GAS TAXES

**1977**
- ELF I
- Economic Limit Factor
  - Gas 10% gross
  - Oil 12.25% gross
  - 300 bopd tax free
  - ELF factor 0 to 1
- Prudhoe / TAPS come on line
- Permanent Fund

**1981**
- ELF I amended
- Oil tax increases to 15% of GVPP
- Field factor of 0.7 or greater round up to 1.0

**1989**
- ELF II
  - Added field size factor
  - Fixed well economic limit at 300 bopd or 3000 mcf/day
  - Dropped rounding up rule
  - Captured large 3 fields, all others zero tax

**Exxon Valdez Spill**

**2002**
- Credits for contribution to veteran's fund

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# HISTORY OF ALASKA OIL AND GAS TAXES

**2003**
- AS 43.55.025 range of credits for exploration

**2005**
- Prudhoe Bay fields aggregated for ELF II
- Enhanced AS 43.55.025 credits

**2006**
- Sweeping reform
- ELF/gross replaced
- PPT /net passed
  - 22.5% net value
  - 0.25% progressivity above $40
  - Added credits for qualifying expenditures

**2007**
- PPT out, ACES in
  - 25% base
  - 0.4 progressivity from $30 to $92.50 PTV/bbl
  - 0.1 progressivity above $92.50
- Added incentive credits
- Added cashable credits
- Gross minimum tax


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# HISTORY OF ALASKA OIL AND GAS TAXES

**2008**
- Added educational credits
- AGIA

**2010**
- Cook Inlet jackup rig credit
- First 3 wells get credits of 100%, 90% and 80%
- Changed credit rules
- Educational credit max raised from $100k to $5MM

**2012**
- CIT credit for gas storage
- Caps set for Middle Earth tax rates
- Credits for Middle Earth exploration and seismic

**2013**
- MAPA in, ACES out
  - SB21
  - 35% net base
  - No progressivity
  - Created GVR
  - Created per barrel credits
  - CF loss tax credits
  - New interest rate


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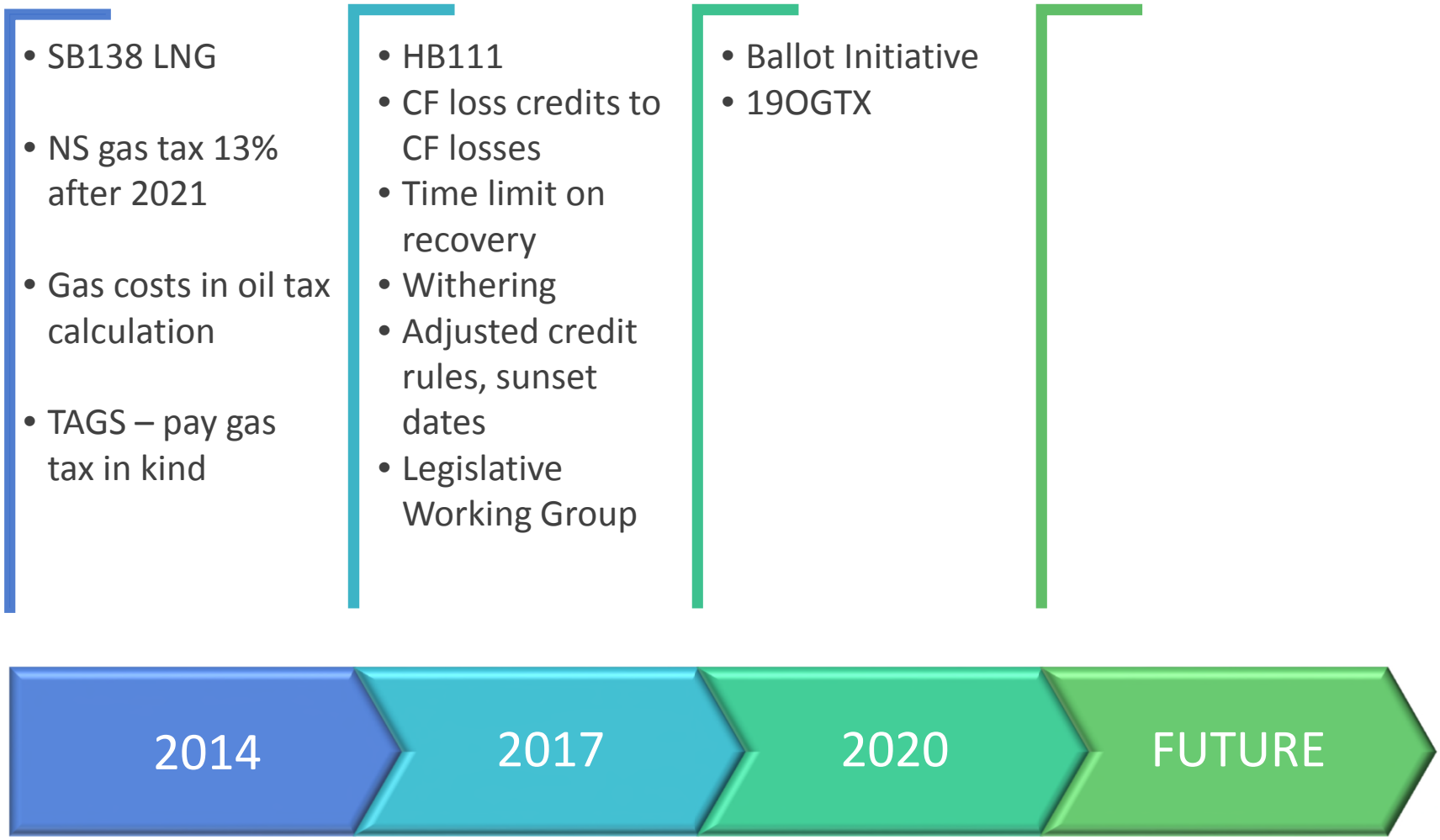
# HISTORY OF ALASKA OIL AND GAS TAXES

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# ALASKA'S OIL TAX HISTORY

## DRIVERS

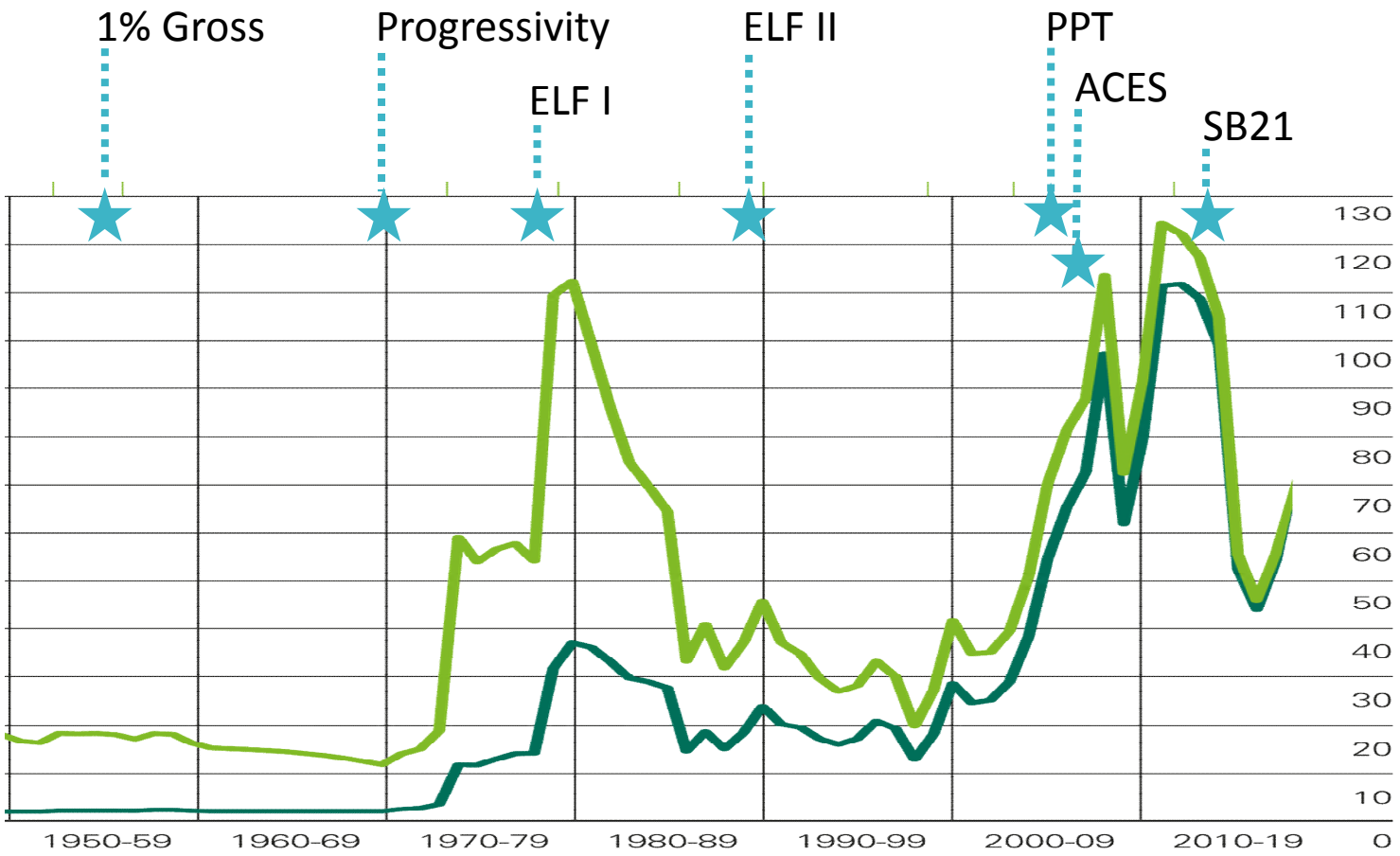
- Each time taxes were changed there were identified reasons for doing so, sometimes very successful and other times not
  - Some were philosophical drivers, such as increase production on the slope responsibly
  - Others were specific such as bringing a jackup rig to the Cook Inlet

- There are differing opinions whether incentives should have ever been offered but the tax credits for exploration drilling were successful in bringing new players to the slope and in identifying new pools of hydrocarbons

- Alaska has been guided/reminded of Gov. Hammond's original 1/3, 1/3, 1/3 split of the oil wealth
  - One third each to the State, US Federal, and Producer
  - Wealth is synonymous with Income or project profit
  - Sales revenue is not wealth

# TAX CHANGES VERSUS OIL PRICE

## CHANGES COMING AT PEAKS OR VALLEYS




1861-1944 US average.
1945-1983 Arabian Light posted at Ras Tanura.
1984-2018 Brent dated.

BP Statistical Review of World Energy 2019

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# ALASKA'S OIL TAX HISTORY

## CHANGING ON THE WORLD STAGE

- But after 40 years, things are changing.
  2020 does not look like 1980

- Alaska was roughly 1/3 of US reserves for the better part of 3 decades, until the emergence of shale development

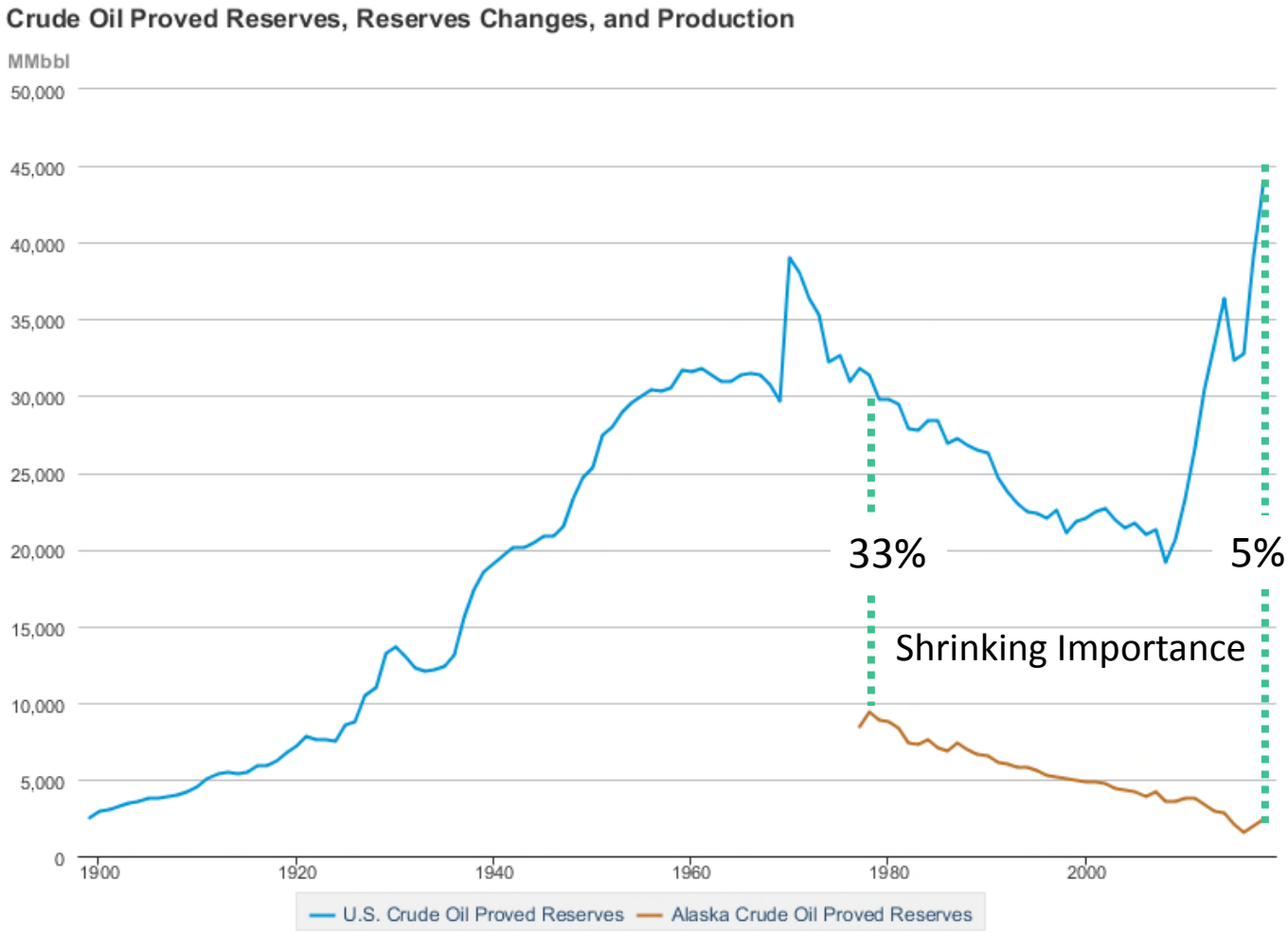
- As of the end of 2018, Alaska is now only 5% of US reserves and 1% of North American reserves

- Geopolitical issues and events are forcing changes
  - Banks refusing to fund artic development
  - Oil companies marching towards 0 emissions

- More important now to look at events outside of Alaska or to look to possible future scenarios to decide how workable and robust your fiscal system for oil is

# ALASKA NEEDS TO COMPETE FOR CAPITAL

## SHRINKING IMPORTANCE HERE AND ABROAD

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# BACKGROUND CONCEPTS

# BACKGROUND CONCEPTS

## PERSPECTIVES ON FISCAL DESIGN

- In order to better understand the next two sections on Alaska's production tax system and producer economics, it will help to have some background on how certain fiscal mechanisms function, why they may have been chosen, and how they work in practice

- The key topics to be discussed include:
  - Gross, proportional and progressive taxes
  - Royalty
  - $ANSWC/barrel versus $GVPP/barrel versus  $PTV/barrel
  - Ringfencing
  - Carry forward credits versus carry forward losses

# TYPES OF TAX

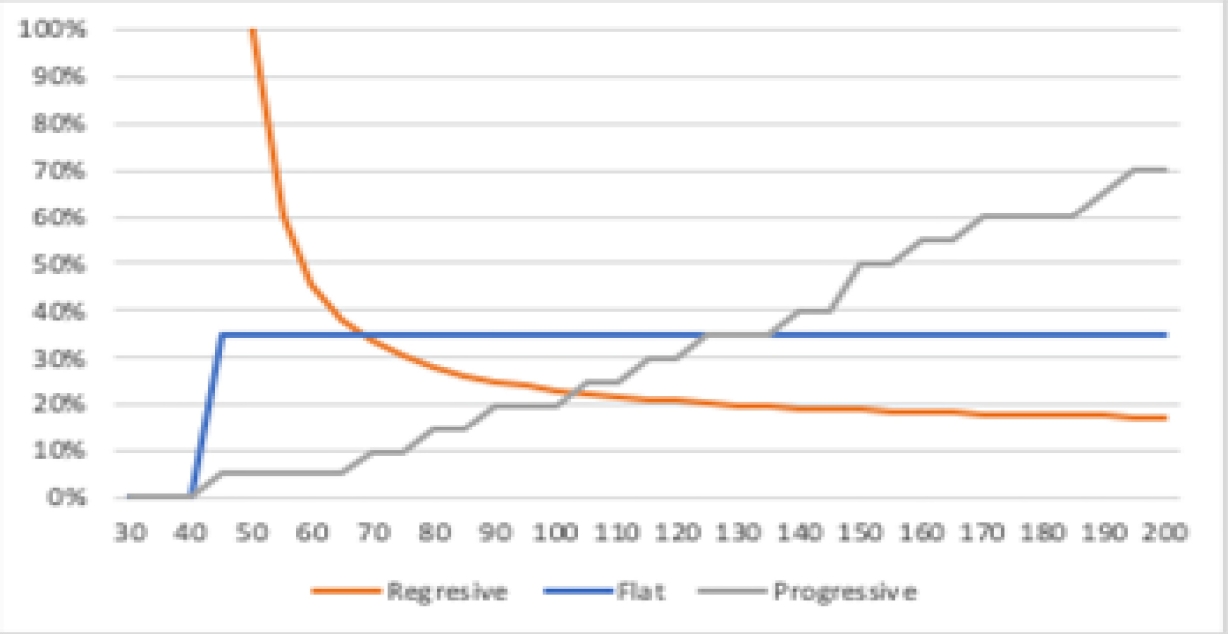
## GROSS VERSUS NET

- Generally petroleum taxes fall into one of three categories
  - Regressive
  - Proportional (flat)
  - Progressive
- Regressive taxes take a larger portion of profits as price fall
- Proportional taxes take the same portion of profits at all prices (where there is a profit, otherwise the tax is zero)
- Progressive taxes take a larger share of profit as price increases
- Gross revenue taxes are regressive, while net taxes on ‘profits’ can be proportional or progressive

# TYPES OF TAXES

## PLOT ACROSS A RANGE OF PRICES

- Each form of tax has positive and negative aspects
- Some regimes use both gross and net taxes to achieve policies across a wider range of prices
- **Tax should never be the reason why operations are uneconomical**

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# TYPES OF TAX

## GROSS VERSUS NET

- Governments tend to use regressive taxes, such as royalty
  - Ensure the state receives some revenue from the first day of production
  - Easy to estimate or predict
  - Easy to calculate and audit

- The downside to regressive taxes are:
  - They present a required upfront payment before costs can be recovered and profits received
  - Economic limit is reached at a higher price
  - They can cause early shut in and abandonment

- Emerging countries, or countries that rely predominately on oil revenue to operate, tend to have regressive taxation

- As producing basins mature, countries tend to eliminate regressive taxes to extend the life of fields

# PROGRESSIVE TAXES

## INCREASING NET TAX AS PROFITS INCREASE

- Progressive taxation focuses on the profitability of a project, aligning government and company expectations

- At the same market price, progressive taxation recognizes differences and taxes accordingly
  - Low cost conventional fields pay a higher effective tax rate than say high cost heavy oil
  - High volume projects versus low volume projects (number of barrels to cover fixed costs)
  - New projects (cost recovery in early years)
  - Projects in their prime (high production, low unit cost)
  - Mature projects (get most oil out of the ground)
  - Automatic desired discrimination

- More governments are using full cycle profitability indices like IRR, ROI, etc. to set government share, which is another form of progressive taxation

# PROGRESSIVE TAXES

EXAMPLE

- Assume a step progressive tax like personal income tax that taxes net income (PTV/barrel) on a per barrel basis: e.g.

| PTV/bbl | Tax Rate |
|---|---|
| $0 - $10 | 10% |
| $11 - $20 | 20% |
| $21 - $40 | 40% |
| $40 and over | 50% |

- Price of oil is $80/bbl
  - Large Conventional Oil $30/bbl cost, PTV = $50/barrel
    - 1st $10 taxed at 10% $1 tax
    - 2nd $10 taxed at 20% $2 tax
    - Etc until a total tax of $16 is due
    - 32% effective rate
  - Heavy Oil with $60/bbl cost, PTV $20/barrel
    - Total tax due is $3
    - Effective rate of 15%

- By contrast a 15% gross tax would tax each $12
- 24% effective rate for large conventional oil
- 60% effective tax rate for heavy oil

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# ROYALTY

## A REGRESSIVE TAX

- Royalties have historically been the most common method used by governments to gain revenue from the exploitation of a nation's resources
- Royalties are based on either the volume ("unit" or "specific" royalty) or the value ("ad valorem")
- In the petroleum industry, royalties are typically calculated on a net-back basis: i.e. the price base for royalty calculation is adjusted from the point of export or sale to the wellhead by deducting transportation, processing and other marketing costs

# ROYALTY

## PROS AND CONS

- Advantages to host governments:
  - Ensure an upfront revenue stream as soon as production starts
  - Estimated with a reasonable degree of predictability as they are tied to sales/production
  - Comparatively easy to calculate, collect, and monitor

- Disadvantages to producers:
  - A regressive form of taxation
  - High levels of royalty distort investment decisions and may encourage uneconomic choices

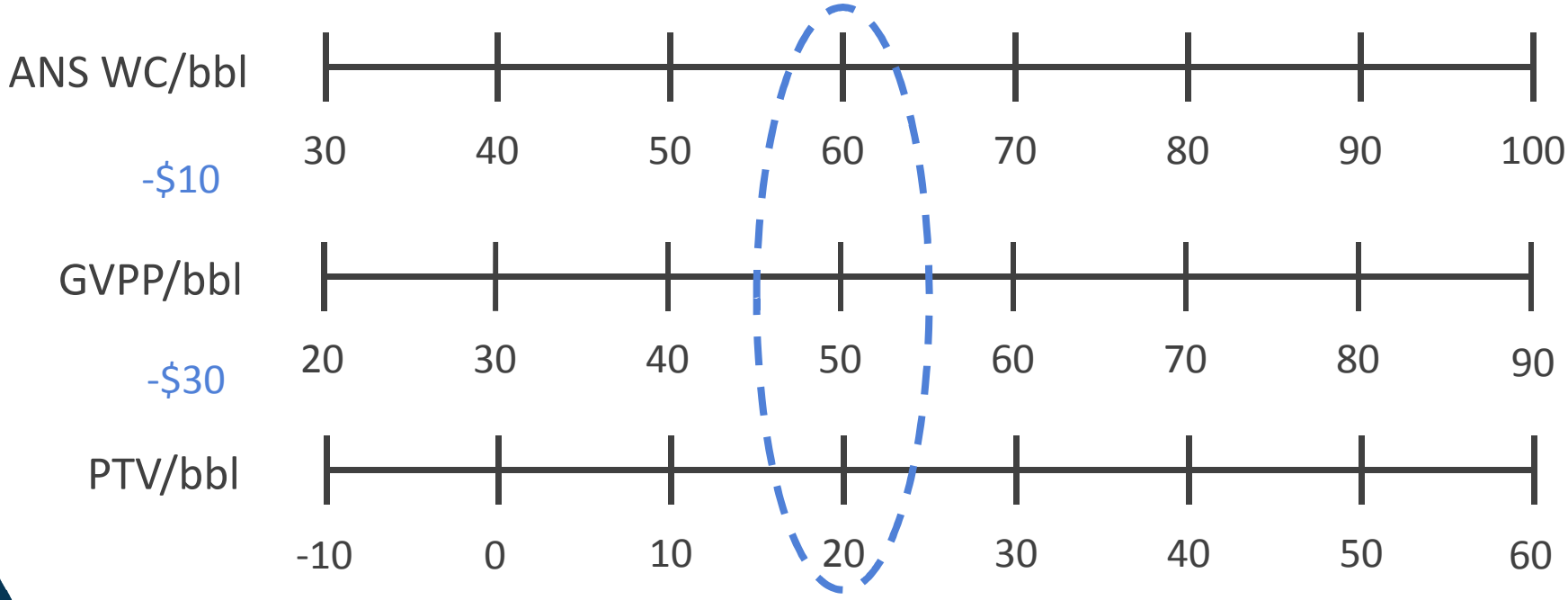
- To mitigate their regressive effects, some countries apply sliding scale royalties based on production levels or sales values, water depth or well depths, or R-factors

# ALL $/BBL ARE NOT THE SAME

ANSWC vs GVPP vs PTV

- Assumptions
  - $10/bbl for marketing, shipping and TAPS
  - $30 lease expenditures

- $60 ANSWC - $10 = $50 GVPP - $30 = $20 PTV/bbl

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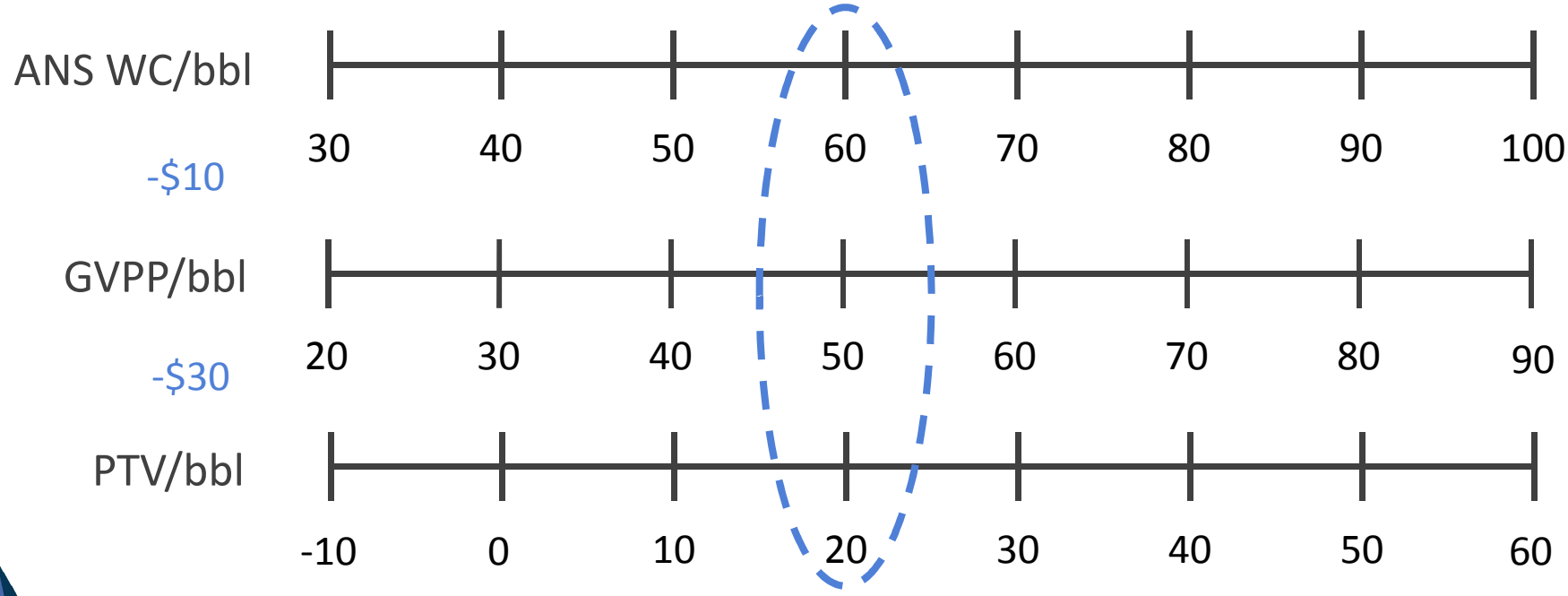
# ALL $/BBL ARE NOT THE SAME

ANSWC vs GVPP vs PTV

- Gross taxes are based on GVPP value
- Net taxes are based on PTV value

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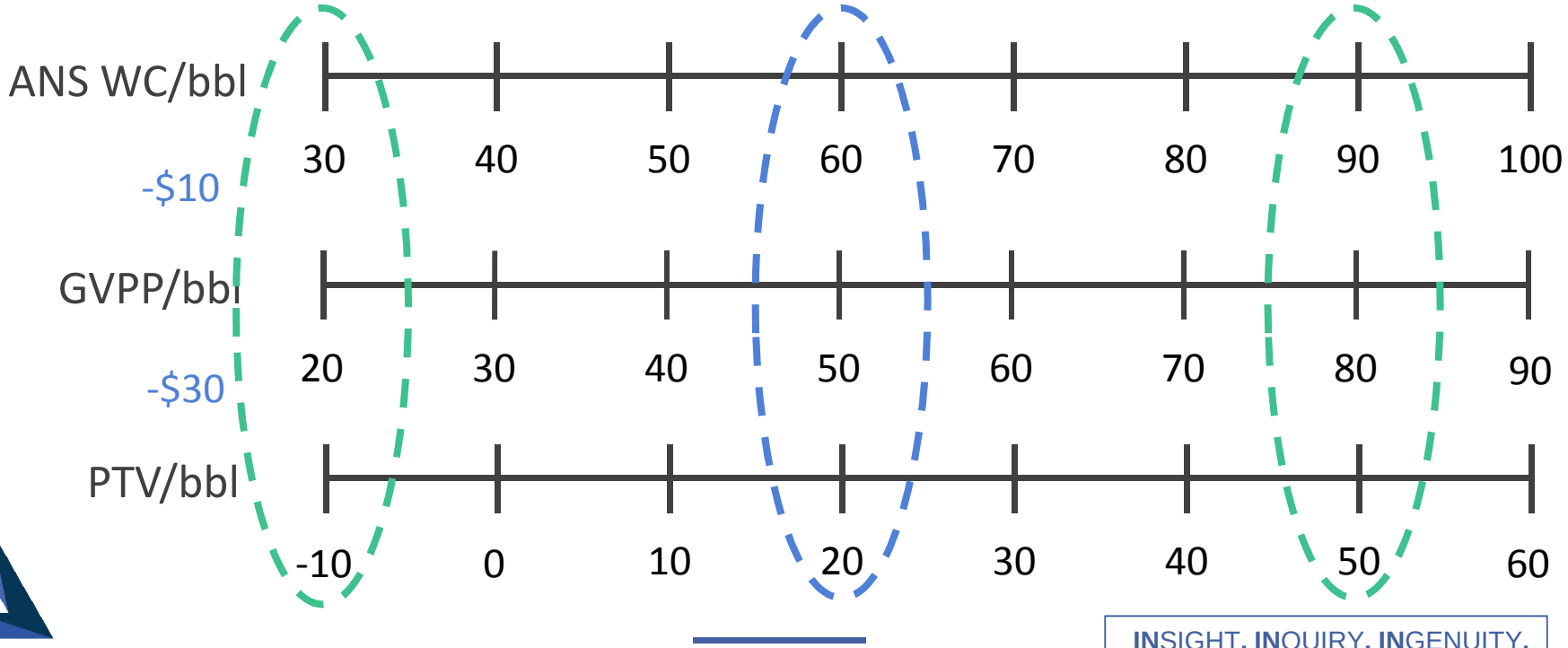
# ALL $/BBL ARE NOT THE SAME

ANSWC vs GVPP vs PTV

- Errors in modeling, followed by missed revenue expectations occur when costs are kept constant at all prices across a wide range during the tax design stage

- With costs constant, it appears that there is a $10 loss at $30 market and a [windfall] $50/bbl profit at $90 market

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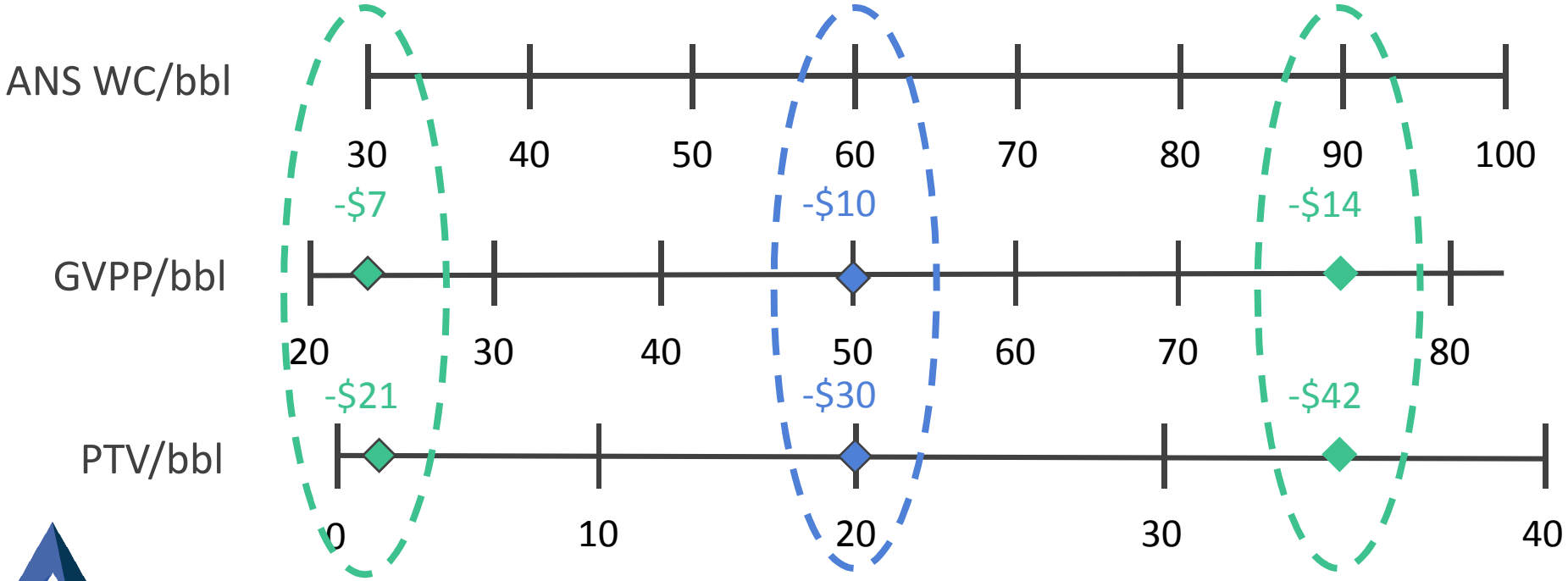
# ANSWC vs GVPP vs PTV – Real World

## COSTS CHANGE AS OIL PRICE CHANGES

- However, historically costs tend to decrease when oil prices fall and tend to increase when oil prices rise
  - Instead of losing $10 at $30 market there is a small $2 profit
  - While at $90 market the profit is 33% lower at $34/bbl
  - This view may quite likely result in a different tax policy than the previous slide

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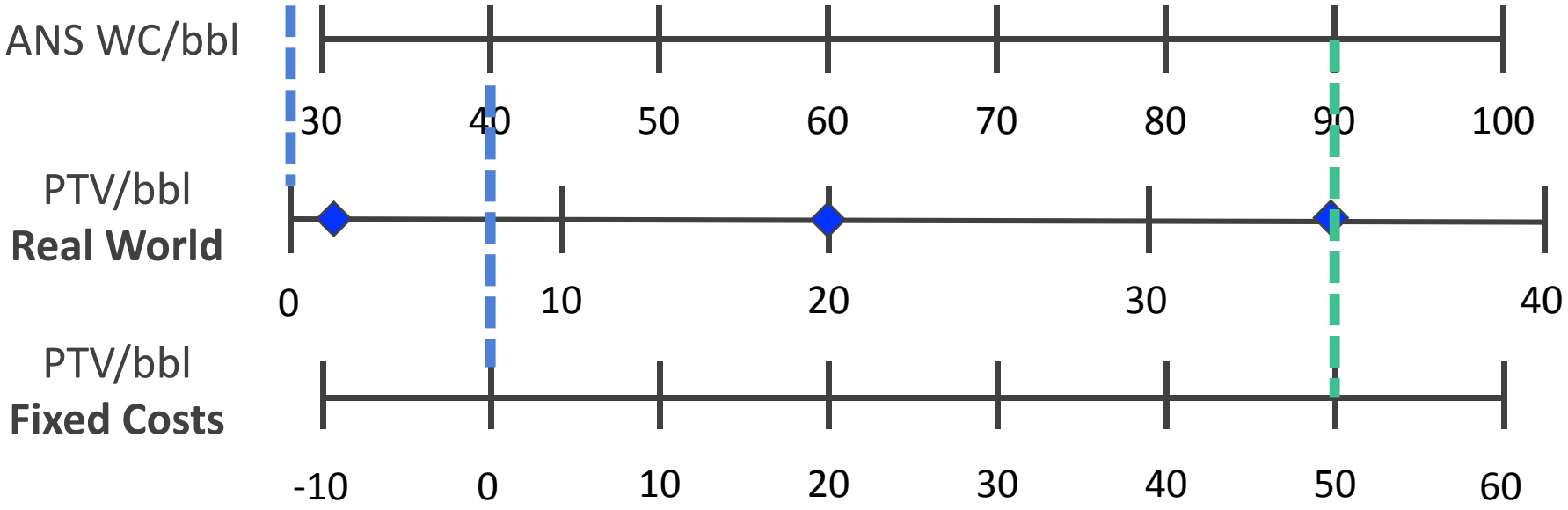
# ANSWC vs GVPP vs PTV – REAL WORLD

## MODELING DISTORTIONS OIL/COST RELATIONSHIP

- Constant costs across all prices does NOT represent the real world
- Proper modeling requires changing costs when oil prices change

- Real break even price is ~$27/bbl not $40/bbl
- Profit at $90 oil is only $34/bbl and not $50/bbl

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# RINGFENCING

## HOW IT WORKS IN ALASKA

- Ringfencing is a means to isolate assets generally for purposes of production taxes and sometimes corporate income taxes

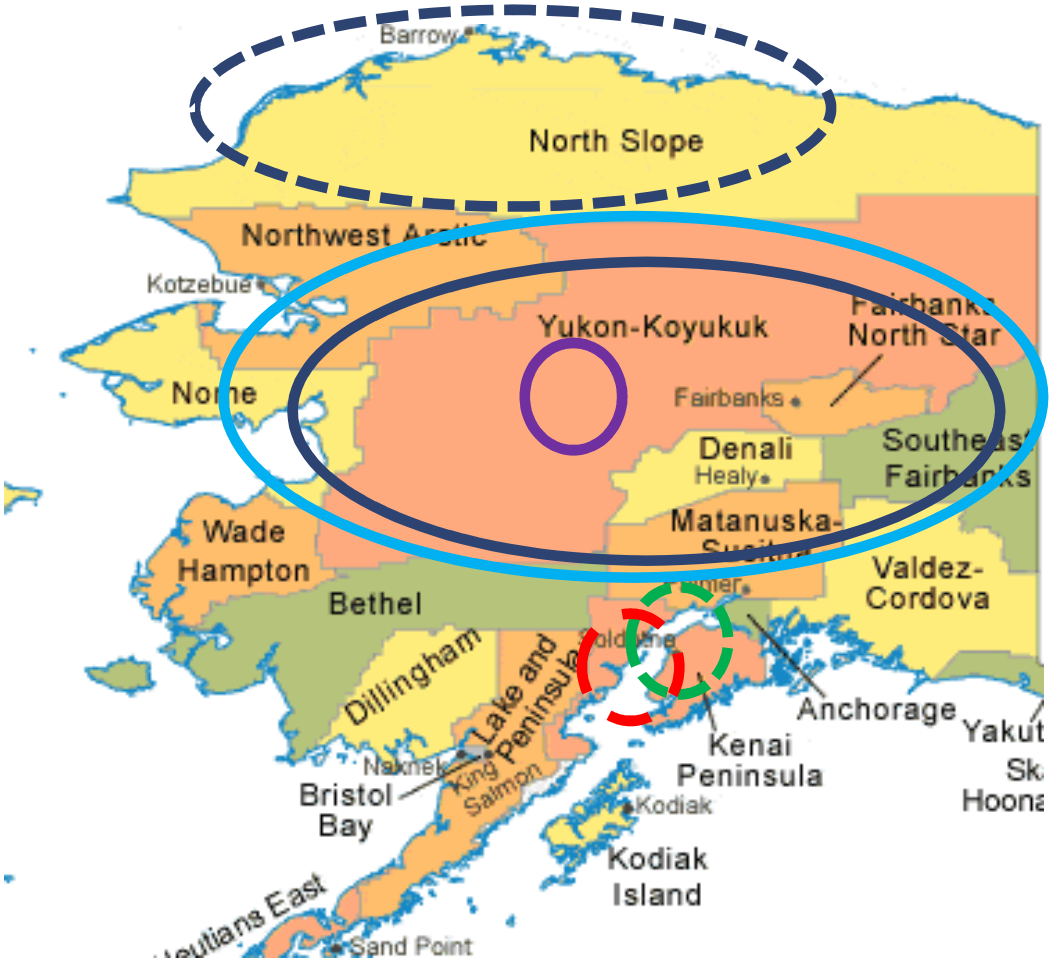
- Ringfencing varies around the world
  - Can be as narrow as a platform or producing reservoir
  - Field or lease ringfencing is common
  - Can be as large as a whole country

- Governments use ringfencing for a number of reasons
  - Differential taxation, usually via contract
  - Incentivize development in order to recover costs
  - Use of profit based mechanisms for sharing profits

- Alaska uses broad geographic ringfences to
  - Recognize differences in size, unit costs
  - Provide differential incentives

# RINGFENCING FOR PRODUCTION TAX

AS 43.55.160




North Slope

ME 024 a,b

Cook Inlet Oil

Cook Inlet Gas

Non CI Gas

All Other

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# CARRY FORWARD CREDIT VS LOSS

## THE IMPACT OF EFFECTIVE TAX RATE

- Depending on the fiscal system, a taxpayer may be indifferent as to whether losses are carried forward ("CF") as losses or as tax credits
- Assume a $100 operating loss and a flat 35% tax rate
- CF loss is $100 or CF tax credit is $35

| | w/o Carry Forwards | Carry Forward Losses | Carry Forward Credits |
|---|---|---|---|
| PTV | 1000 | 1000 | 1000 |
| CF Loss | 0 | 100 | 0 |
| Taxable Income | 1000 | 900 | 1000 |
| tax at 35% | 350 | 315 | 350 |
| CF credit | 0 | 0 | 35 |
| Profit | 650 | 685 | 685 |

- Here the use of the CF loss or the CF credit results in the same profit. Under this type of system the producer is indifferent to a CF loss or a CF credit

# CARRY FORWARD CREDIT VS LOSS

## THE IMPACT OF EFFECTIVE TAX RATE

- Depending on the fiscal system, the use of carry forward losses versus carry forward credits can lead to a very different result
- Assume a $100 loss, 35% base tax rate, negative progressivity
- CF loss is $100 or CF tax credit is $35
- 10% effective tax rate when used due to progressivity

| | w/o Carry Forwards | Carry Forward Losses | Carry Forward Credits |
|---|---|---|---|
| PTV | 1000 | 1000 | 1000 |
| CF Loss | 0 | 100 | 0 |
| Taxable Income | 1000 | 900 | 1000 |
| tax at 10% | 100 | 90 | 100 |
| CF credit | 0 | 0 | 35 |
| Profit | 900 | 910 | 935 |

- Here the use of the CF loss or the CF credit results in a very different profit. The use of credits and losses is not the same

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# CARRY FORWARD CREDIT VS LOSS

## THE IMPACT OF EFFECTIVE TAX RATE

- Depending on the effective tax rate, the conversion of losses to carry forward credits at the base rate will shield more income from tax than the size of the original loss
- Again assume a $100 loss and a 35% base tax rate
- Carry forward is a $35 tax credit
- The amount of income shielded from tax can be many times greater than the loss that created the credit

| Effective Tax Rate | Income Shielded |
|---|---|
| 5% | 700 |
| 8% | 467 |
| 10% | 350 |
| 13% | 280 |
| 15% | 233 |
| 20% | 175 |
| 25% | 140 |
| 30% | 117 |
| 35% | 100 |

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# CARRY FORWARD CREDIT VS LOSS

## PER BARREL CREDITS

- In 43.55.024 there is the allowance for per barrel credits to be used
- Flat $5 per barrel for GVR qualified production
- $0 to $8 per barrel for all other production
- Depending on the effective tax rate, the per barrel credits will shield from tax various amounts of PTV

| $8 per barrel | |
|---|---|
| Effective Tax Rate | Income Shielded |
| 5% | 160 |
| 8% | 107 |
| 10% | 80 |
| 13% | 64 |
| 15% | 53 |
| 20% | 40 |
| 25% | 32 |
| 30% | 27 |
| 35% | 23 |

| $5 per barrel | |
|---|---|
| Effective Tax Rate | Income Shielded |
| 5% | 100 |
| 8% | 67 |
| 10% | 50 |
| 13% | 40 |
| 15% | 33 |
| 20% | 25 |
| 25% | 20 |
| 30% | 17 |
| 35% | 14 |

# NOT ALL BARRELS ARE THE SAME

## BARRELS VERSUS TAXABLE BARRELS

- After choosing a reference point to measure production, we need to understand the difference between barrels and taxable barrels

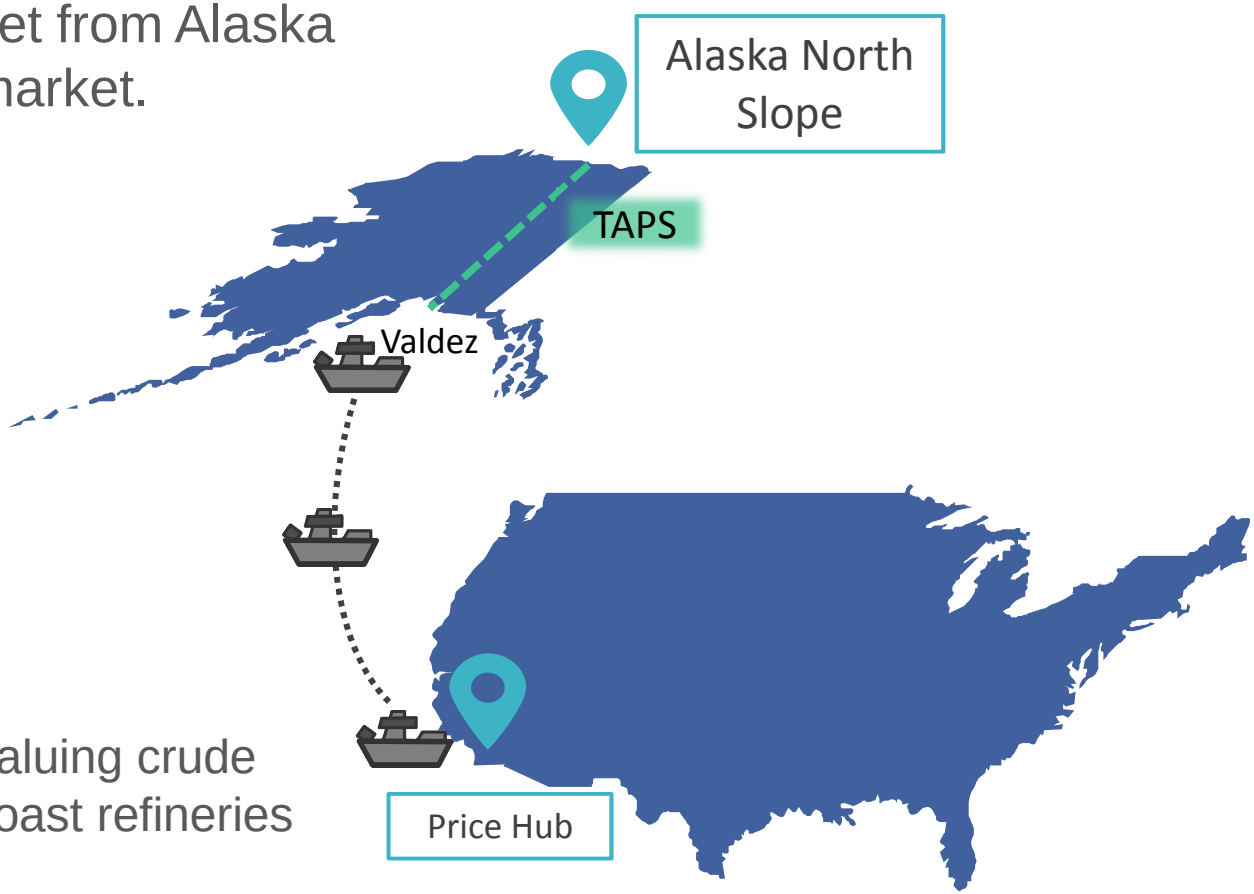
- Most of AS 43.55 when referring to barrels generally refers to taxable barrels
  - Taxable Barrels = Total Barrels minus Royalty Barrels
  - Taxable barrels are roughly 12% to 17%  lower than total barrels

- Assume 1000 barrels subject to a 1/8$^{th}$ royalty
  - 1000 total barrels; or
  - 875 taxable barrels

# UNDERSTANDING ALASKA'S TAX CODE

## WHAT ARE THE VARIOUS PIECES

- Allowable costs to get from Alaska North Slope to the market.
  - Marketing/sales
  - Shipping
  - Pipeline
    - TAPS
    - Inter-field




- ANS West Coast
  - Marker price for valuing crude shipped to west coast refineries

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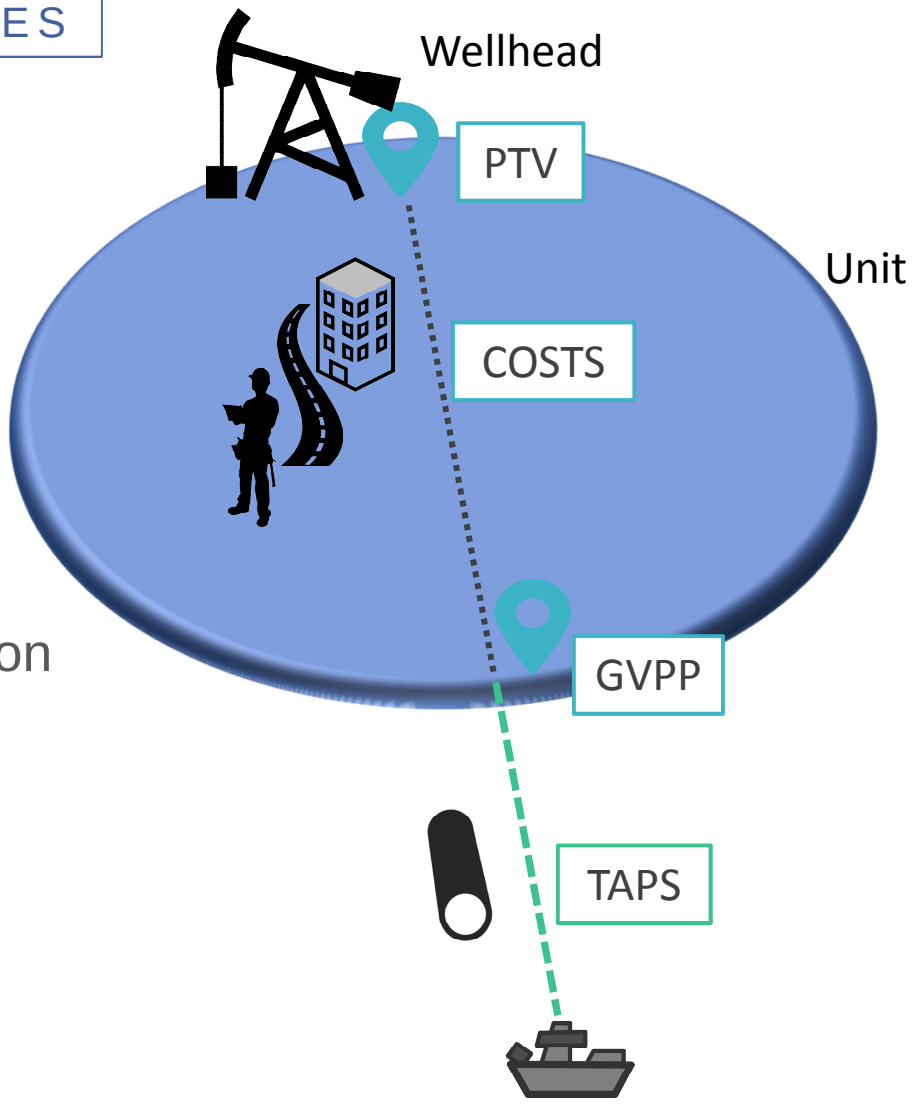
# UNDERSTANDING ALASKA'S TAX CODE

## WHAT ARE THE VARIOUS PIECES

- Production Tax Value
  - PTV
  - Wellhead
  - GVPP less operating costs

- Gross value at point of production
  - GVPP
  - Unit boundary
  - Market less transport
    - TAPS
    - Field lines to TAPS



# ORDER OF OPERATIONS

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# ALASKA ORDER OF OPERATIONS

GVPP

1

| | Volume | $/bbl | Value ($ Million) |
|---|---|---|---|
| ANSWC Price ($/bbl) | | 100 | |
| Production (kbbls/d) | 1,000 | | |
| **Gross Value** | | | **100,000** |
| Transportation ($/bbl) | | 10 | 10,000 |
| Marketing | | | |
| Shipping | | | |
| TAPS | | | |
| 1/8th Royalty (12.5%) | 125 | 90 | 11,250 |
| **Gross Value at the Point of Production (GVPP)** | **875** | **90** | **78,750** |

- Alaska oil is sold on the US west coast
- The GVPP is the sales revenue minus the transportation costs to move the oil from the North Slope to the market
- In the Alaska production tax system, the GVPP is used for
  - Determining the amount of the per taxable barrel credits
  - Calculating the gross minimum tax calculation

# ALASKA ORDER OF OPERATIONS

PTV

2

| | Volume | $/bbl | Value ($ Million) |
|---|---|---|---|
| **Gross Value at the Point of Production (GVPP)** | **875** | **90** | **78,750** |
| Operating Expenditures (Opex) | 875 | 15 | 13,125 |
| Capital Expenditures (Capex) | 875 | 15 | 13,125 |
| Property Tax | 875 | 1 | 875 |
| Carry Forward Losses | 875 | 0 | - |
| **Production Tax Value** | **875** | **59** | **51,625** |

- The PTV is the income after accounting for allowed costs
- The PTV is derived by subtracting from the GVPP operating expenditures, property tax, and any carry forward losses
- PTV is generally discussed in statute on a per taxable barrel basis
- In the Alaska production tax system, the PTV is used for the Net tax calculation

# ALASKA ORDER OF OPERATIONS

## FROM MARKET TO PROFIT

1

| | Volume | $/bbl | Value ($ Million) |
|---|---|---|---|
| ANSWC Price ($/bbl) | | 100 | |
| Production (kbbls/d) | 1,000 | | |
| **Gross Value** | | | **100,000** |
| Transportation ($/bbl) | | 10 | 10,000 |
| Marketing | | | |
| Shipping | | | |
| TAPS | | | |
| 1/8th Royalty (12.5%) | 125 | 90 | 11,250 |
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2

| | Volume | $/bbl | Value ($ Million) |
|---|---|---|---|
| **Gross Value at the Point of Production (GVPP)** | **875** | **90** | **78,750** |
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| Capital Expenditures (Capex) | 875 | 15 | 13,125 |
| Property Tax | 875 | 1 | 875 |
| Carry Forward Losses | 875 | 0 | - |
| **Production Tax Value** | **875** | **59** | **51,625** |

# ALASKA ORDER OF OPERATIONS

## GROSS MINIMUM CALCULATION

3

| (Gross Min Tax) | Volume | $/bbl | Value ($ Million) |
|---|---|---|---|
| **GVPP After Royalty** | **875** | **90** | **78,750** |
| Tax Rate | | 4% | |
| **Gross Min Tax** | | | **3,150** |

- Two parallel calculations are done to determine the production tax due:
  - the gross minimum tax; and
  - the net tax

- The gross minimum is taken as a percentage of the GVPP

| Minimum Gross Tax | | | |
|---|---|---|---|
| Step | ANSWC min | ANSWC max | Rate |
| 1 | 0.00 | 14.99 | 0% |
| 2 | 15.00 | 17.49 | 1% |
| 3 | 17.50 | 19.99 | 2% |
| 4 | 20.00 | 24.99 | 3% |
| 5 | 25.00 | | 4% |

- It does not allow for use of the (reductions and credits)

# HOW OIL COMPANIES EVALUATE PROJECTS

## NET TAX CALCULATION

3

| (Net Tax) | Volume | $/bbl | Value ($ Million) |
|---|---|---|---|
| **Production Tax Value** | **875** | **59** | **51,625** |
| Gross Value Reduction (GVR) | | | |
| Tax Rate | | 35% | |
| **Net Tax Before Credits** | | | **18,069** |

- The second tax calculation is the net tax. This 35% of the PTV
- In the net tax, for those fields eligible the GVPP is further reduced by the GVR allowance

# ALASKA ORDER OF OPERATIONS

## CHOOSING THE GREATER OF

4

| (Gross Min Tax) | Volume | $/bbl | Value ($ Million) |
|---|---|---|---|
| **GVPP After Royalty** | **875** | **90** | **78,750** |
| Tax Rate | | 4% | |
| **Gross Min Tax** | | | **3,150** |

| (Net Tax) | Volume | $/bbl | Value ($ Million) |
|---|---|---|---|
| **Production Tax Value** | **875** | **59** | **51,625** |
| Gross Value Reduction (GVR) | | | |
| Tax Rate | | 35% | |
| **Net Tax Before Credits** | | | **18,069** |

- After the gross and net calculations are done, the values are compared to determine the “greater of”
- The greater of the two values is the production tax payable

# ALASKA ORDER OF OPERATIONS

## NET TAX AFTER CREDITS

5

| (Net Tax if Greater) | Volume | $/bbl | Value ($ Million) |
|---|---|---|---|
| **Net Tax Before Credits** | | | **18,069** |
| GVR per-taxable-barrel credits | | | |
| Non-GVR per-taxable-barrel credits | 875 | 6 | 5,250 |
| Other Credits | | | |
| **Net Tax After Credits** | | | **12,819** |

- If the gross tax is the greater of the two, that is the tax due and there are no further adjustments
- If the net tax is the greater of the two, the amount is then reduced by any available credits including the sliding scale per taxable barrel credits

# ALASKA ORDER OF OPERATIONS

## TAX PAYABLE

6

| | Volume | $/bbl | Value ($ Million) |
|---|---|---|---|
| **Gross Value at the Point of Production (GVPP)** | **875** | **90** | **78,750** |
| Operating Expenditures (Opex) | 875 | 15 | 13,125 |
| Capital Expenditures (Capex) | 875 | 15 | 13,125 |
| Property Tax | 875 | 1 | 875 |
| Carry Forward Losses | 875 | 0 | - |
| **Production Tax Value** | **875** | **59** | **51,625** |

| (Net Tax) | Volume | $/bbl | Value ($ Million) |
|---|---|---|---|
| **Production Tax Value** | **875** | **59** | **51,625** |
| Gross Value Reduction (GVR) | | | |
| Tax Rate | | 35% | |
| **Net Tax Before Credits** | | | **18,069** |

| (Net Tax if Greater) | Volume | $/bbl | Value ($ Million) |
|---|---|---|---|
| **Net Tax Before Credits** | | | **18,069** |
| GVR per-taxable-barrel credits | | | |
| Non-GVR per-taxable-barrel credits | 875 | 6 | 5,250 |
| Other Credits | | | |
| **Net Tax After Credits** | | | **12,819** |

# ALASKA ORDER OF OPERATIONS

## PRODUCER SHARE

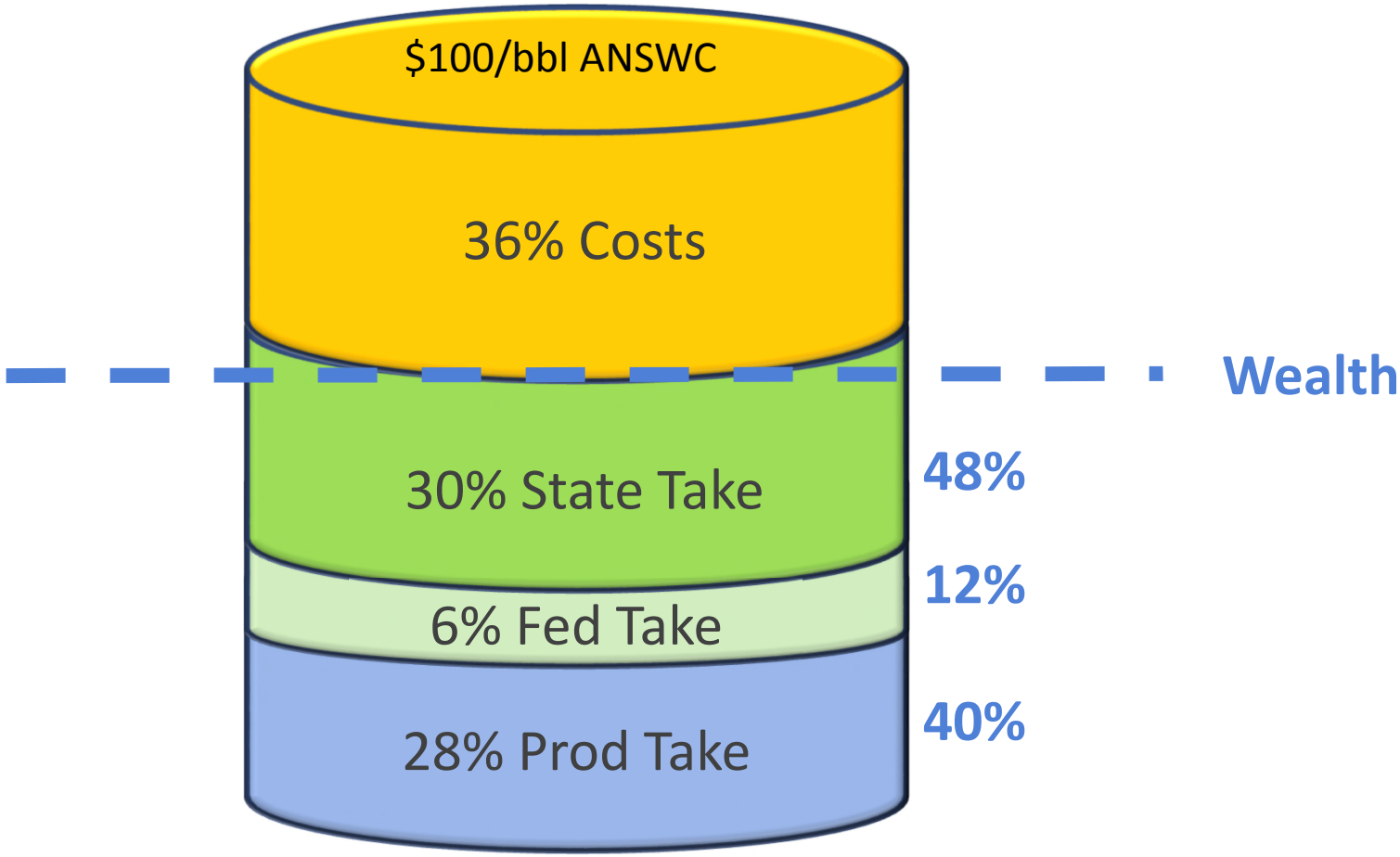
7

| | Volume | $/bbl | Value ($ Million) |
|---|---|---|---|
| **Income** | | | **38,806** |
| State Corporate Income Tax | | 9.4% | 3,648 |
| Federal Corporate Income Tax | | 21% | 7,383 |
| **Produce Share** | | | **27,775** |

- From the tax calculated, State and federal income taxes are deducted to reach the final producer share

# ALASKA ORDER OF OPERATIONS

## WHO GETS THE BARREL



# PRODUCER ECONOMICS

IN3NERGY

# UNDERSTANDING COMPANY DRIVERS

## COMPARE TO GOVERNMENT DRIVERS

- The stewardship role of governments is to retain as much value from the production of its hydrocarbons while continuing to attract new investment dollars
- In evaluating what its level of take should be governments usually look at how a project compares in its regime versus other competing regimes
- Sometimes, but not often enough, governments look at their fiscal system through the eyes of the oil company
- While governments tend to be more transparent about their drivers, companies are a bit more opaque when it comes to discussing how they make investment decisions

# HOW OIL COMPANIES EVALUATE PROJECTS

INVESTMENT

- Generic company process
  - In alignment with corporate strategy
  - Preliminary risk assessment
  - Identification of opportunities
  - Economic analysis, detailed risk assessment
  - Corporate portfolio management
  - Strategic decision

- Risk assessment can cover:
  - Cost, schedule, safety, legal, market, geologic, price, political, royalty, tax, suppliers, equip/materials, technology, weather, environmental, personnel, infrastructure, markets

- Company economic models are designed and run according to company specific procedures

- They have specific comparative metrics such as max cash out, time to payback, IRR, NPV, ROI, etc.

# UNDERSTANDING COMPANY DRIVERS

## COMPARE TO GOVERNMENT DRIVERS

- Many companies deploy a stage gate process similar to:
  - Appraise – desktop study of do I want to be in _____ country
  - Select – Of all the possible opportunities, choose 1
  - Design – Prepare design options, costs and expected revenues
  - Build – Receive FID and begin building
  - Operate – commence production

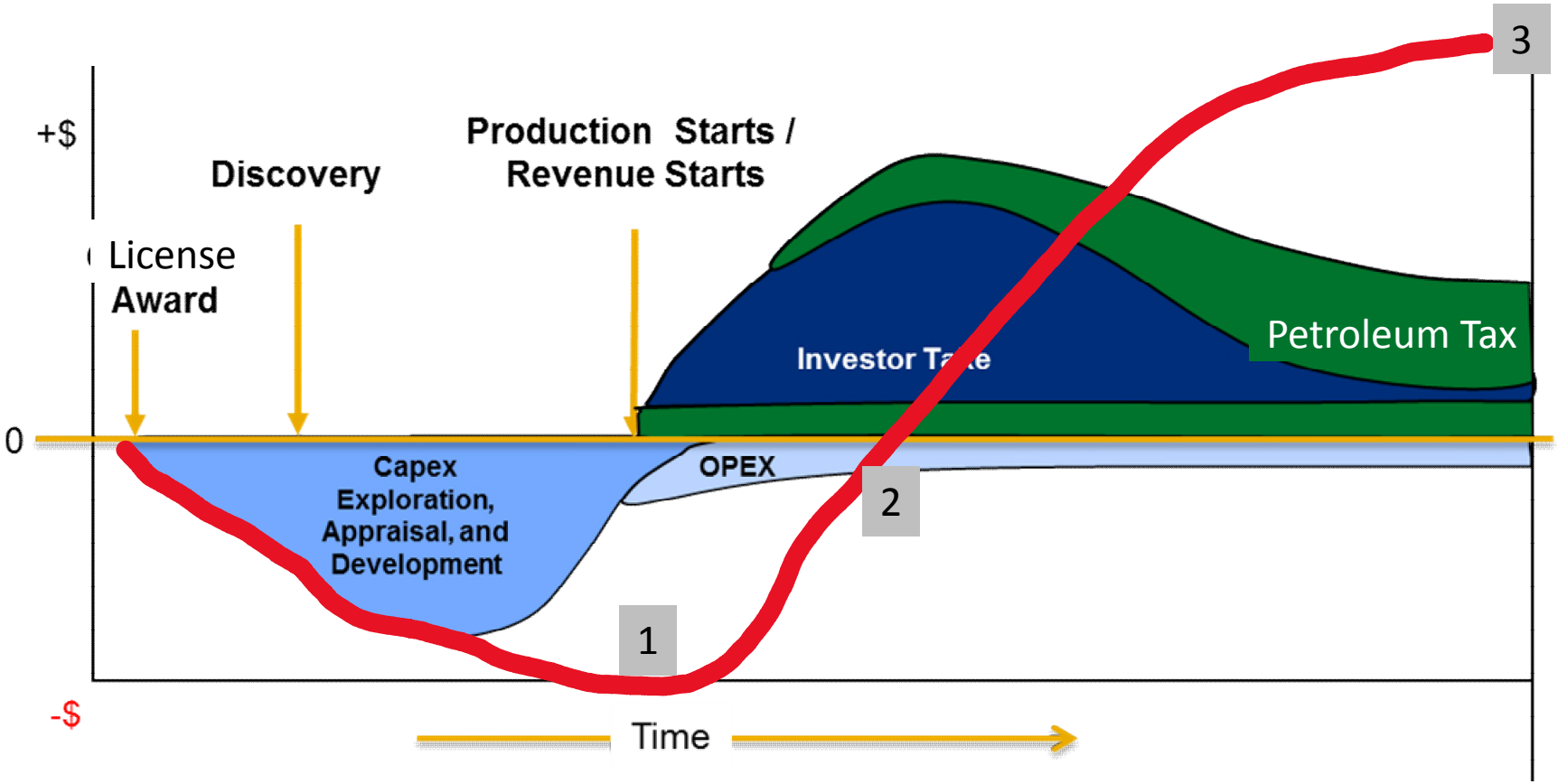
- In order to proceed to the next stage a potential project will need to meet the milestones set for the previous stage and receive budget approval to move forward into the next

- The goal is at each stage gate review is to reduce uncertainty, manage risks and identify opportunities for added value

- Risk evaluation sometimes carries as much importance as economic evaluation

# TYPICAL LARGE PROJECT "HOCKEY STICK"

## CUMULATIVE CASH FLOW




1. How Deep? Maximum cash out
2. How Wide? Time to pay out or recovery of costs
3. How High? Enough profit to be worth the risk

# HOW OIL COMPANIES EVALUATE PROJECTS

## INVESTMENT

- In the 102 course we talked about the relatively large amount of capital that is spent in countries that have a 'higher government take' than Alaska

- We suggested that time plays a very important role in project economics as company metrics favor higher early cash flows

- Look at a very simplistic model with $1000 in cost and a total of $2000 back to the producer.
  - Varying the timing of the expenditures
  - Varying the timing of the cash back to the producer

- Simplified explanation of terms:
  - IRR – interest earned on their investment
  - NPV – Value added above corporate cost of capital
  - ROI – ratio of cash in divided by cash out

# THE IMPACTS OF TIMING

PROJECT ECONOMICS

- All three cash flows have same cost and income
- Only the timing of investment is varied
- Think of the first line as a lower 48 project where a lease can be obtained, permits received and drilling completed all in under a year
- The third line is more typical of Alaska where it takes several years to get to first oil
- The 'Alaska' project is 6% worse on IRR and barely adds value above the cost of capital

| | | 10% | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IRR | NPV | ROI | -6 | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 17% | $268 | 2.0 | | | | | | | -1000 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 14% | $153 | 2.0 | | | | | -200 | -500 | -300 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 11% | $41 | 2.0 | -50 | -10 | -10 | -200 | -330 | -300 | -100 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |

# THE IMPACTS OF TIMING

PROJECT ECONOMICS

- To compete, 'Alaska' could reduce investment timing and take its share of the profits later in the project
- As can be seen in the 4th line this improves the IRR 3% and the NPV by almost $100
- 'Government Take' remains unchanged

| 10% | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IRR | NPV | ROI | -6 | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 17% | $268 | 2.0 | | | | | | | -1000 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 14% | $153 | 2.0 | | | | | -200 | -500 | -300 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 11% | $41 | 2.0 | -50 | -10 | -10 | -200 | -330 | -300 | -100 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 14% | $140 | 2.0 | | | -50 | -200 | -350 | -300 | -100 | 275 | 400 | 400 | 300 | 200 | 140 | 80 | 75 | 70 | 60 |

# THE IMPACTS OF INCENTIVES

## PROJECT ECONOMICS

- High government take regimes offer other incentives to compete for oil company investment capital
  - 40% investment credit
  - 10% uplift on unrecovered capital

- First, using only the investment credit, as can be seen in the 4th line this improves the IRR 3% and the NPV by almost $100

- Combining investment credits with uplift on capital until recovered, improves the IRR by 8% and value added by $300

- Reported 'Government Take' remains unchanged

| | 10% | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IRR | NPV | ROI | -6 | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 17% | $268 | 2.0 | | | | | | | -1000 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 11% | $41 | 2.0 | -50 | -10 | -10 | -200 | -330 | -300 | -100 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 16% | $219 | 2.4 | -50 | -10 | -10 | -200 | -330 | -300 | -100 | 375 | 450 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 19% | $340 | 2.7 | -50 | -10 | -10 | -200 | -330 | -300 | -100 | 475 | 530 | 360 | 330 | 250 | 175 | 160 | 150 | 140 | 120 |

# THE IMPACTS OF TIMING

PROJECT ECONOMICS

- A company has an expectation of a 15% return on its investment
- Vary the time from investment to when that investment is recovered from project cash flows
- The longer the delay, the greater the profit required to meet 15%

| IRR | ROI | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15% | 1.2 | -1000 | 1150 | | | | | | | | | |
| 15% | 1.3 | -1000 | | 1320 | | | | | | | | |
| 15% | 1.5 | -1000 | | | 1520 | | | | | | | |
| 15% | 1.8 | -1000 | | | | 1775 | | | | | | |
| 15% | 2.0 | -1000 | | | | | 2000 | | | | | |
| 15% | 2.3 | -1000 | | | | | | 2300 | | | | |
| 15% | 2.7 | -1000 | | | | | | | 2700 | | | |
| 15% | 3.1 | -1000 | | | | | | | | 3100 | | |
| 15% | 3.5 | -1000 | | | | | | | | | 3500 | |
| 15% | 4.2 | -1000 | | | | | | | | | | 4200 |

# THE IMPACTS OF TIMING

PROJECT ECONOMICS

- Where governments take their share early, e.g. royalty, bonuses, etc., then the producer has to receive a significantly larger share of the profits later in the project to meet economic targets

- Use large share in year 10 to simulate a greater producer share later in the life of the project

- Basically to get the same IRR as the ‘Lower 48’ project, the ‘Alaska’ project requires just about twice the cashflow (3.9 ROI vs. 2.0 ROI)

| | 10% | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IRR | NPV | ROI | -6 | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 17% | $268 | 2.0 | | | | | | | -1000 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 14% | $153 | 2.0 | | | | | -200 | -500 | -300 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 11% | $41 | 2.0 | -50 | -10 | -10 | -200 | -330 | -300 | -100 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 12% | $72 | 2.0 | -50 | -10 | -10 | -200 | -330 | -300 | -100 | 225 | 300 | 350 | 300 | 230 | 175 | 160 | 100 | 90 | 70 |
| 14% | $215 | 2.9 | -50 | -10 | -10 | -200 | -330 | -300 | -100 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 1000 |
| 17% | $413 | 3.9 | -50 | -10 | -10 | -200 | -330 | -300 | -100 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 2000 |

# THE IMPACTS OF TIMING

PROJECT ECONOMICS

- In the table below, the first line is our ‘Lower 48’ project and the second line is our ‘Alaska’ project

- Lines 3, 4 and 5 alter ‘Lower 48’ making changes to investment or producer cash flow to make the IRR the same as it is for ‘Alaska’
  - Line 3 notes ‘lower 48’ could cost 25% more
  - Line 4 changes the profile to that of a shale well and shows they could spend 62% more
  - Line 5 keeps the cost the same but government take could be higher such that producer revenues are reduced by 38%

| | 10% | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IRR | NPV | ROI | -6 | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 17% | $268 | 2.0 | | | | | | | -1000 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 11% | $41 | 2.0 | -50 | -10 | -10 | -200 | -330 | -300 | -100 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 11% | $46 | 1.6 | | | | | | | -1245 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 11% | $27 | 1.2 | | | | | | | -1621 | 800 | 800 | 200 | 50 | 40 | 30 | 20 | 20 | 20 | 20 |
| 11% | $15 | 1.2 | | | | | | | -1000 | 493 | 493 | 123 | 30.8 | 24.6 | 18.5 | 12.3 | 12.3 | 12.3 | 12.3 |
| | | | | | | | | Revenue Multiplier | | 0.6 | | | | | | | | | |

# THANK YOU

# QUESTIONS?

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be in the know


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# GLOSSARY

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# GLOSSARY – Move to back but let know

## ALASKA FISCAL REGIME

| | |
|---|---|
| **ACES** | Alaska Clear Equitable Share |
| **AGIA** | Alaska Gasline Inducement Act |
| **ANS** | Alaska North Slope |
| **ANS WC** | ANS West Coast |
| **AS** | Alaska Statute |
| **BTU** | British Thermal Unit |
| **CI** | Cook Inlet |
| **DNR** | Department of Natural resources |
| **DOG** | Division of Oil & Gas |
| **DOR** | Department of Revenue |
| **ELF** | Economic Limit Factor |
| **GF** | General Fund |
| **GVPP** | Gross Value Point of Production |
| **KRU** | Kuparuk River Unit |
| **ME** | Middle Earth |
| **NPRA** | National Petroleum Reserve |
| **NS** | North Slope |
| **PBU** | Prudhoe Bay Unit |
| **PF** | Permanent Fund |
| **PPT** | Petroleum Profits Tax |
| **PTV** | Production Tax Value |
| **RIK** | Royalty in Kind |
| **RIV** | Royalty in Value |
| **TAPS** | Trans Alaska Pipeline System |