



Preliminary Forecast released October 25, 2017

Alaska Department of Revenue



FORECASTING METHODS: Timeline

- December 2016: Fall 2016 forecast and Revenue Sources Book
- Early April 2017: Spring 2017 forecast
- Late April 2017: Spring 2017 Alternative Scenario
 - 4% Production Decline Scenario, Letter to Co-Chairs
- October 2017: Preliminary Fall 2017 forecast
 - non-standard, provided to assist special session
- December 2017: Final Fall 2017 forecast and Revenue Sources Book
- March or April 2018: Spring 2018 forecast

FORECASTING METHODS: Introduction

- All data is based on the DOR Fall 2017 Preliminary Forecast.
- This is a preliminary forecast and some numbers will change before the final submittal in December.
 - Changes to unrestricted revenue between the preliminary and final forecast are expected to be less than \$100 million in any given year.

Note: This is a forecast. All figures and narratives in this document that are not based on events that have already occurred, constitute forecasts or “forward-looking statements.” These numbers are projections based on assumptions regarding uncertain future events and the responses to those events. Such figures are subject to uncertainties and actual results will differ, potentially materially, from those anticipated.

FORECASTING METHODS: What Do We Forecast at DOR?

- We directly forecast **Petroleum Revenue**
 - Accounted for 65% of state unrestricted revenue in FY 2017
 - Projected to be 70-72% in FY 2018 and FY 2019
 - Includes severance taxes, royalties, corporate income tax, and all other revenue from oil companies
- We directly forecast **Non-Petroleum Revenue**
- We use Alaska Permanent Fund Corporation and Treasury Division forecasts for **Investment Revenue**
- We use the **Federal Revenue** authorized for spending as the forecast
 - It is typically 20%-30% more than actually gets spent
- Compile all of these into Revenue Sources Book once the forecasts are finalized.

Fall 2017 Preliminary Petroleum Revenue Forecast



PETROLEUM REVENUE FORECAST: Factors

Four Factors for Petroleum Revenue Forecast

1. Production

2. Price

3. Costs

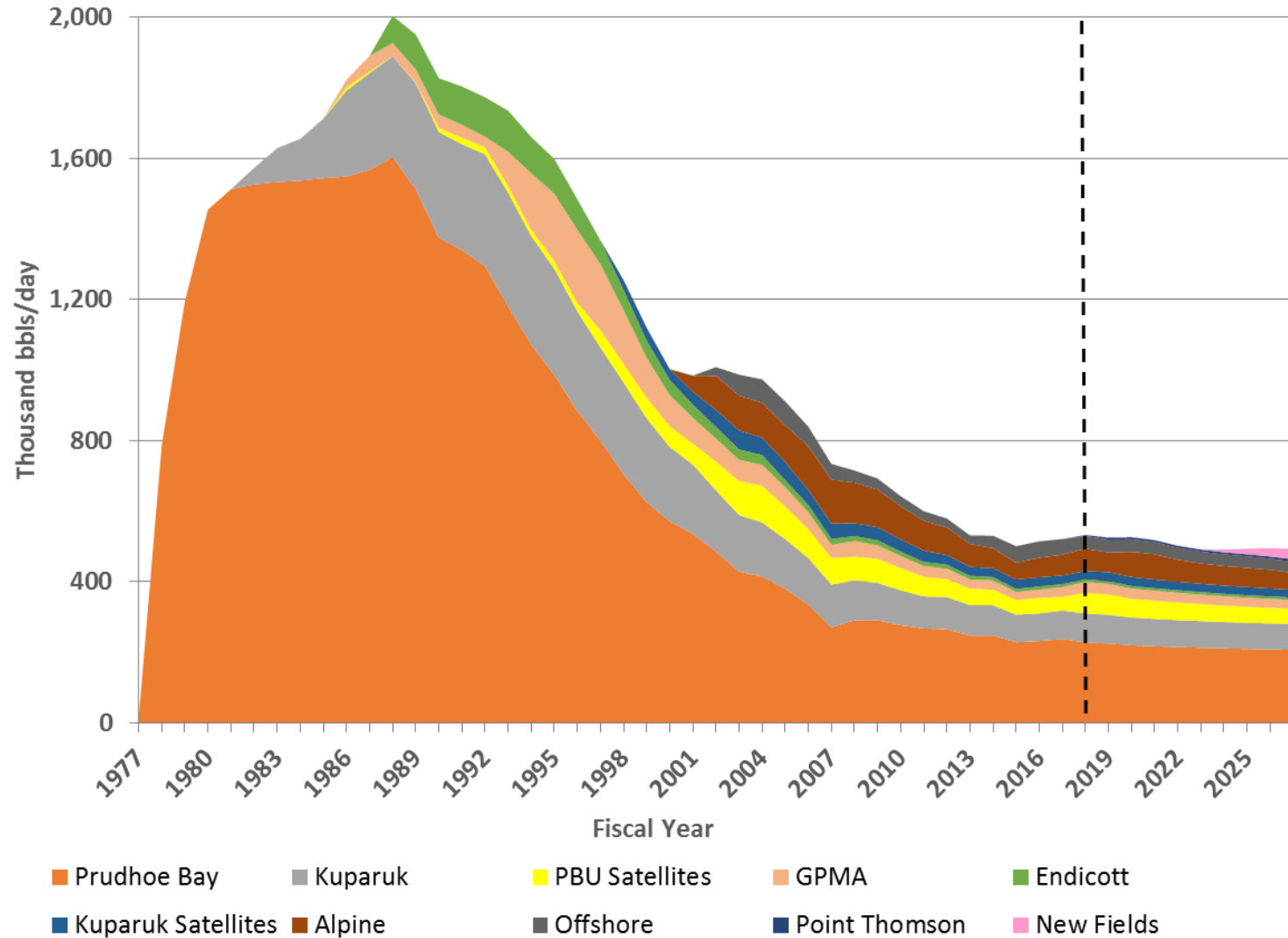
- Capital Expenditures
- Operating Expenditures
- Transportation Costs

4. Credits

Fall 2017 Preliminary Production Forecast



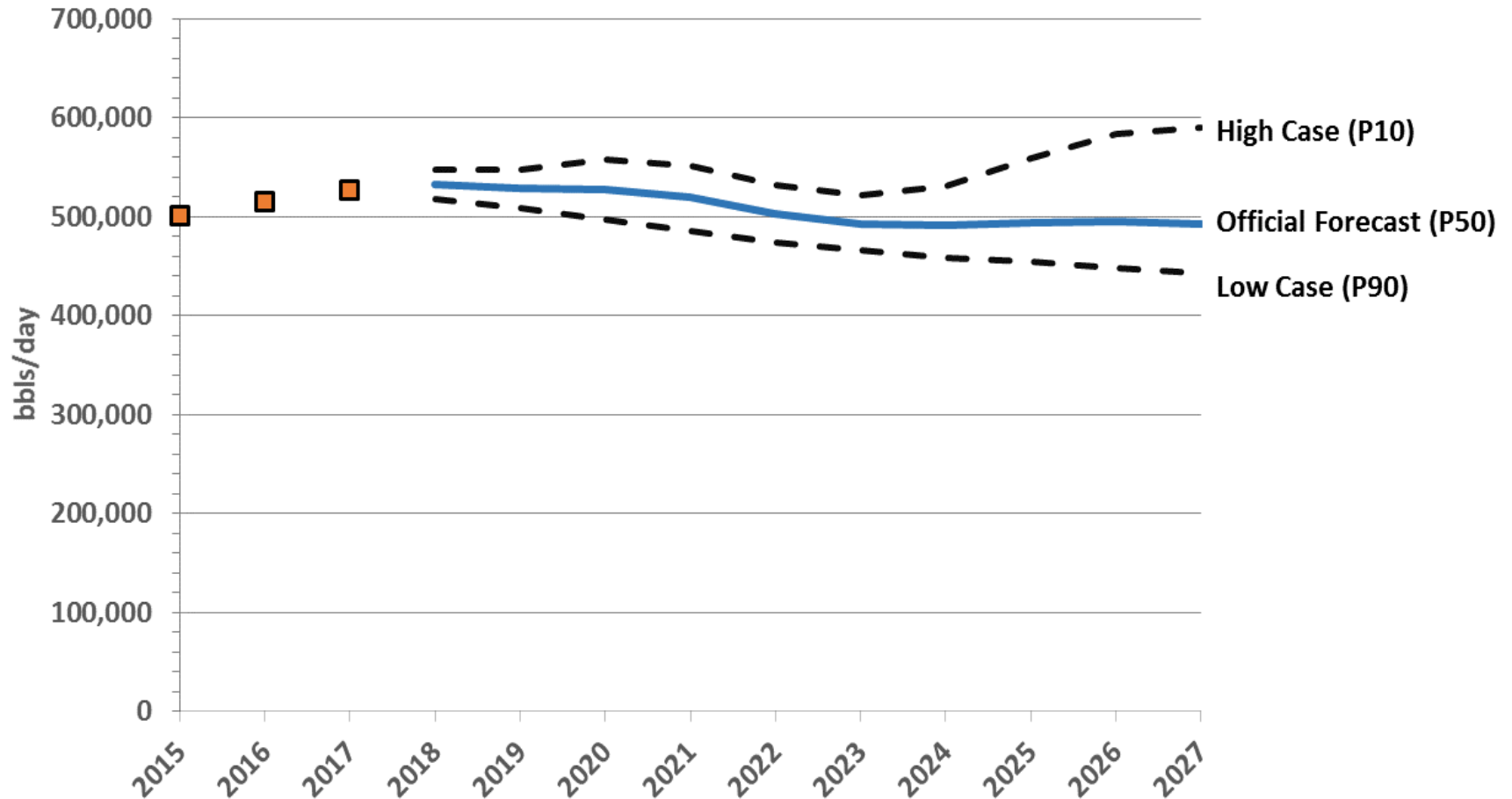
PRODUCTION FORECAST: ANS History and Forecast by Pool



Source: Department of Revenue and Department of Natural Resources

ANS = Alaska North Slope; PBU = Prudhoe Bay Unit; GPMA = Greater Point McIntyre Area

PRODUCTION FORECAST: ANS by Case



Source: Department of Revenue and Department of Natural Resources

ANS = Alaska North Slope

PRODUCTION FORECAST: ANS Details

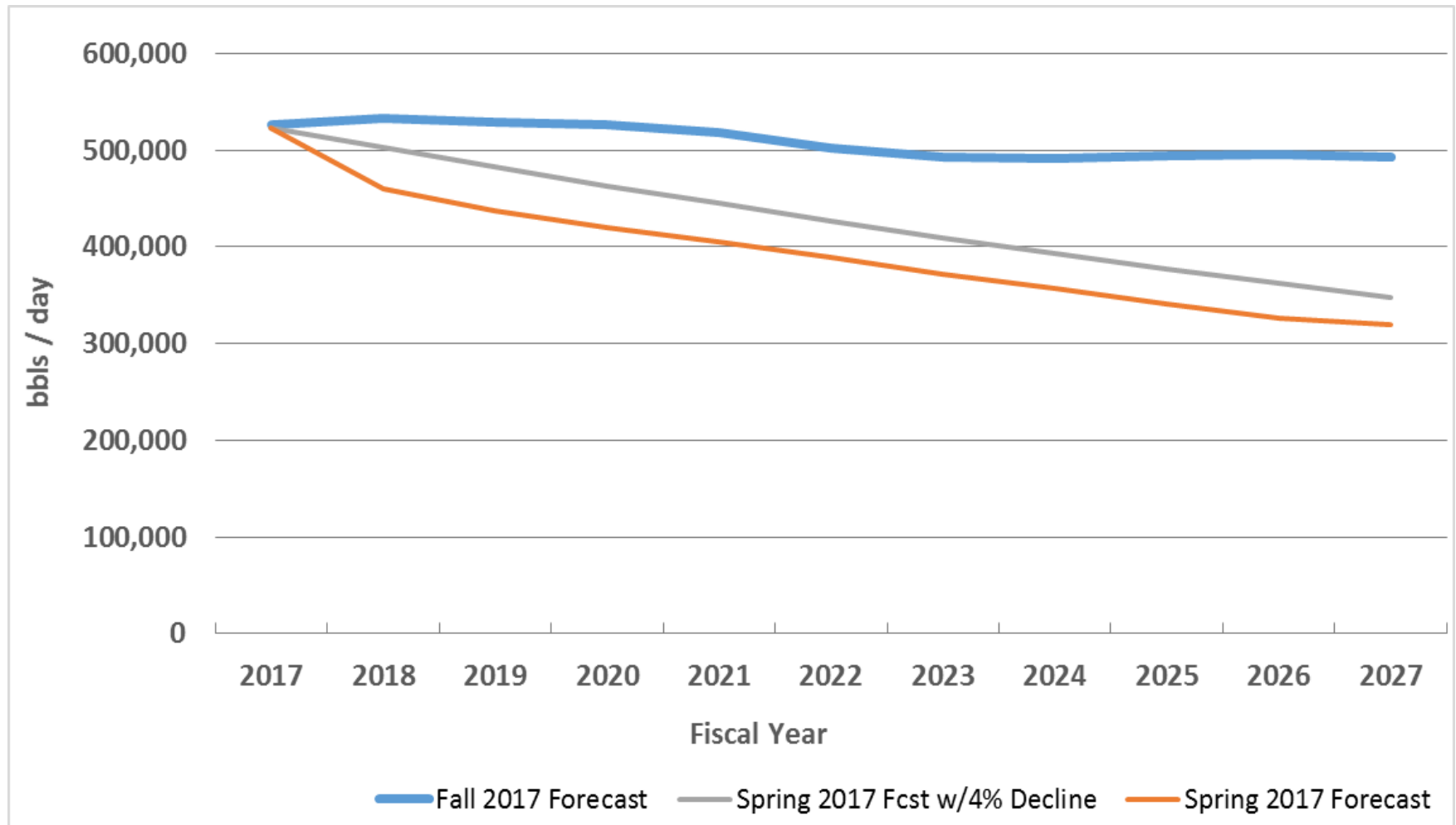
Preliminary Fall 2017 ANS Oil Production Forecast

	(bbls/day)									
Fiscal Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Low Case (P90)	518,000	509,000	497,000	486,000	474,000	466,000	459,000	454,000	448,000	443,000
Change from Prior Year	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-1%	-1%	-1%
Official Forecast (P50)	533,000	529,000	527,000	519,000	503,000	493,000	491,000	494,000	495,000	493,000
Change from Prior Year	1%	-1%	0%	-2%	-3%	-2%	0%	1%	0%	0%
High Case (P10)	548,000	548,000	558,000	551,000	532,000	521,000	530,000	559,000	583,000	590,000
Change from Prior Year	4%	0%	2%	-1%	-3%	-2%	2%	5%	4%	1%
Production from GVR-Eligible Fields under Official Forecast	30,000	35,000	43,000	47,000	48,000	34,000	24,000	33,000	32,000	36,000
% from GVR-Eligible Fields under Official Forecast	6%	7%	8%	9%	10%	7%	5%	6%	6%	7%

Source: Department of Revenue and Department of Natural Resources

GVR = Gross Value Reduction (GVR-Eligible Fields are qualifying “New Fields” under production tax laws)

PRODUCTION FORECAST: ANS Comparison to Prior Forecast



Source: Department of Revenue and Department of Natural Resources

PRODUCTION FORECAST: NPR-A Update

Royalty Revenue and Volumes from NPRA

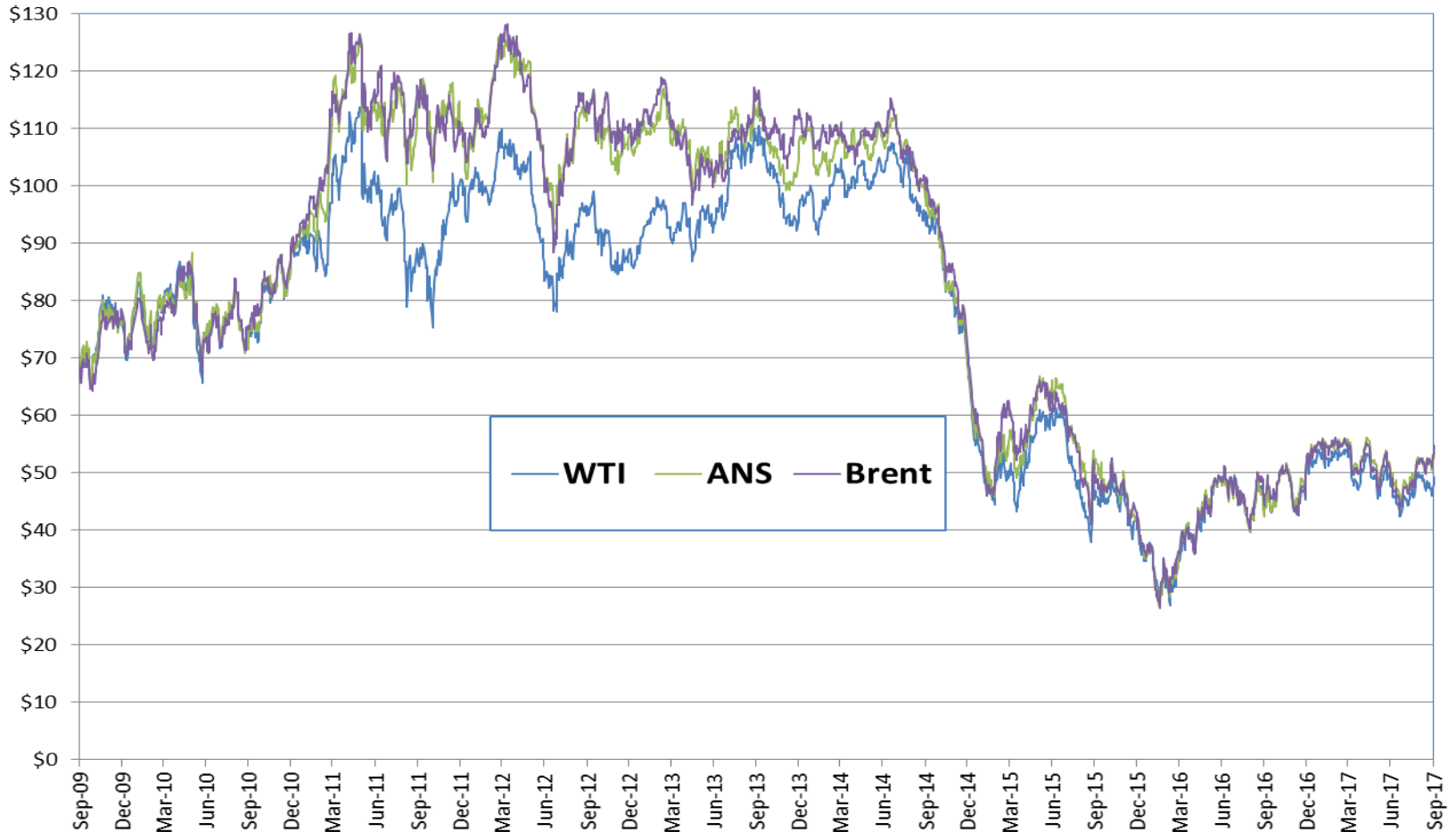
- Alaska's share of revenues fund the Alaska Impact Grant Program
- Forecasted volumes from Moose's Tooth (GMT1 & GMT2) and Willow

average barrels per day	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
NPR-A Production	-	-	1,000	9,500	14,300	15,600	16,400	16,900	17,500	17,500	16,400

Fall 2017 Preliminary Price Forecast

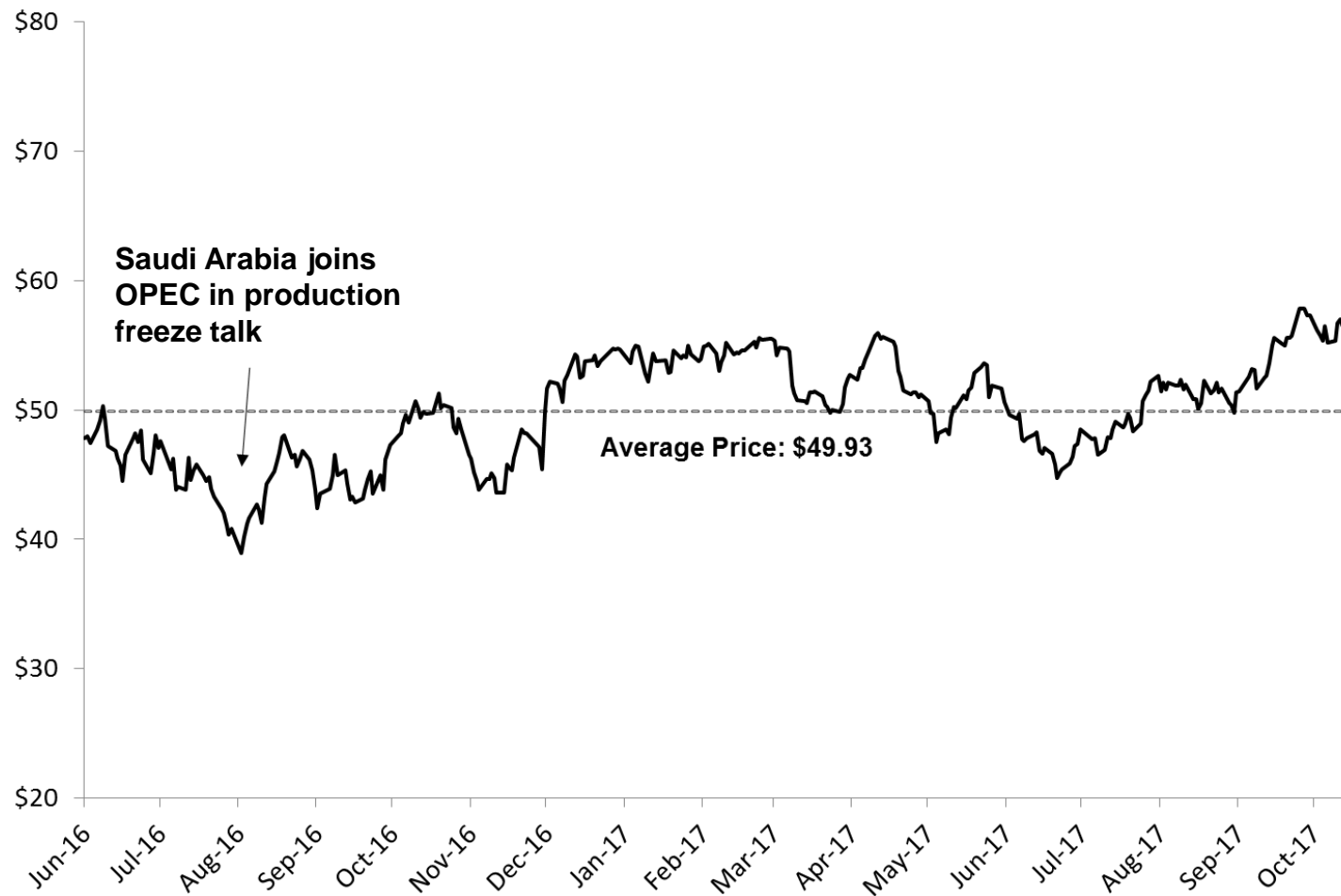


PRICE FORECAST: Historical ANS West Coast, West Texas Intermediate (WTI) and Brent Crude Prices 2009+



Source: Platts

PRICE FORECAST: Historical ANS West Coast Price 2016+



Source: Department of Revenue – Economic Research

PRICE FORECAST: Key Drivers

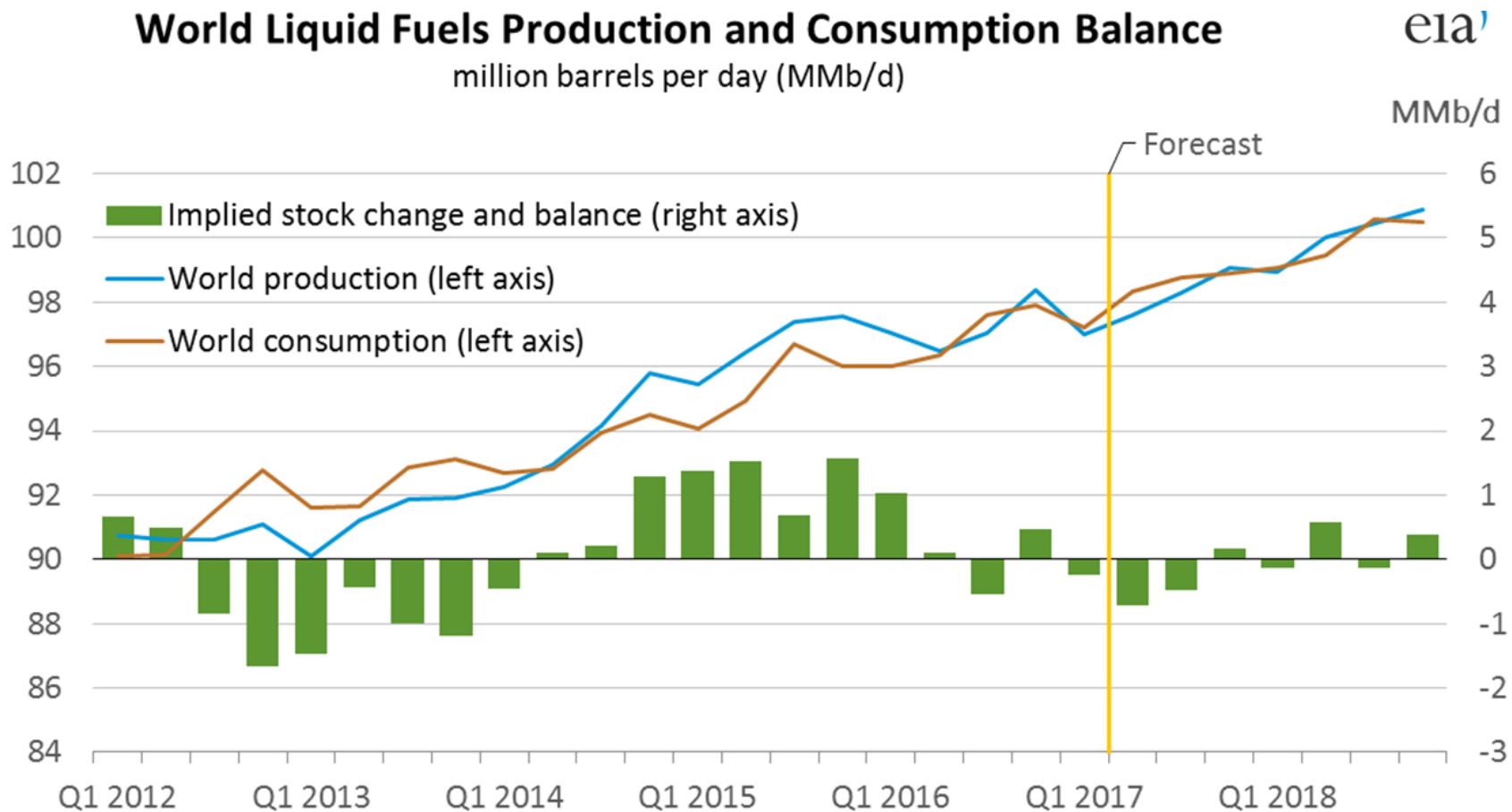
➤ Supply, Demand and Spare Capacity in FY 2018

- Global Supply – 99.08 million barrels per day
- Global Demand – 99.05 million barrels per day
- Supply / Demand roughly in balance

➤ Current Events

- Supply and demand balancing out
- OPEC and Russia are maintaining decreased production until at least March 2018
 - Compliance with this cut has been relatively high
- Recent unrest in the Middle East due to the Kurdish independence vote may disrupt supply

PRICE FORECAST: Impact of Spare Capacity

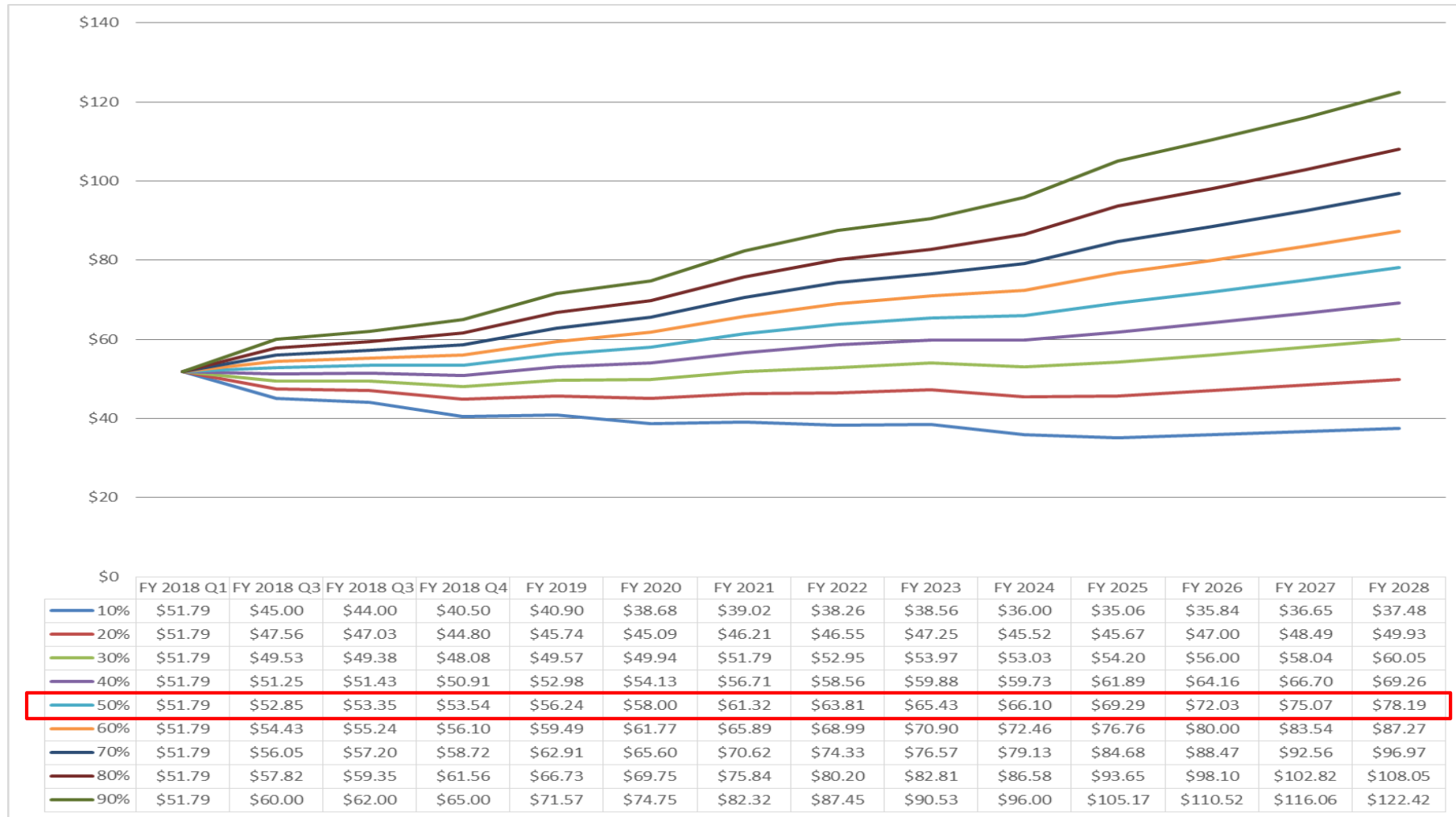


Source: Short-Term Energy Outlook, October 2017.

PRICE FORECAST: Base Price Method

- Price forecast is based on Fall 2017 forecasting session held on October 9th
- Participants gave 10th, 50th, and 90th percentile paths
- Average of these paths used to derive distribution of possible prices
- Base case is the median of the distribution

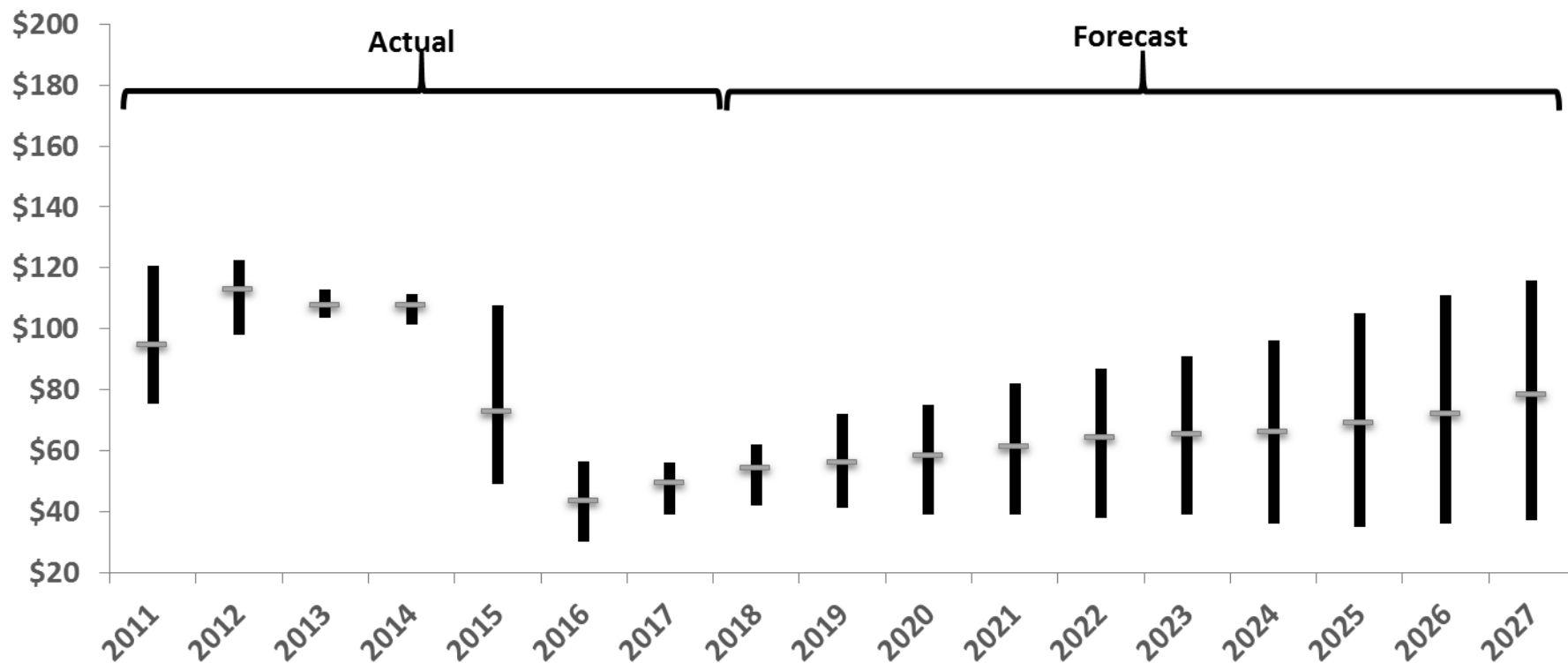
PRICE FORECAST: Nominal ANS Price Distribution



Note: Forecasted price has been rounded to the nearest dollar

Source: Department of Revenue – Economic Research

PRICE FORECAST: Historical ANS West Coast Price FY Oil Price Bands (Annual Average and Fall 2017 Forecast)

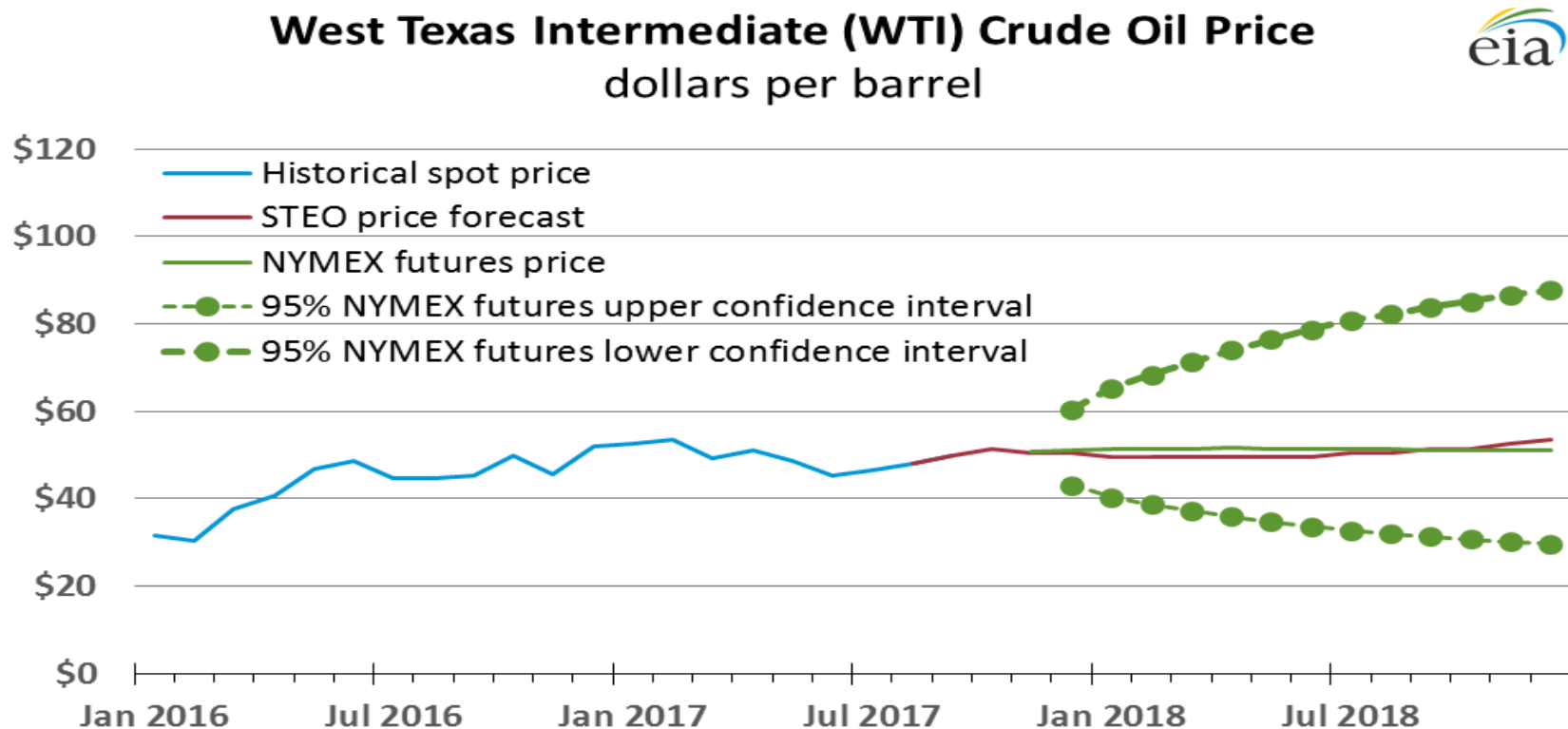


Notes: Bands for Actual represent range of ANS prices within the year.

Bands for Forecast represent an 80% confidence level for ANS prices.

Source: Department of Revenue – Economic Research

PRICE FORECAST: Consensus View of Wide Distribution



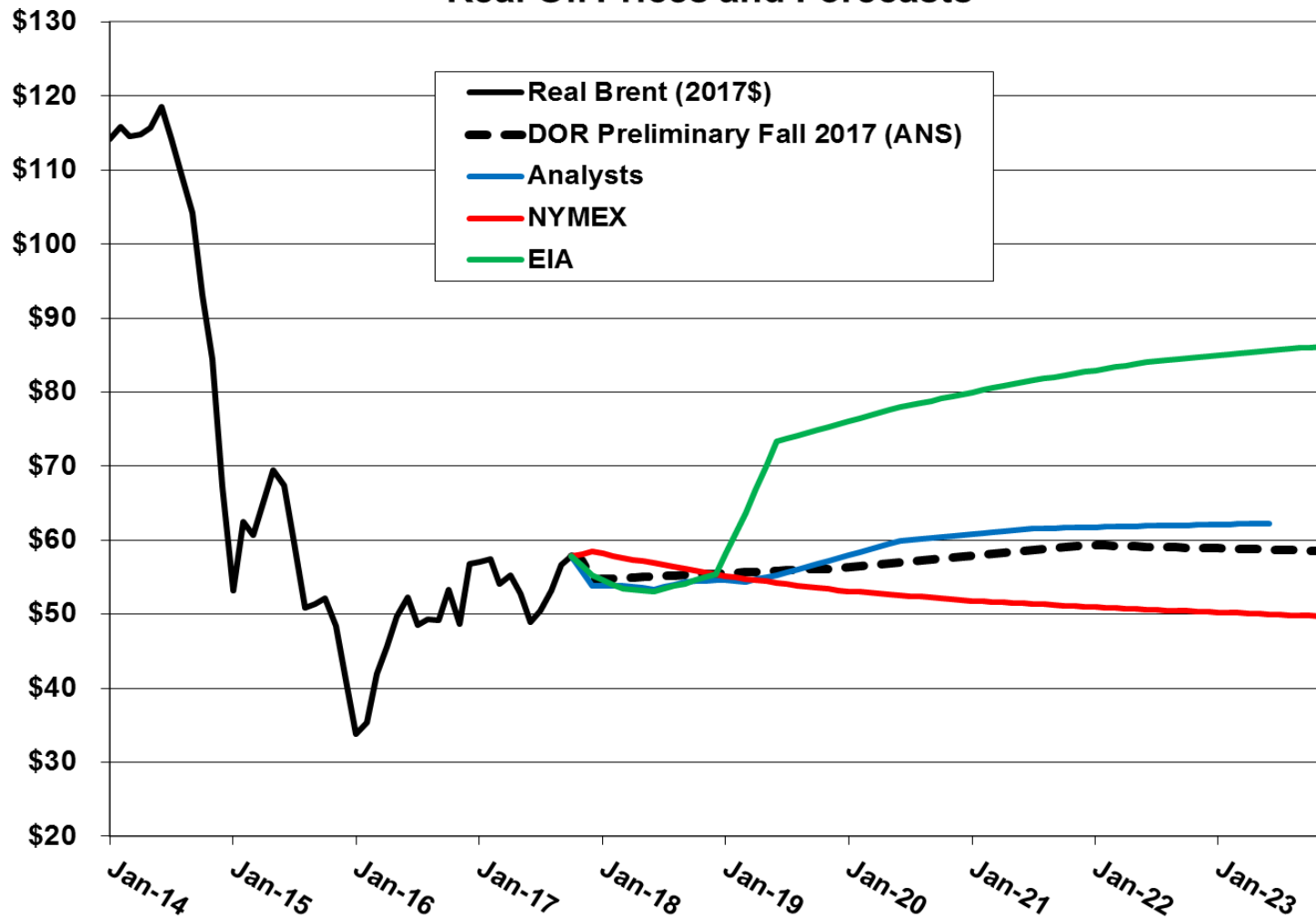
Note: Confidence interval derived from options market information for the 5 trading days ending Oct 5, 2017. Intervals not calculated for months with sparse trading in near-the-money options contracts.

Source: Short-Term Energy Outlook, October 2017.

PRICE FORECAST: Brent Forecasts Comparison to DOR

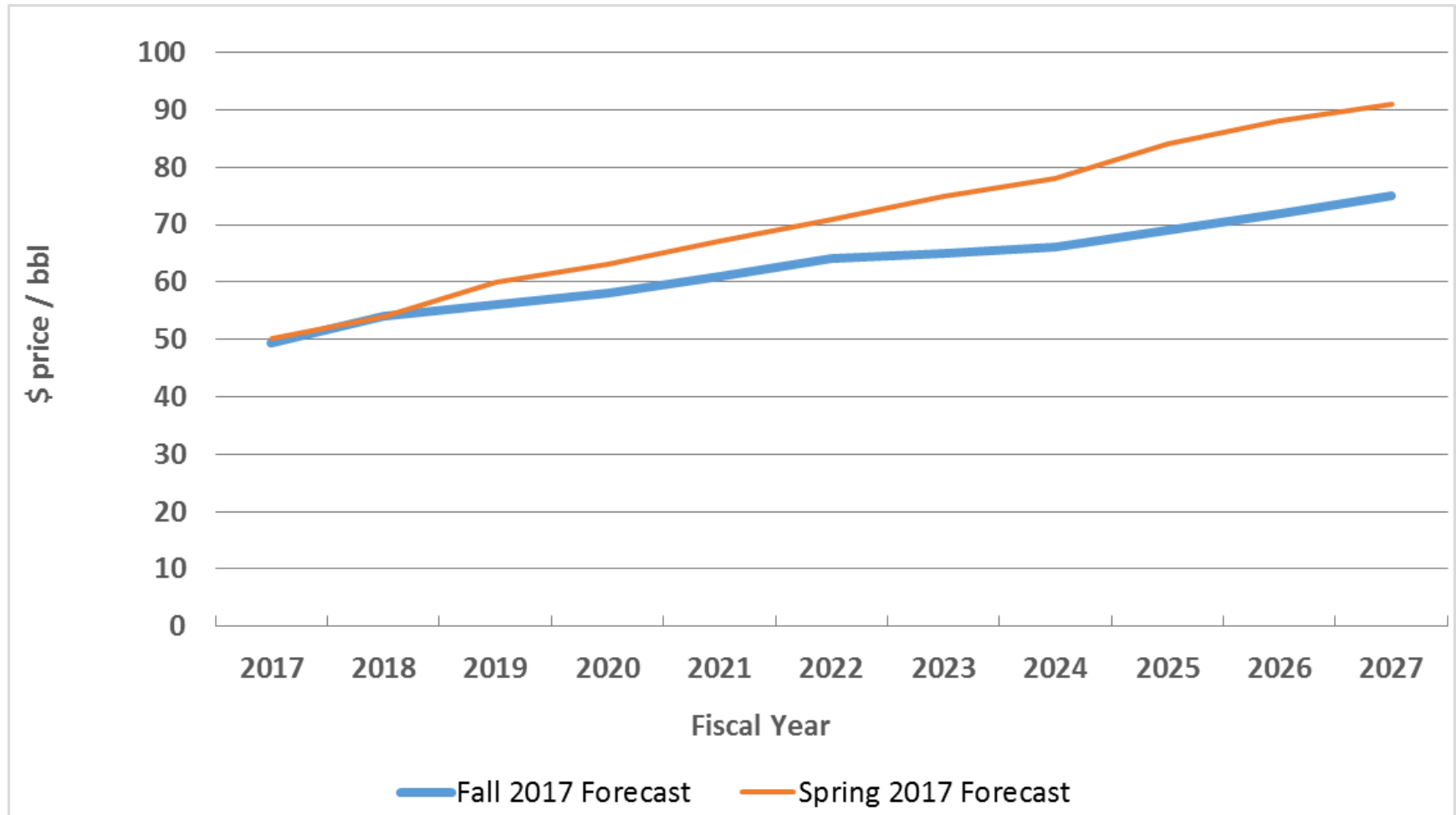
ANS Forecast

Real Oil Prices and Forecasts



Note: EIA price uses current short-term outlook through 2018 then price for 2019+ from 2017 Annual Energy Outlook (AEO), released Jan 2017

PRICE FORECAST: ANS Comparison to Prior Forecast

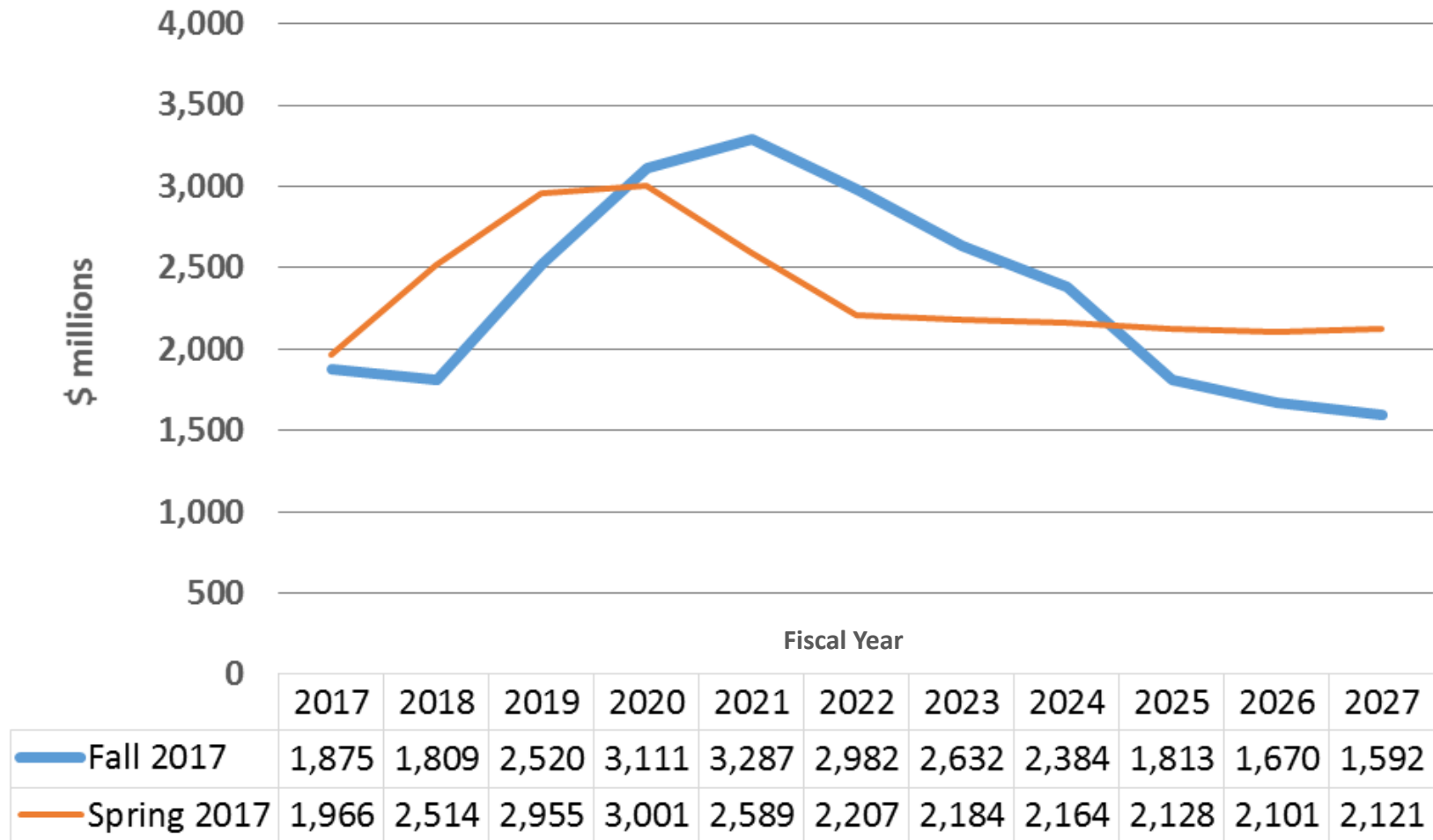


Source: Department of Revenue – Economic Research

Fall 2017 Preliminary Cost Forecast



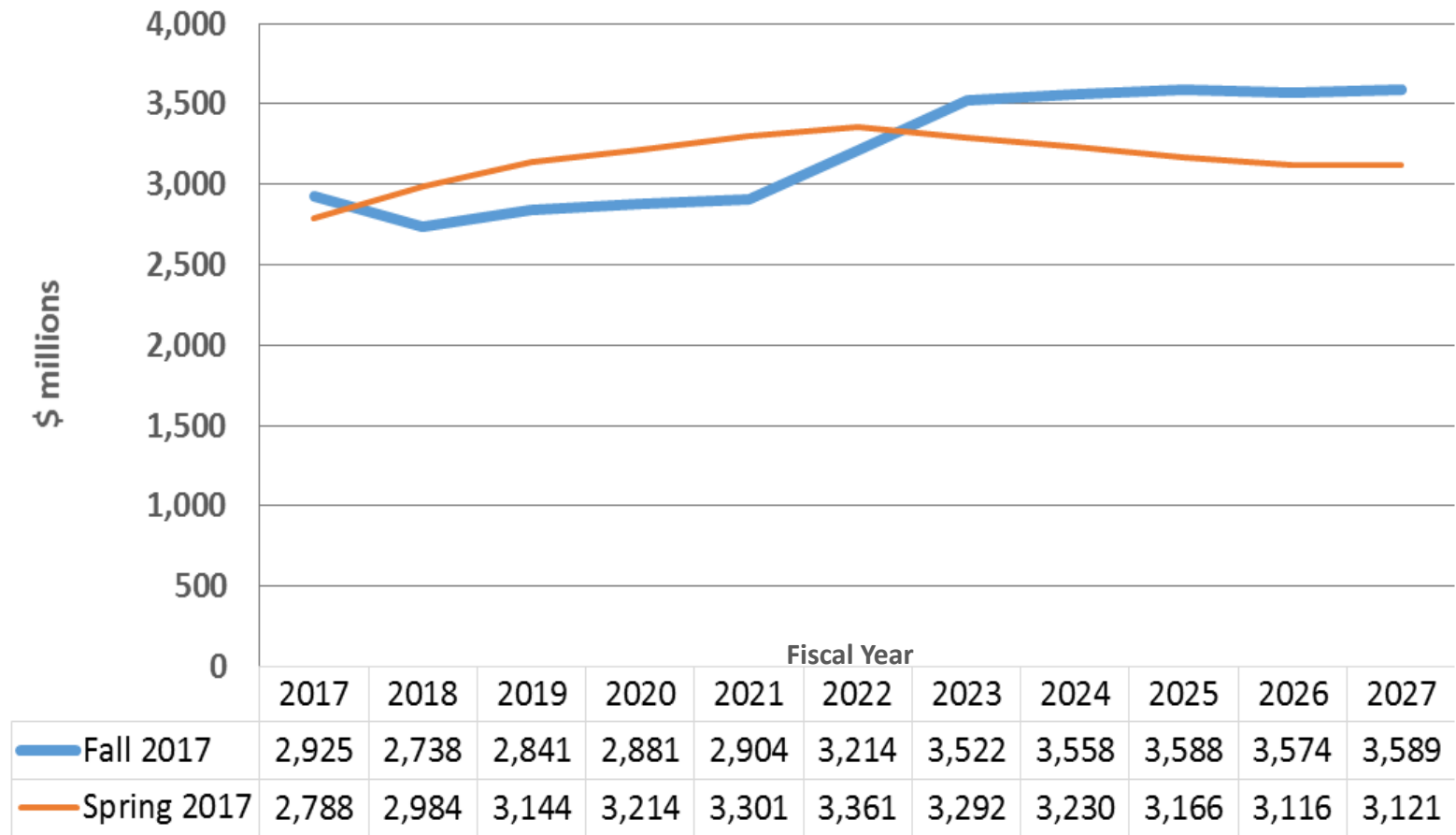
COST FORECAST: North Slope Capital Lease Expenditures



Note: These estimates include lease expenditures by companies that are not expected to have a tax liability.

Source: Department of Revenue – Economic Research

COST FORECAST: North Slope Operating Lease Expenditures



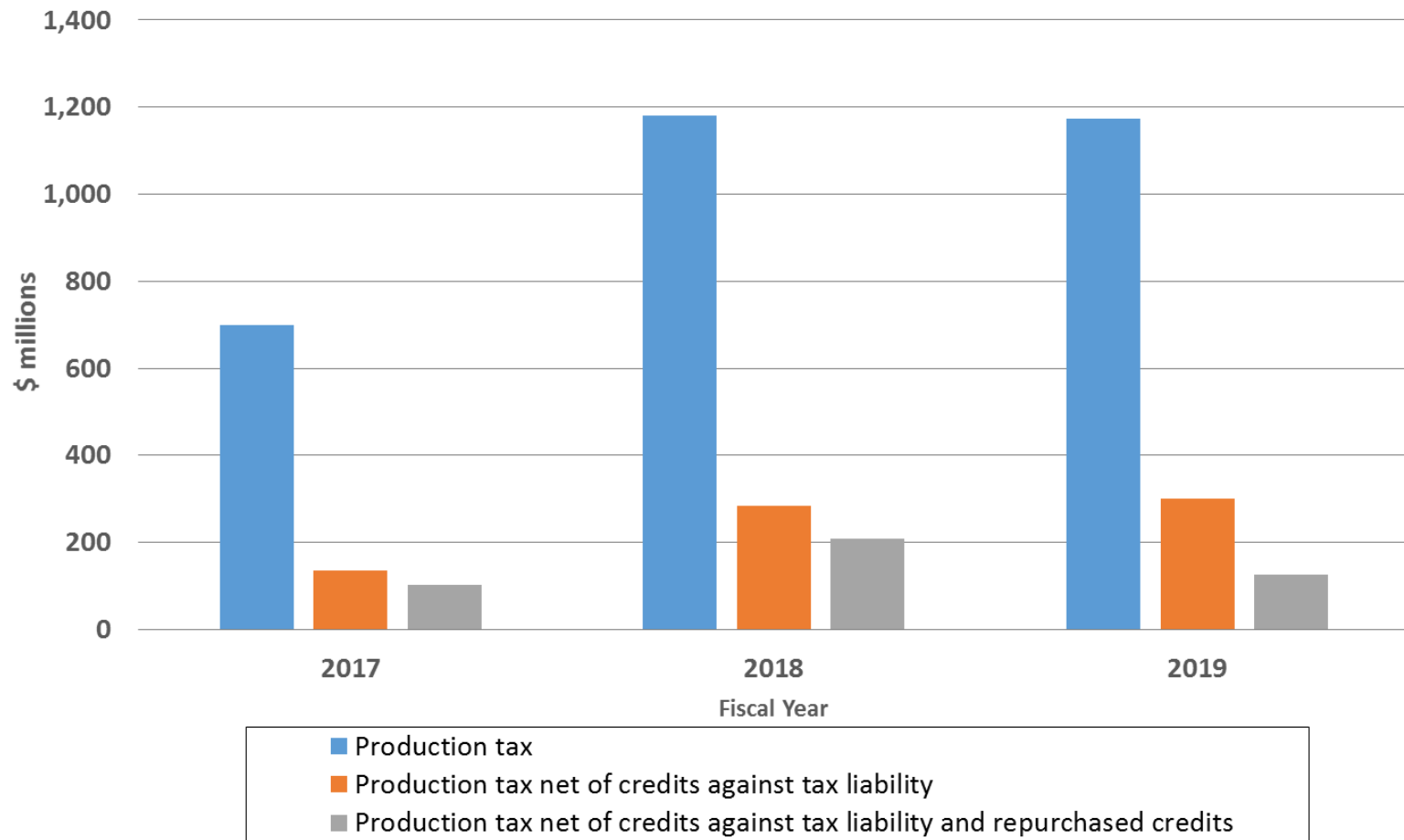
Note: These estimates include lease expenditures by companies that are not expected to have a tax liability.

Source: Department of Revenue – Economic Research

Fall 2017 Preliminary Credits Forecast



CREDITS FORECAST: Compared with Production Tax



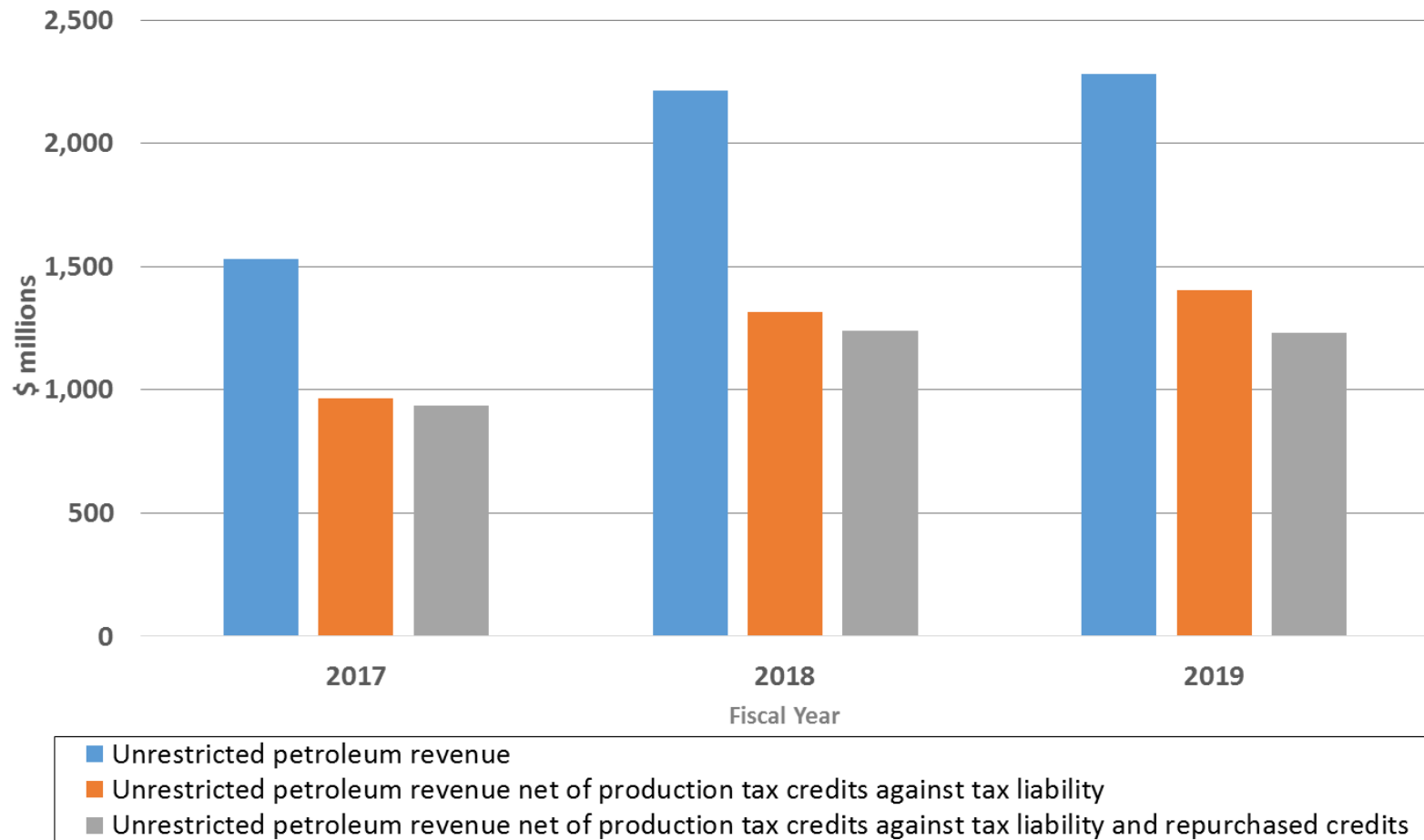
Notes: Repurchased credits for FY 2017 and FY 2018 include only credits actually repurchased during those years.

Repurchased credits for FY 2019 represents the statutory appropriation of \$175 million.

Under this scenario, estimated credits available for repurchase are \$736 million at end of FY18 and \$679 million at end of FY19.

Source: Department of Revenue – Economic Research

CREDITS FORECAST: Compared with Unrestricted Petroleum Revenue



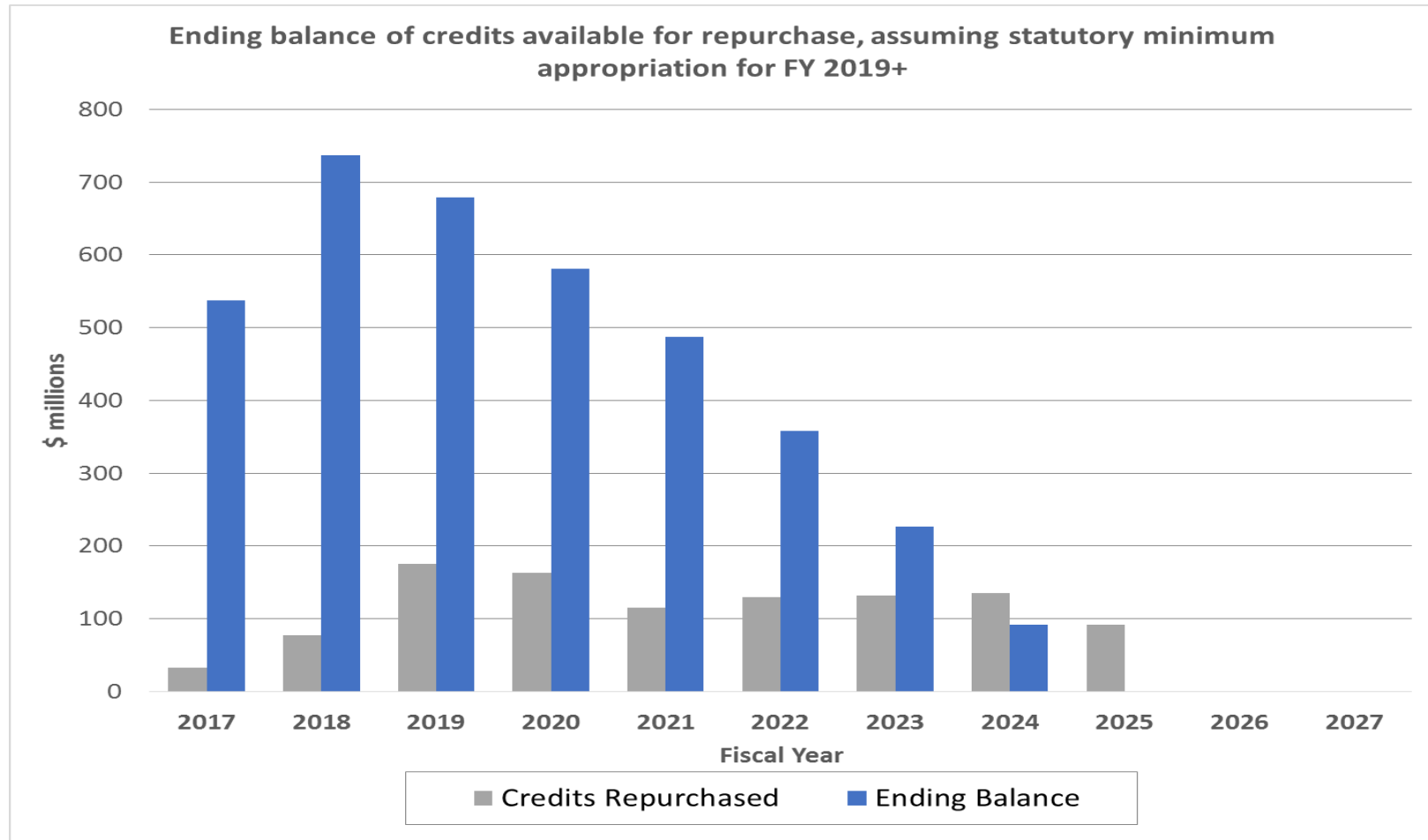
Notes: Repurchased credits for FY 2017 and FY 2018 include only credits actually repurchased during those years.

Repurchased credits for FY 2019 represents the statutory appropriation of \$175 million.

Under this scenario, estimated credits available for repurchase are \$736 million at end of FY18 and \$679 million at end of FY19.

Source: Department of Revenue – Economic Research

CREDITS FORECAST: Outstanding Tax Credit Obligations




Per AS 43.55.028, minimum appropriation is 10% of production tax levied, before credits, when ANS price forecast is \$60 or higher. Minimum appropriation is 15% of production tax levied, before credits, when ANS price forecast is below \$60. Does not include changes in company behavior or credit transfers beyond FY 2019 as a result of only making minimum appropriation.

Source: Department of Revenue – Economic Research

Illustration of Tax and Credit Calculations

FY 2019 production tax illustration – Spring 2017

~140 million taxable barrels

	Per taxable Barrel	Total(\$MM)	
Market Price	\$60.00	\$8,400	
<u>Transport Cost</u>	<u>(\$10.28)</u>	<u>(\$1,400)</u>	
Gross Value	\$49.72	\$7,000	
<u>Lease Expenditures</u>	<u>(\$39.54)</u>	<u>(\$5,600)</u>	
Production Tax Value	\$10.18	\$1,400	
Tax @ 35%	\$3.56	\$490	 10% x \$490 = \$49 Million
<u>Per-Barrel Credit</u>	<u>\$8.00</u>	<u>(\$490)</u>	
Net Payment	\$0.00	\$0	
Minimum Tax Gross x 4%	\$1.99	\$278	
<u>Higher Of (Actual Tax)</u>	<u>\$1.99</u>	<u>\$278</u>	

Note: Tax calculation simplified for illustration purposes


Illustration of Tax and Credit Calculations

FY 2019 production tax illustration – Preliminary Fall 2017

~169 million taxable barrels

	Per taxable Barrel	Total(\$MM)
Market Price	\$56.00	\$9,500
<u>Transport Cost</u>	<u>(\$9.86)</u>	<u>(\$1,700)</u>
Gross Value	\$46.14	\$7,800
<u>Lease Expenditures</u>	<u>(\$26.58)</u>	<u>(\$4,500)</u>
Production Tax Value	\$19.56	\$3,300
Tax @ 35%	\$6.85	\$1,150
<u>Per-Barrel Credit</u>	<u>\$8.00</u>	<u>(\$1,150)</u>
Net Payment	\$0.00	\$0
Minimum Tax Gross x 4%	\$1.85	\$312
<u>Higher Of (Actual Tax)</u>	<u>\$1.85</u>	<u>\$312</u>

15% x \$1,150 = \$172.5 Million



Note: Tax calculation simplified for illustration purposes

FY 2019 Statutory Credit Appropriation

Key Changes Spring to Preliminary Fall:

➤ Production forecast increased

- 29 million more taxable barrels
- \$800 million more gross value

➤ Cost forecast decreased

- \$1.1 billion less deductible costs

➤ Tax before credits increased

- \$1.9 billion more profit x 35% = \$660 million

➤ Different Statutory Appropriation Multiplier

- Appropriation is 15% of tax before credits when price forecast <\$60, 10% when price forecast is \$60+

Changes from Spring 2017 Revenue Forecast



FORECAST CHANGE: FY 2017 Forecast vs Actuals

	(\$ millions)	
	Received FY 2017	Difference from Spring 2017 forecast
Production Tax	134.4	(55.1)
Royalties	680.9	(49.8)
Corporate Petroleum Income Tax	(59.4)	(182.0)
Property Tax	120.4	4.6
Total Petroleum Revenue	876.3	(282.3)
Non-Petroleum Corporate Income Tax	86.5	(41.5)
Other Non-Oil Revenues	388.8	29.0
Total Non-Oil Revenue	475.3	(12.5)
Total Unrestricted General Fund Revenue	1,351.6	(294.8)

- About \$125 million of “miss” due to transfers to the CBRF from General Fund – prior-year adjustments
- Remaining \$170 million of “miss” due to Corporate Income Tax forecast – primarily oil & gas

FORECAST CHANGE: Production Tax Revenue Highlights

- Oil price forecasts decreased slightly from spring forecast
 - Long-term prices (FY2022+) now expected to settle around \$60 real
- Oil production forecast methods
 - Forecast process by technical experts at DNR improved from last year.
 - Long term forecasts have stabilized.
- Unrestricted revenue forecast increased somewhat mostly due to higher oil production forecast
- Lease expenditures expected to fluctuate over the forecast period due to forecasted new production: Companies have cut costs for existing fields but new fields will add costs
- Companies cited Alaska investment instability and uncertainty regarding the state fiscal system, as factors impacting decision making

FORECAST CHANGE: Comparison from Spring 2017 Forecasts for FY 2018

Fiscal Year 2018	Fall 2017 Forecast	Spring 2017 Fcst w/4% Decline	Variance- Fall to Spring w/4% Decline	Change	Spring 2017 Forecast	Variance - Fall to Spring Forecast	Change
Oil Price (ANS West Coast per barrel)	\$54.00	\$54.00	\$0.00	0%	\$54.00	\$0.00	0%
ANS Oil Production (THS bbls/day)	533.3	502.8	30.5	6%	459.9	73.4	16%
ANS Deductible Lease Expenditures (\$ millions)	\$4,204.8	\$4,979.3	(\$774.4)	-16%	\$4,950.2	(\$745.4)	-15%
Transportation Costs (\$/barrel)	\$9.80	\$9.24	\$0.56	6%	\$9.79	\$0.01	0%
GF Unrestricted Petroleum Revenue (\$ millions)	\$1,317.8	\$1,387.7	(\$69.9)	-5%	\$1,279.0	\$38.8	3%

THS = Thousands; GF = General Fund; Fcst = Forecast

Source: Department of Revenue – Economic Research

FORECAST CHANGE: Comparison from Spring 2017 Forecasts for FY 2019

Fiscal Year 2019	Fall 2017 Forecast	Spring 2017 Fcst w/4% Decline	Variance- Fall to Spring w/4% Decline	Change	Spring 2017 Forecast	Variance - Fall to Spring Forecast	Change
Oil Price (ANS West Coast per barrel)	\$56.00	\$60.00	(\$4.00)	-7%	\$60.00	(\$4.00)	-7%
ANS Oil Production (THS bbls/day)	528.8	482.6	46.2	10%	437.3	91.5	21%
ANS Deductible Lease Expenditures (\$ millions)	\$4,496.2	\$5,580.0	(\$1,083.9)	-19%	\$5,545.3	(\$1,049.1)	-19%
Transportation Costs (\$/barrel)	\$9.86	\$10.15	(\$0.30)	-3%	\$10.28	(\$0.42)	-4%
GF Unrestricted Petroleum Revenue (\$ millions)	\$1,405.6	\$1,476.2	(\$70.6)	-5%	\$1,352.1	\$53.5	4%

THS = Thousands; GF = General Fund; Fcst = Forecast

Fall 2017 Preliminary Total Revenue Forecast



REVENUE FORECAST: 2017 to 2019 Totals

\$ millions	History	Forecast	
Revenue Type	FY 2017	FY 2018	FY 2019
Unrestricted General Fund			
Oil Revenue	876.4	1,317.8	1,405.6
Non-Oil Revenue ⁽¹⁾	457.9	493.2	565.5
Investment Revenue	17.3	23.2	48.0
Total Unrestricted Revenue	1,351.6	1,834.3	2,019.1
Designated General Fund			
Non-Oil Revenue ⁽¹⁾	395.1	412.9	363.0
Investment Revenue	59.4	44.5	36.7
Subtotal	454.5	457.4	399.7
Other Restricted Revenue			
Oil Revenue	822.4	447.3	465.7
Non-Oil Revenue ⁽¹⁾	261.2	303.6	257.3
Investment Revenue ⁽²⁾	6,772.8	3,382.7	3,983.7
Subtotal	7,856.4	4,133.6	4,706.7
Federal Revenue			
Oil Revenue	1.4	4.3	7.2
Federal Receipts ⁽³⁾	2,640.1	3,834.3	3,429.8
Subtotal	2,641.5	3,838.6	3,437.0
Total State Revenue	12,303.9	10,263.9	10,562.5

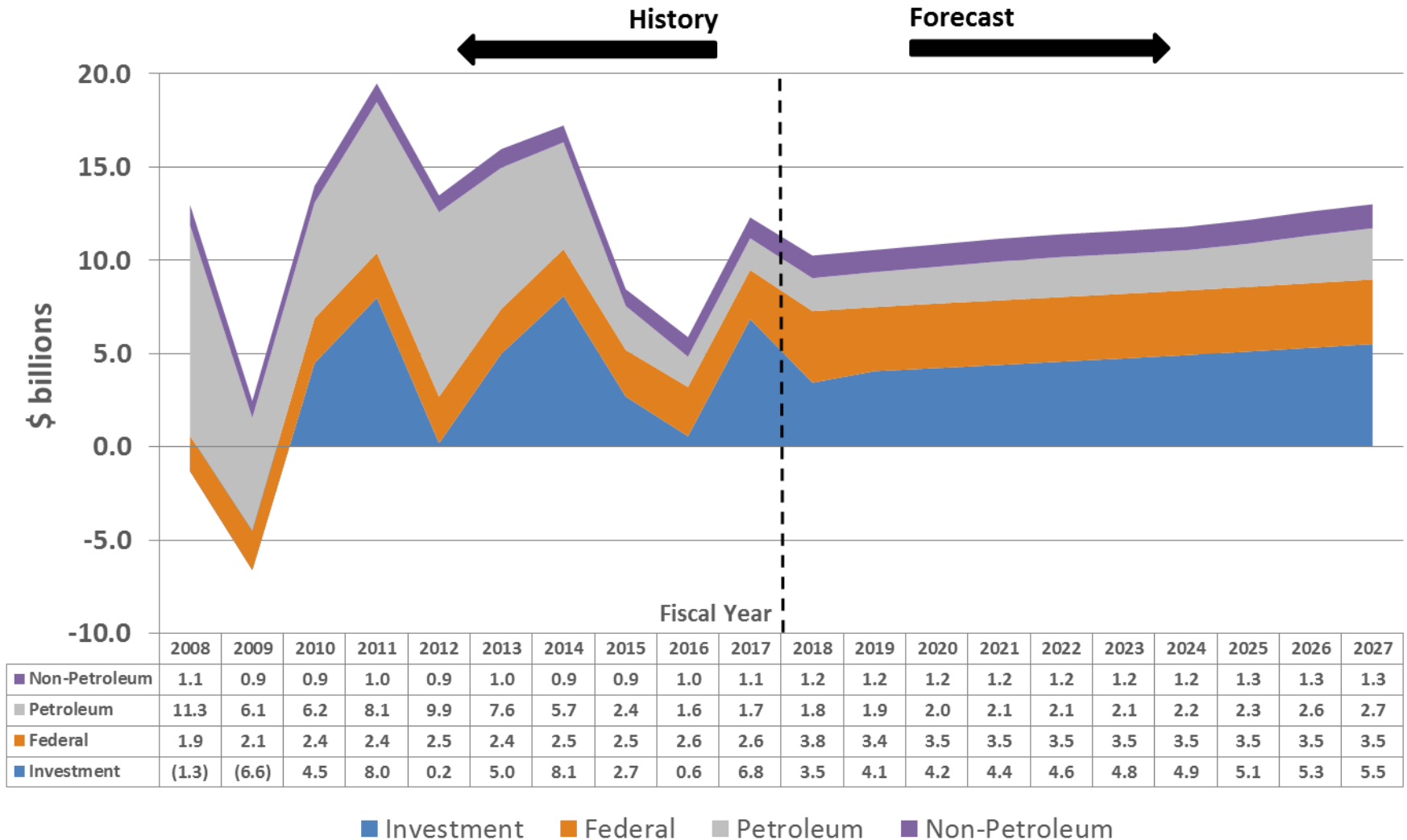
(1) Except Federal and Investment

(2) Investment revenue is primarily Alaska Permanent Fund, based on 6.95% median expected return

(3) Federal Receipt forecasts are based on total authorization, actual revenue typically comes in below forecast

Source: Department of Revenue – Economic Research

REVENUE FORECAST: By Spending Category



Source: Department of Revenue – Economic Research

REVENUE FORECAST: 2017 to 2019 Petroleum Unrestricted Revenue

\$ millions	History		Forecast			
	FY 2017	Percent	FY 2018	Percent	FY 2019	Percent
Unrestricted General Fund Revenue						
Taxes						
Petroleum Property Tax	120.4	13.7%	117.2	8.9%	110.9	7.9%
Petroleum Corporate Income Tax	-59.4	-6.8%	130.0	9.9%	170.0	12.1%
Production Tax	134.4	15.3%	284.6	21.6%	299.8	21.3%
Subtotal Taxes	195.4	22.3%	531.8	40.4%	580.6	41.3%
Royalties						
Mineral Bonuses and Rents	15.5	1.8%	14.1	1.1%	14.1	1.0%
Oil and Gas Royalties	676.2	77.2%	767.7	58.3%	806.7	57.4%
Interest	<u>-10.7</u>	-1.2%	<u>4.2</u>	0.3%	<u>4.2</u>	0.3%
Subtotal Royalties	680.9	77.7%	786.0	59.6%	825.0	58.7%
Total Petroleum Revenue	876.4	100%	1,317.8	100%	1,405.6	100%

Source: Department of Revenue – Economic Research

REVENUE FORECAST: 2017 to 2019 Non-Petroleum Unrestricted Revenue

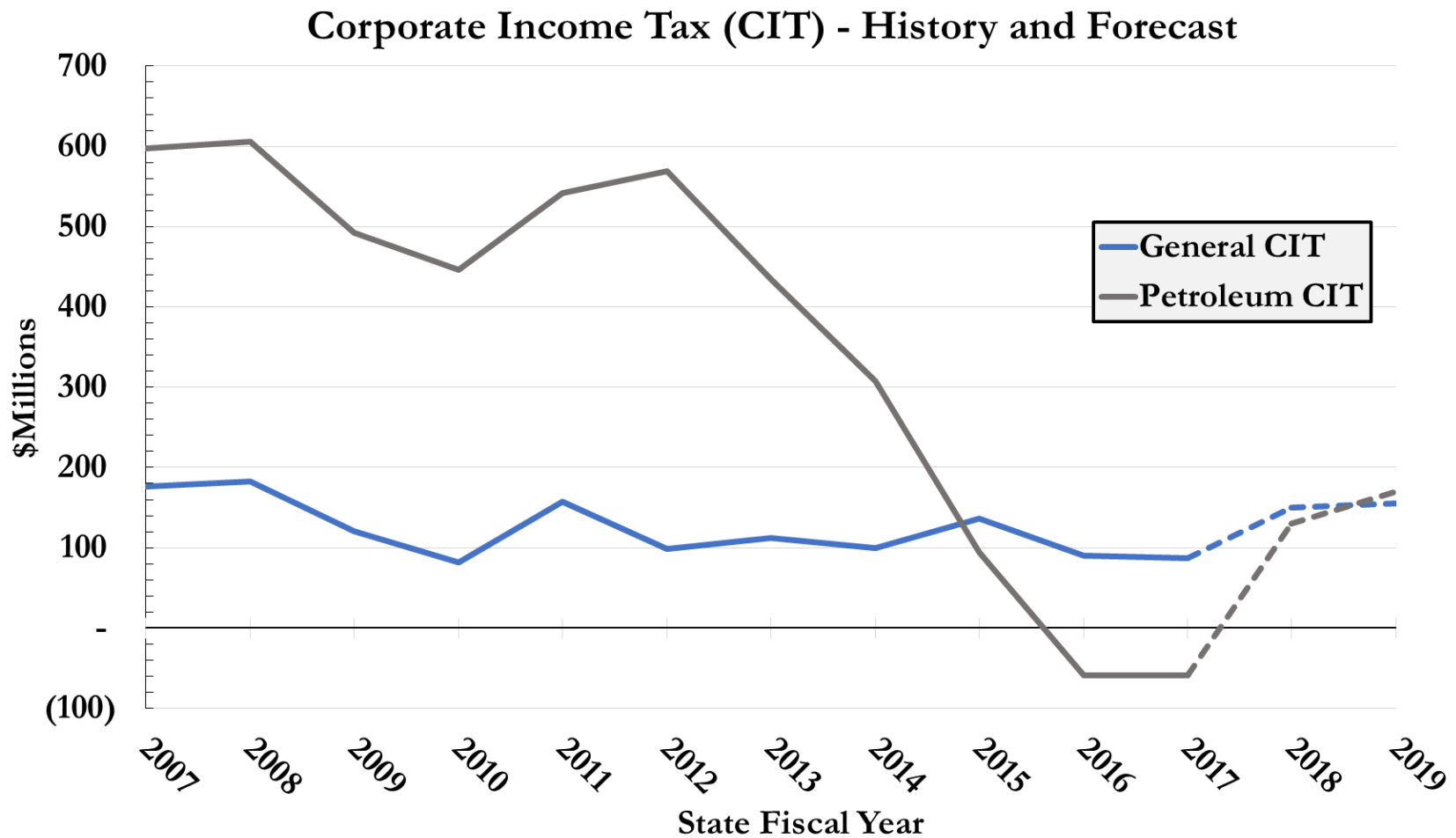
\$ millions	History		Forecast			
	FY 2017	Percent	FY 2018	Percent	FY 2019	Percent
Unrestricted General Fund Revenue						
Taxes						
Non-Petroleum Corporate Income	86.5	18.2%	150.0	29.0%	155.0	25.3%
Mining License Tax	41.4	8.7%	45.8	8.9%	46.4	7.6%
Marijuana	0.9	0.2%	4.6	0.9%	9.0	1.5%
Tobacco	43.4	9.1%	40.8	7.9%	40.7	6.6%
Motor Fuel (Non Aviation)	34.7	7.3%	0.0	0.0%	0.0	0.0%
Motor Fuel (Conservation Surcharge)	6.6	1.4%	6.6	1.3%	6.6	1.1%
Insurance Premium Tax	0.0	0.0%	0.0	0.0%	62.5	10.2%
Other Taxes	52.7	11.1%	57.3	11.1%	58.4	9.5%
Subtotal Taxes	266.2	56.0%	305.1	59.1%	378.6	61.7%
Investments	15.7	3.3%	21.6	4.2%	46.4	7.6%
Other	193.3	40.7%	189.8	36.7%	188.6	30.7%
Total Non-Petroleum Revenue	475.2	100%	516.4	100%	613.5	100%

Source: Department of Revenue – Economic Research

REVENUE FORECAST: Corporate Income Tax

- Challenging to forecast in changing price environment
 - Based on U.S. or worldwide profitability, apportioned to Alaska.
- Estimated payments – lower than expected
 - Expecting a rebound as companies return to profitability
- Refunds – higher than expected
 - Partially due to Net Operating Loss carry-backs
 - Expecting smaller impact going forward (if price remains stable)
- CBRF movement of funds in FY 2017 – unexpected
 - In consultation with Legislative Audit
 - Did not impact cash received but did impact general fund / CBRF split
- Preliminary Forecast: FY 18 \$130 million oil, \$150 million general; FY 19 \$170 million oil, \$155 million general

REVENUE FORECAST: Corporate Income Tax



Source: Department of Revenue – Economic Research

REVENUE FORECAST: Revenue Available for Appropriation

- Useful for outside analysts not familiar with Alaska's budget conventions
- Better reflects ability of state to meet its obligations
 - Alaska has a budget framework that restricts certain revenue based on constitution, statute, of customary practice
 - The ability of the state to meet its obligations is not fully reflected by the General Fund Unrestricted Revenue category
- All revenues subject to appropriation for any purpose can be used by the legislature to fund government services or obligations, including:
 - Constitutional Budget Reserve Fund
 - Earnings Reserve of the Permanent Fund

REVENUE FORECAST: 2017 to 2019 Available for Appropriation

\$ millions	History	Forecast	
Revenue Type	FY 2017	FY 2018	FY 2019
Petroleum Revenue			
Unrestricted General Fund	876.4	1,317.8	1,405.6
Royalties to Alaska Permanent Fund beyond 25% dedication ⁽¹⁾	79.1	58.3	62.1
Tax and Royalty Settlements to CBRF	481.9	100.0	100.0
Subtotal Petroleum Revenues	1,437.4	1,476.2	1,567.7
Non-Petroleum Revenue			
Unrestricted General Fund	457.9	493.2	565.5
Designated General Fund	395.1	412.9	363.0
Royalties to Alaska Permanent Fund beyond 25% dedication ⁽¹⁾	2.5	2.6	3.1
Tax and Royalty Settlements to CBRF	(1.0)	1.4	1.4
Subtotal Non-Petroleum Revenues	854.5	910.1	933.0
Investment Revenue			
Unrestricted General Fund	17.3	23.2	48.0
Designated General Fund	59.4	44.5	36.7
Constitutional Budget Reserve Fund Earnings	94.2	63.3	11.3
Alaska Permanent Fund - Realized Earnings	3,239.0	4,425.0	3,983.0
Subtotal Investment Revenues	3,409.9	4,556.0	4,079.0
Total Revenue Subject to Appropriation	5,701.8	6,942.2	6,579.7

(1) Estimated based on deposit to Permanent Fund minus 25% of total royalties.

WRAP-UP: Changes to 10-Year Unrestricted Revenue Outlook

GF Unrestricted Revenue (\$ millions) – Preliminary Fall 2017 vs Official Spring 2017

	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>
PRELIM Fall 2017	1,352	1,834	2,019	2,070	2,165	2,215	2,231	2,252	2,400	2,631	2,806
Spring 2017 (official)	1,646	1,832	1,920	1,923	1,963	2,028	2,046	2,066	2,144	2,181	2,180
change	-295	2	99	147	203	187	185	186	256	450	627

GF Unrestricted Revenue (\$ millions) – Preliminary Fall 2017 vs Spring 2017 w/ 4% Decline

	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>
PRELIM Fall 2017	1,352	1,834	2,019	2,070	2,165	2,215	2,231	2,252	2,400	2,631	2,806
Spring 2017 (4% Decline)	1,646	1,941	2,044	2,052	2,098	2,160	2,187	2,211	2,300	2,402	2,357
change	-295	-107	-25	18	67	55	44	41	100	229	449

Source: Department of Revenue – Economic Research

GF = General Fund

WRAP-UP: Big Picture Takeaways for Forecast Period

- Oil Prices for FY19+ decreased for the forecast period
 - Current prices trending slightly higher than forecasted price for FY 2018
- Oil Production is forecasted to be steady
 - Includes some new fields on a risked basis.
 - Current production on track with forecast so far for FY 2018
- Petroleum Revenue represents 65 - 74% of our unrestricted revenues over the forecast period
- Unrestricted revenue trend over forecast period (year-over-year):
 - Increases of \$483M in FY 2018 and \$185M in FY 2019
 - Revenue grows 1-5% per year FY 2020-2024 then 7-10% in FY 2025-2027
 - In real terms, GFUR grows ~2.5% per year between FY 2018 and FY 2027
- Structural budget deficit remains

THANK YOU

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