



State of Alaska Department of Revenue

Revenue Sources Book Fall 2016

Fall 2016 Revenue Forecast Presentation

Forecast Released December 15, 2016

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Alaska Department of Revenue



Alaska Department of Revenue

*The mission of the Department of Revenue is to collect,
distribute and invest funds for public purposes*

Major Programs

Tax Division

*Enforces the tax laws of the state;
forecasts, collects and accounts for tax revenues*

Treasury Division

Manages and invests state funds

Permanent Fund Dividend Division

*Administers the PFD program and
distributes the annual dividend payment to eligible Alaskans*

Child Support Services Division

Collects and distributes child support to custodial parents

FORECASTING METHODS: Trends for Forecast Period

- Oil Price is projected to increase 7% on average over the forecast period (FY 2017-2026)
- Oil Production is projected to decrease 4% on average over the forecast period
- Unrestricted General Fund Revenue is projected to increase 5% on average over the forecast period
- Investment Income is projected to increase 5% on average over the forecast period
- Total State Revenue is projected to increase 2% on average over the forecast period

FORECASTING METHODS: Introduction

- All data is based on the DOR Fall 2016 Forecast.
- 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, therefore, subject to uncertainties and actual results will differ, potentially materially, from those anticipated.
- This forecast supersedes all prior estimates or forecasts as the official forecast of the department. Therefore, all prior forecasts should be used only for comparison purposes.

FORECASTING METHODS: What Do We Forecast at DOR?

- We directly forecast **Petroleum Revenue**
 - Accounted for 72% of state unrestricted revenue in FY 2016
 - Projected to be 67-68% in FY 2017 and FY 2018
 - Includes severance taxes, royalties, corporate income tax, and all other revenue from oil companies
- We directly forecast **Non-Petroleum Revenue**
- We use investment advisor 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

Fall 2016 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 2016 Production Forecast

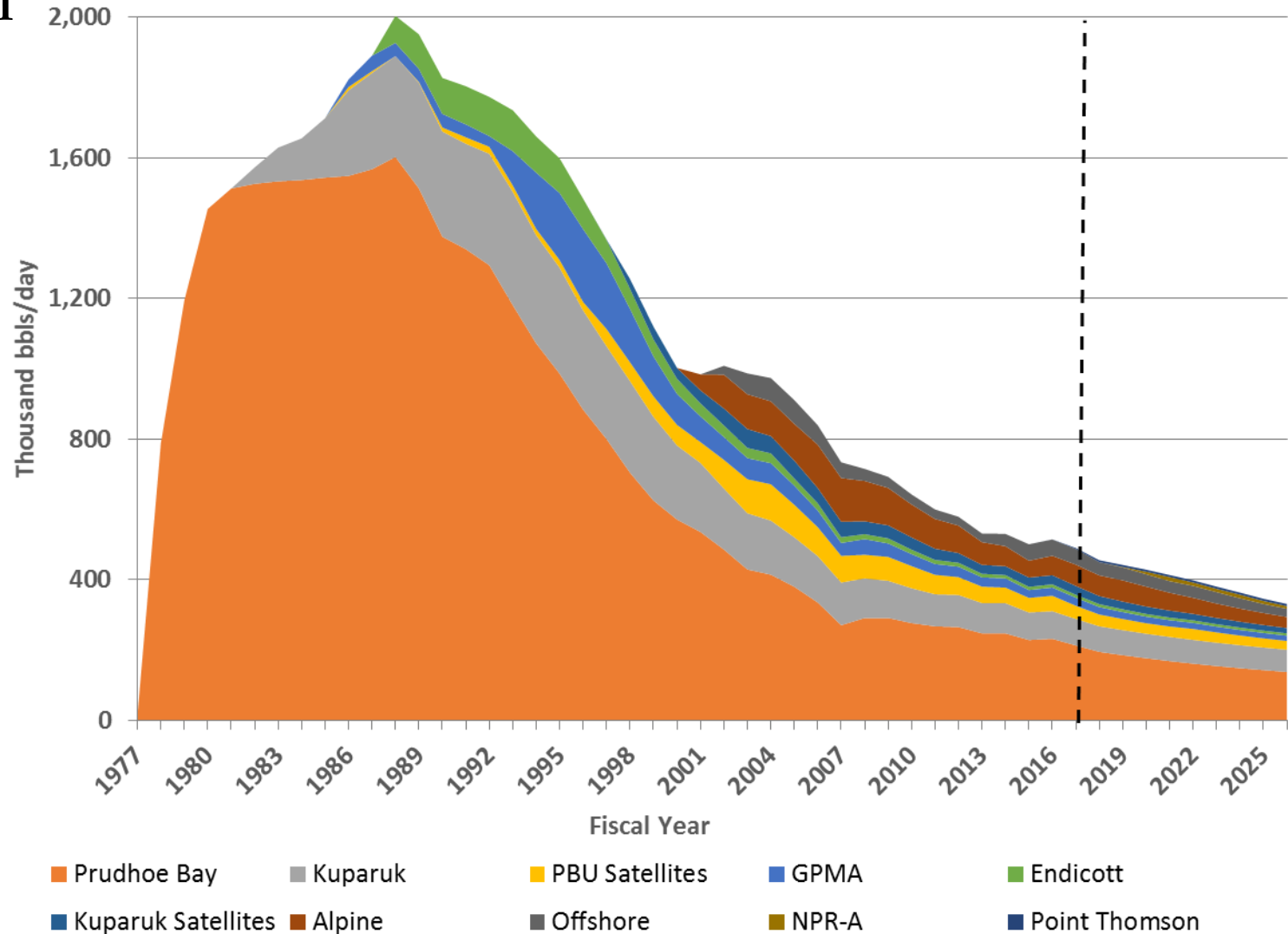


PRODUCTION FORECAST: Methods Used

COMPONENT	2011 – 2016	2016 – PRESENT
Forecast Level	Well-by-Well Forecast	Pool Level Forecast
Uncertainty Handling	Deterministic	Probabilistic
Risking	Unrisked CP First attempts in UD/UE risking in 2013 Fall Forecast	Probabilistic technical and Non Technical risk
Type Wells	Some type wells	Pool-by-Pool type wells
Oil Price Dependency	None	Some dependence on price
UD Production	10-Year Outlook	1-Year Outlook (1)
UE Production	10-Year Outlook	5-Year Outlook (1)

(1) No fields were removed from the forecast by the change in time horizon; this simply sets the benchmark for future inclusion of new developments.

PRODUCTION FORECAST: ANS History and Forecast by Pool



Source: Department of Revenue - Revenue Sources Book Fall 2016

PRODUCTION FORECAST: Currently Producing

Volumes from Currently Producing (CP):

- Oil from all currently producing pools and wells
- Decline curve analysis forecast at pool level inherently includes 'background' ongoing development activity, facility maintenance, turn-around events

PRODUCTION FORECAST: Under Development

Volumes from Under Development (UD):

- Ongoing development wells in existing, mature fields above and beyond CP
- New fields expected to produce within 1 year (by 6/30/2017)

PRODUCTION FORECAST: Under Evaluation

Volumes from Projects Under Evaluation (UE):

- New fields expected to produce within 2-5 years (7/1/2017 to 6/30/2021)
- UE 1: Facilities in place, significant sunk cost, well locations finalized, drilling plans in place
 - Examples: Nuna, GMT1, Mustang, Moraine, 1H NEWS, Nuiqsut expansion
- UE 2: Facility-sharing agreements in place, source of funding identified, EIS progress
 - Example: GMT2
- Risk factors internalized in forecast based on breakeven price

PRODUCTION FORECAST: Excluded from Forecast

Characteristics:

- Unknown first-oil date/estimated greater than 5 years
- Discovery (contingent resource) or just prospects (prospective resource)
- Uncertain finances (e.g., sourcing for private equity)
- Facilities incomplete or nonexistent
- Projects in Appraisal
- Technological Uncertainty
- Environmental/Permitting Uncertainty
- Economic Uncertainty

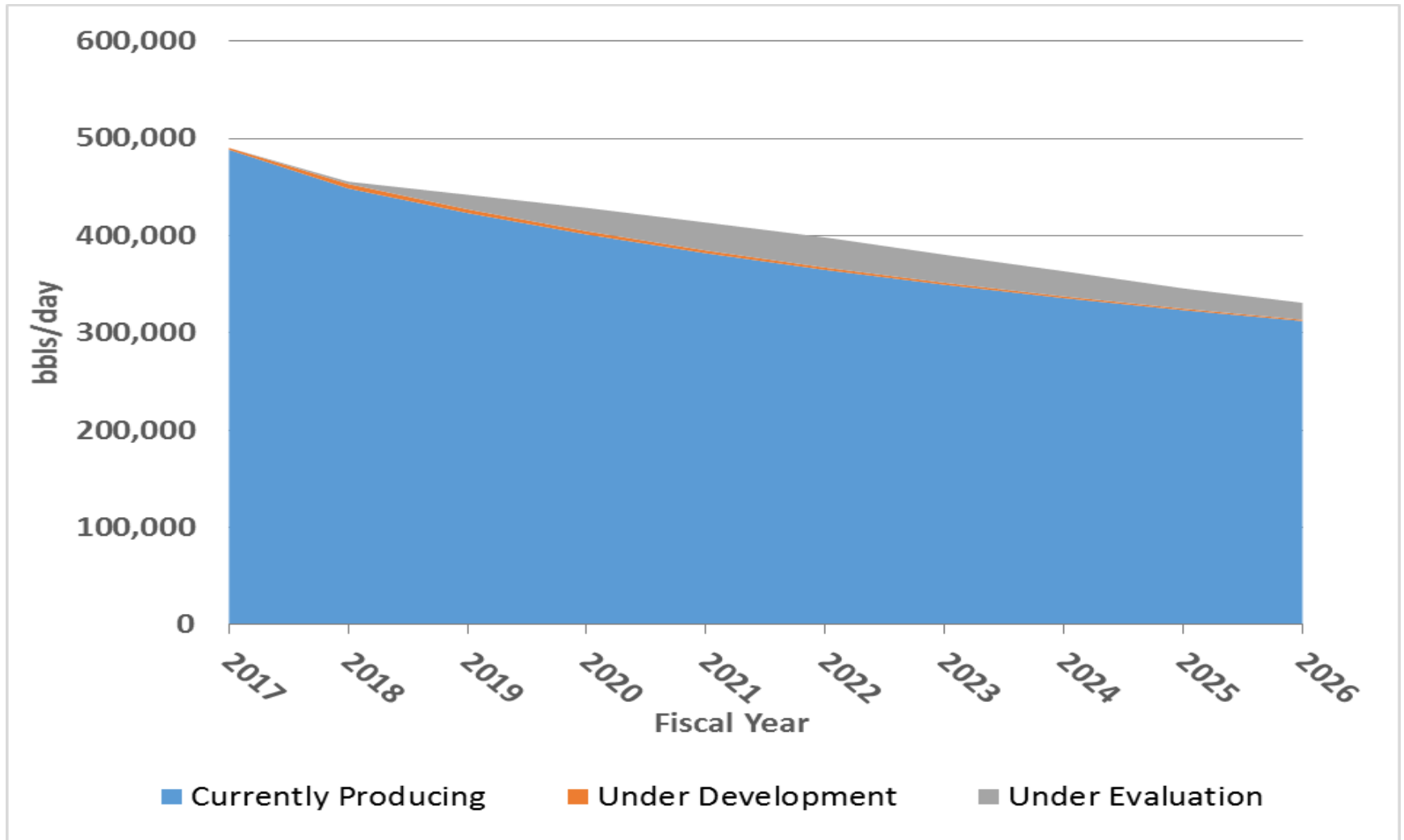
Examples: Pikka, Ugnu, Placer, Tofkat, Pt Thomson (MGS or full-cycling), Liberty, Fiord West, Smith Bay

PRODUCTION FORECAST

OFFICIAL FORECAST =

**Currently Producing + Under
Development + Under Evaluation**

PRODUCTION FORECAST: ANS



Source: Department of Revenue - Revenue Sources Book Fall 2016

PRODUCTION FORECAST: DOR Cases

➤ High Case (P10):

- Based on DNR modeling, oil production would have a 10% probability of exceeding this level

■ Official Forecast (P50):

- Based on DNR modeling, oil production would have an equal probability of coming in above or below this level

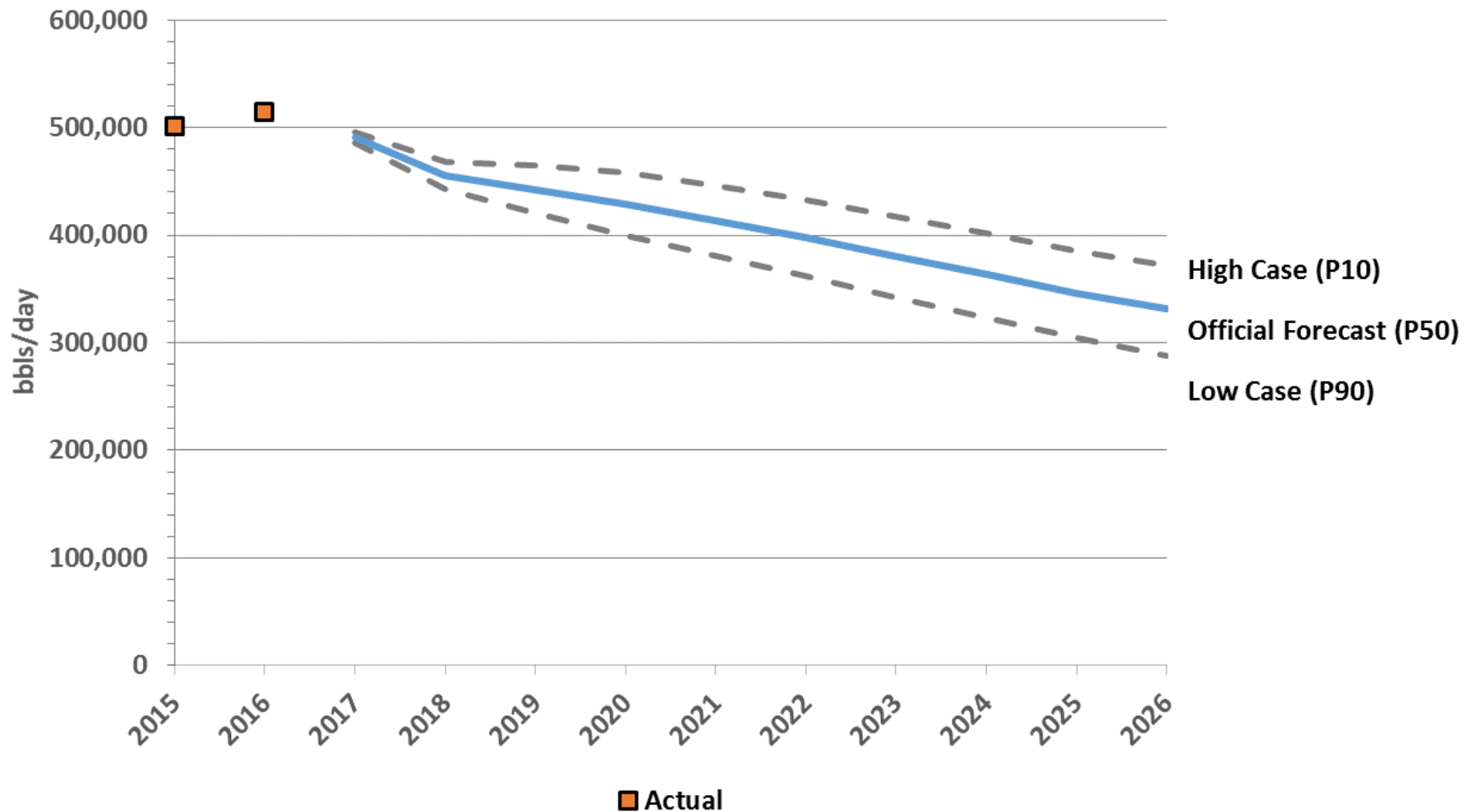
➤ Low Case (P90):

- Based on DNR modeling, oil production would have a 90% probability of exceeding this level.=

➤ Note: None of the cases include any of the “Excluded from forecast window” fields

- With these fields, production could exceed the high case

PRODUCTION FORECAST: ANS by Case

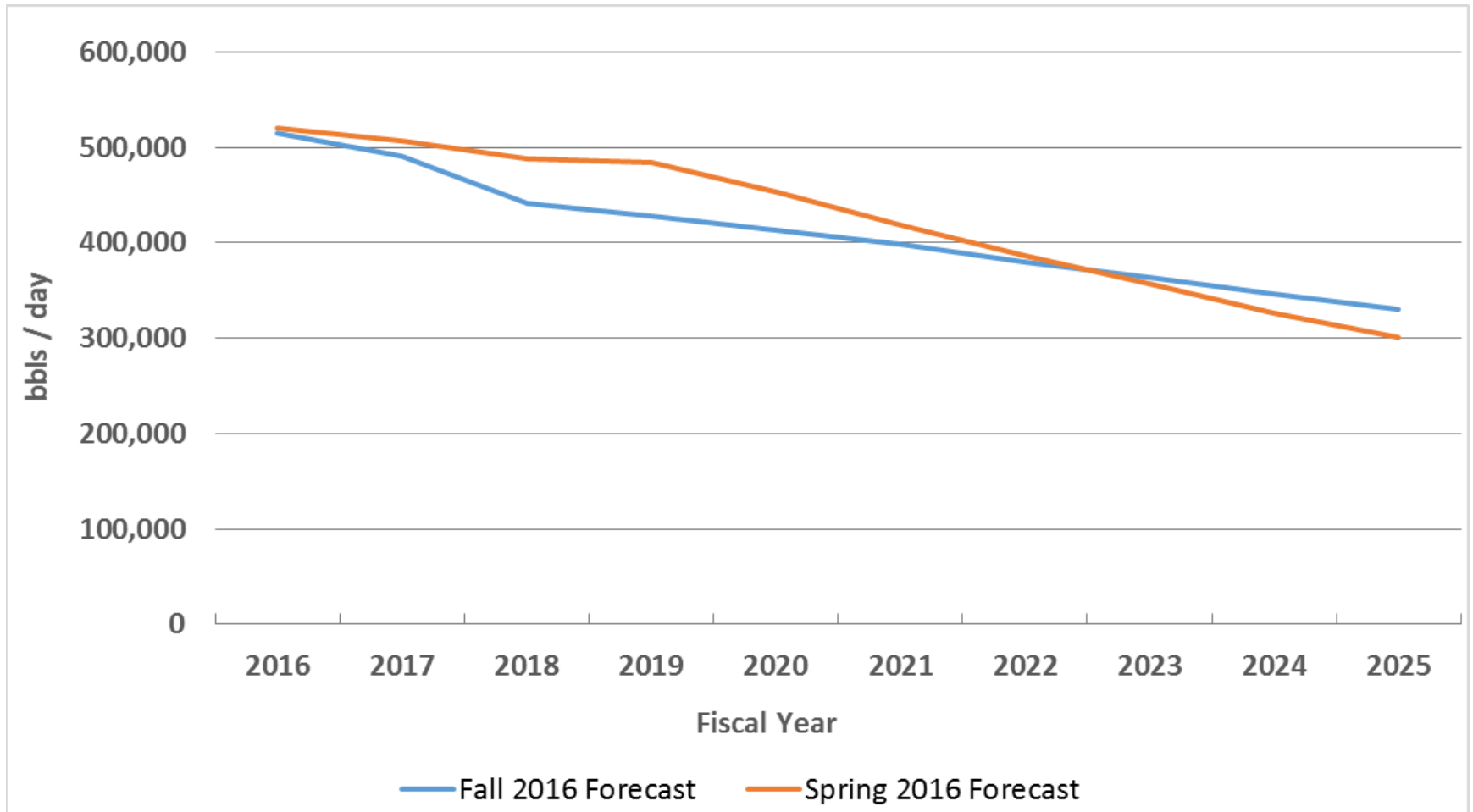


PRODUCTION FORECAST: ANS Details

Fall 2016 ANS Oil Production Forecast

	(bbls/day)									
Fiscal Year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Low Case (P90)	485,437	443,130	420,468	399,452	380,773	362,396	342,498	323,061	304,545	288,085
Decline Rate	-6%	-9%	-5%	-5%	-5%	-5%	-5%	-6%	-6%	-5%
Official Forecast (P50)	490,289	455,550	442,100	428,564	413,481	398,226	380,352	363,447	345,867	330,973
Decline Rate	-5%	-7%	-3%	-3%	-4%	-4%	-4%	-4%	-5%	-4%
High Case (P10)	495,504	467,715	464,292	457,841	446,209	432,753	417,186	402,099	385,324	371,733
Decline Rate	-4%	-6%	-1%	-1%	-3%	-3%	-4%	-4%	-4%	-4%
GVR Eligible under Official Forecast	41,771	40,051	43,025	48,430	50,465	49,255	29,116	11,208	4,697	-
% GVR Eligible under Official Forecast	9%	9%	10%	11%	12%	12%	8%	3%	1%	0%

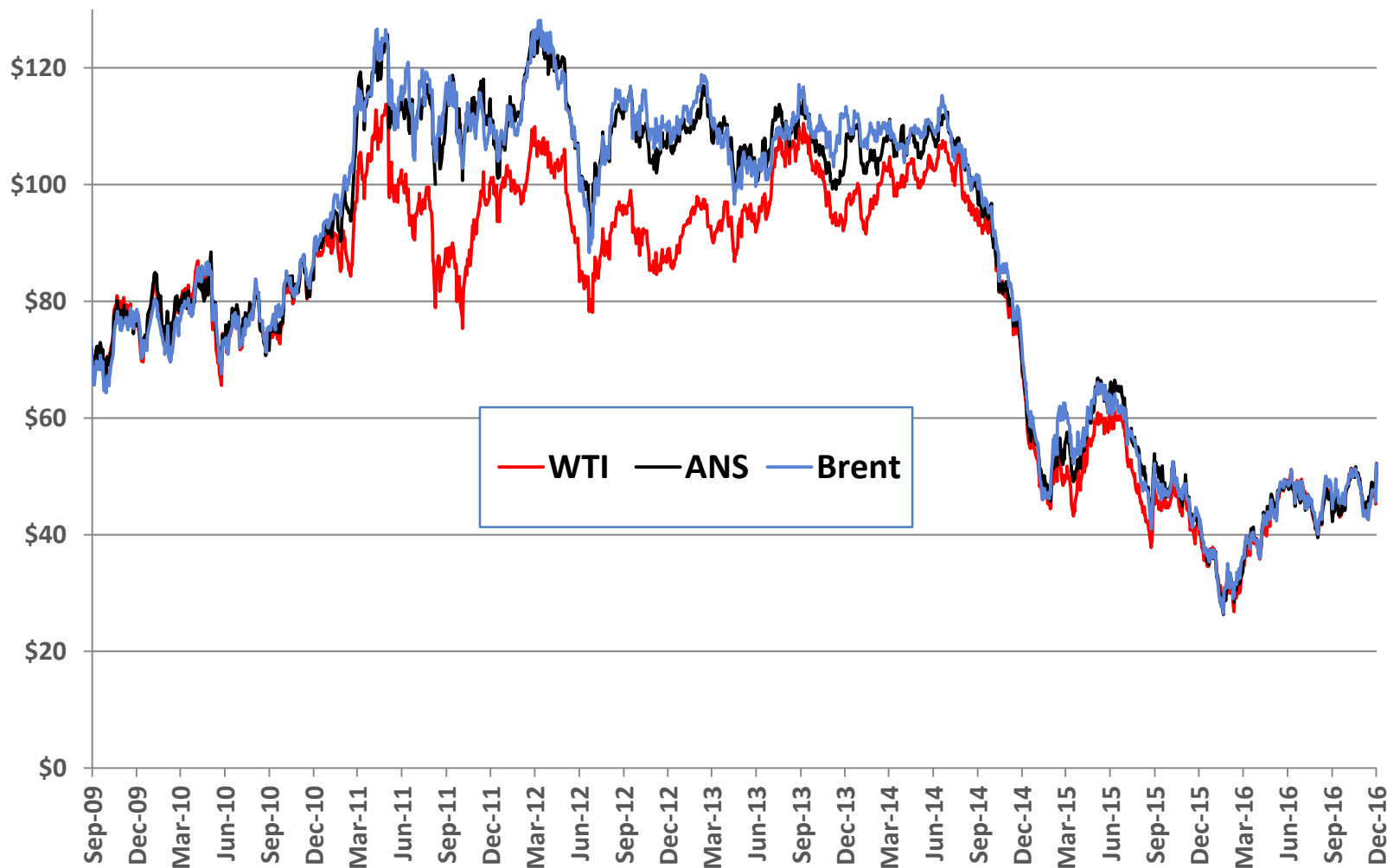
PRODUCTION FORECAST: ANS Comparison to Prior Forecast



Fall 2016 Price Forecast



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



Source: Platts

PRICE FORECAST: Key Drivers

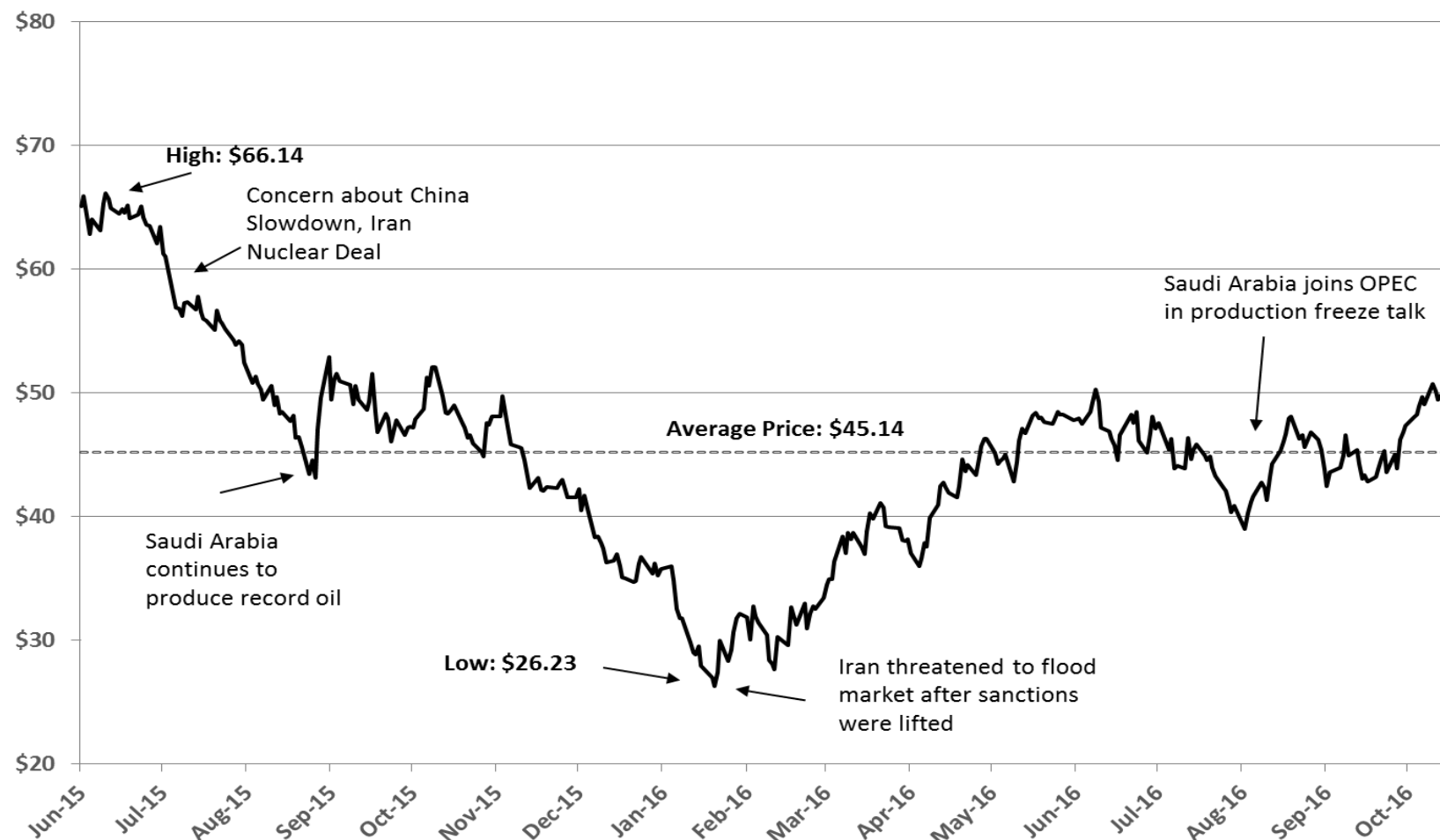
➤ Supply, Demand and Spare Capacity in CY 2017

- Supply – 97.4 mb/d
- Demand – 96.9 mb/d
- Global Spare Capacity – 1.17 mb/d or 1.2%

➤ Current Events

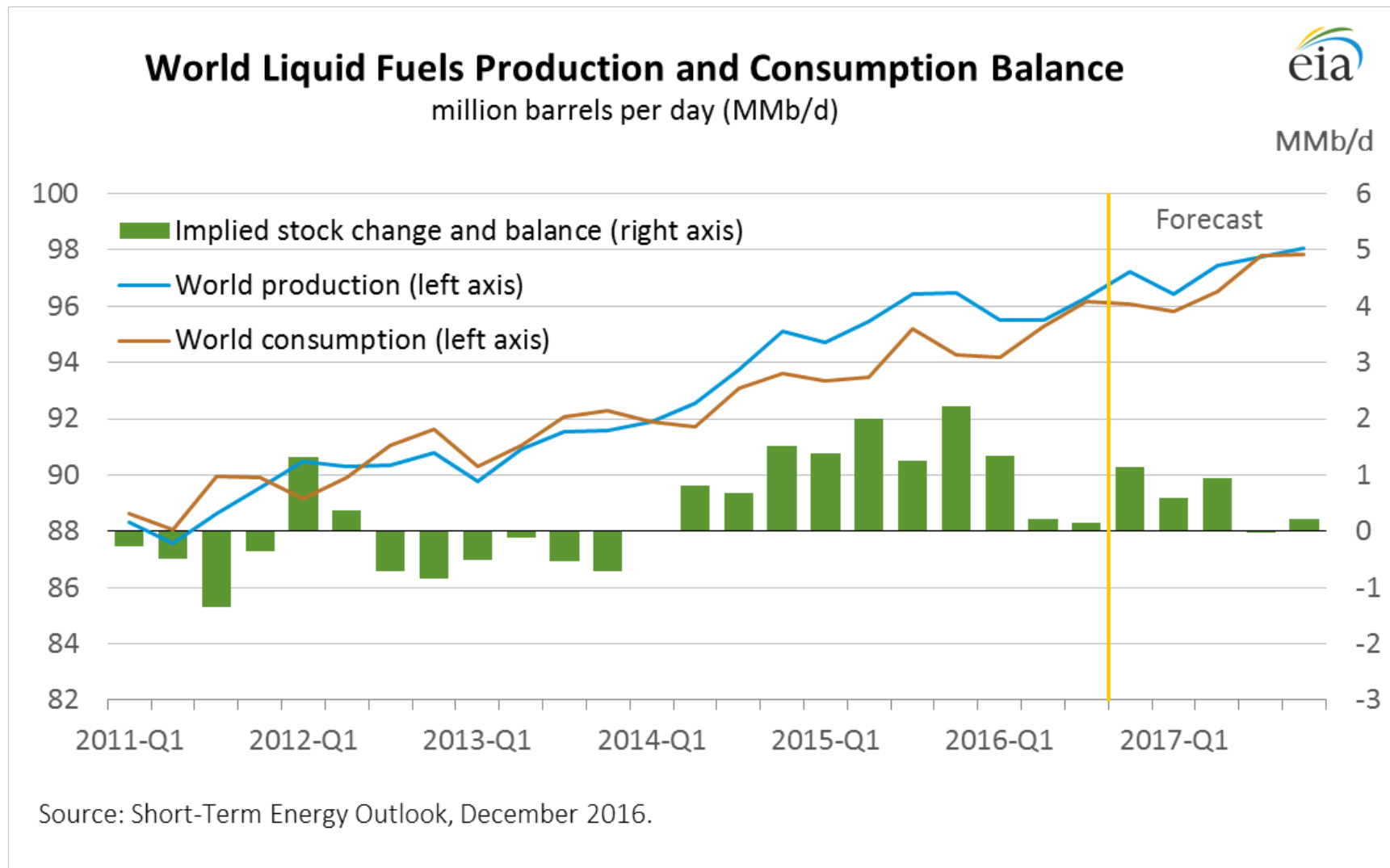
- Weak global demand growth
- Cost of supplying the marginal barrel has decreased
- OPEC (Saudi Arabia) maintains market share and accepts lower prices
 - OPEC recently agreed to cut supply
- Cost of supply has fallen as new sources have been defined and developed (i.e. Shale oil)

PRICE FORECAST: Historical ANS West Coast Price 2015+



Source: Department of Revenue – Economic Research

PRICE FORECAST: Impact of Spare Capacity

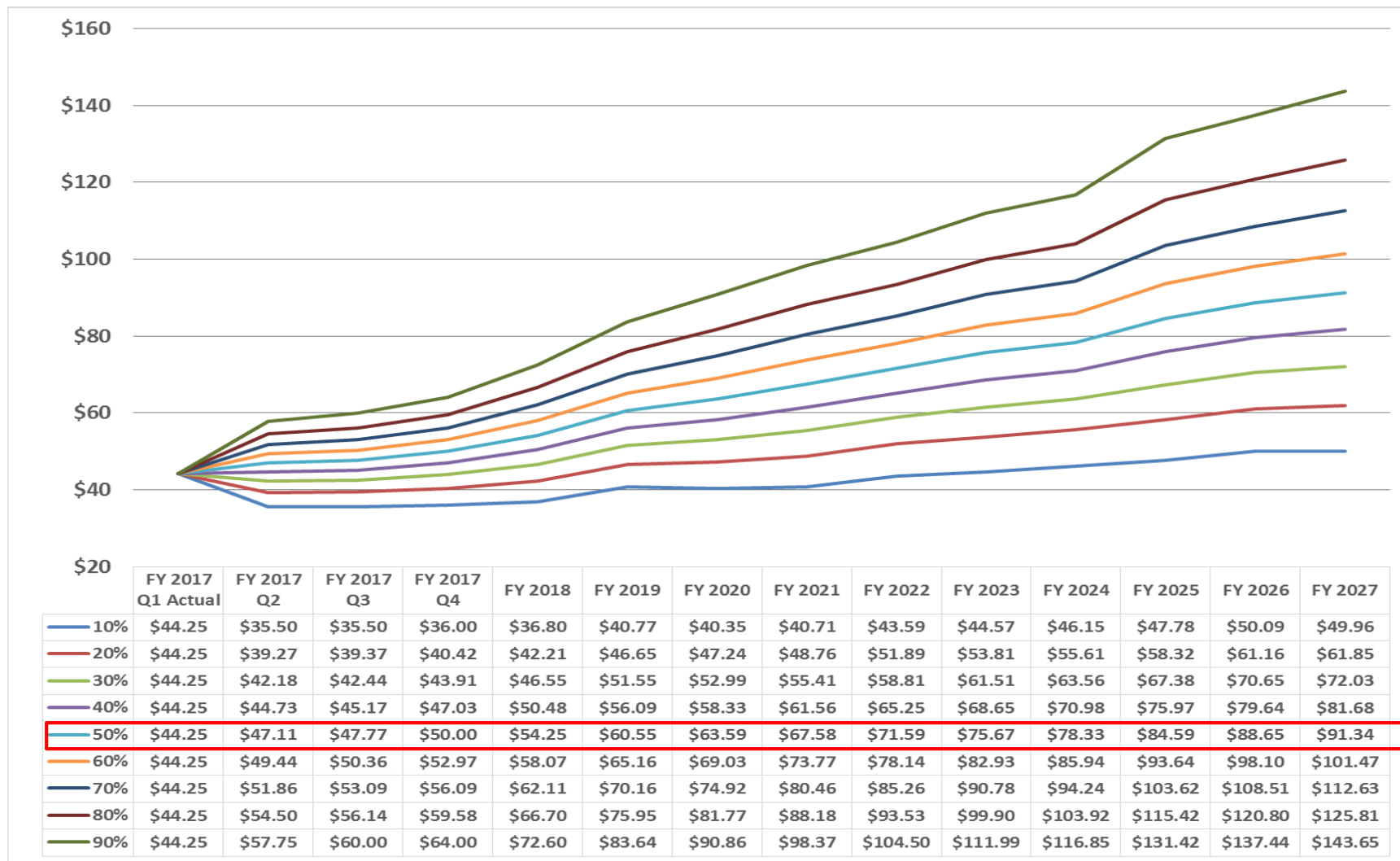


Source: Energy Information Agency

PRICE FORECAST: Base Price Method

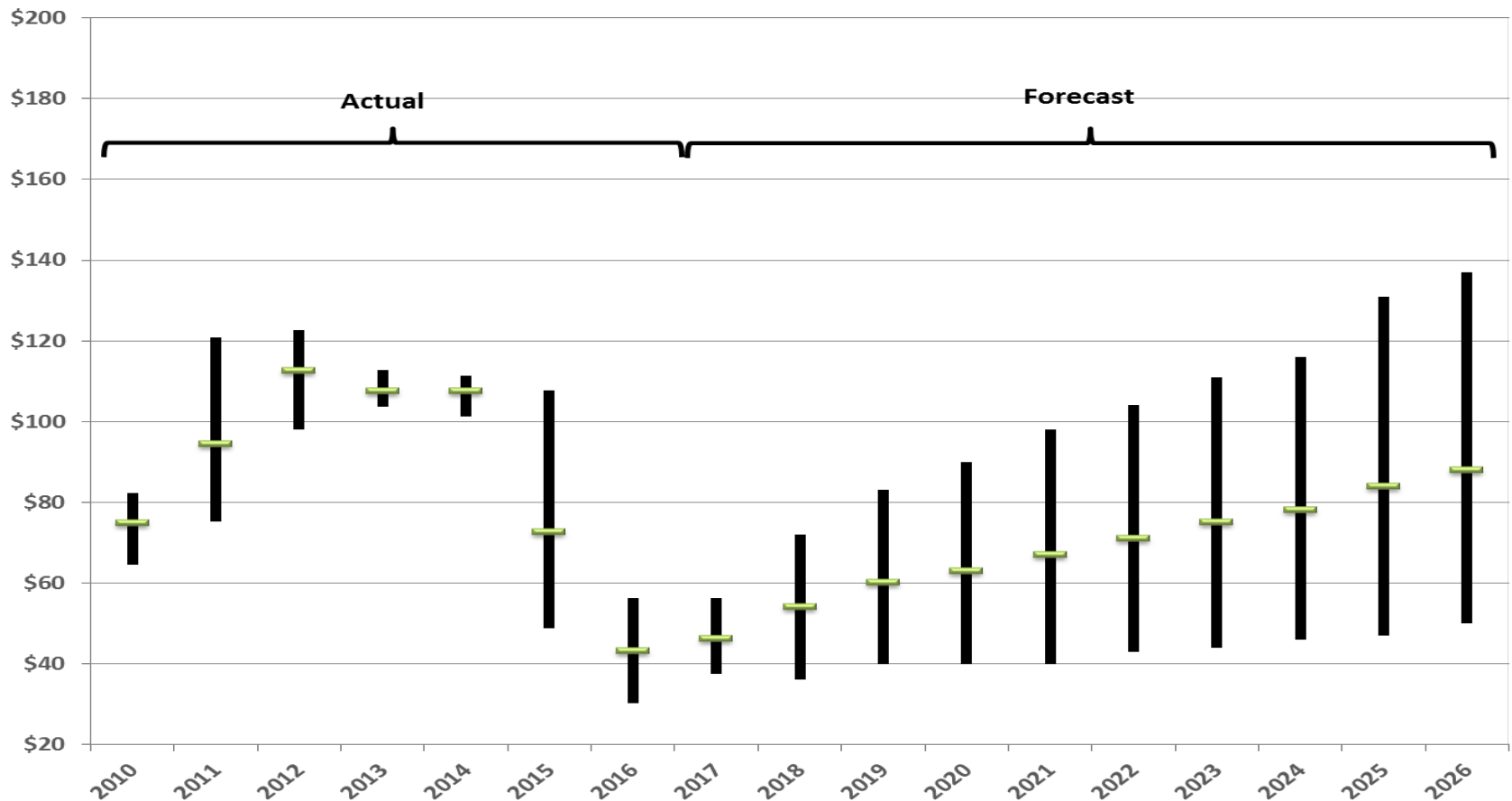
- Price forecast is based on fall 2016 forecasting session held on October 4
- Participants gave 10th, 50th, and 90th percentile paths
- Average of these paths used to derive PERT distribution
- Base case is the median of the distribution

PRICE FORECAST: Nominal ANS Price Distribution



Note: Forecasted price has been rounded down to the nearest dollar

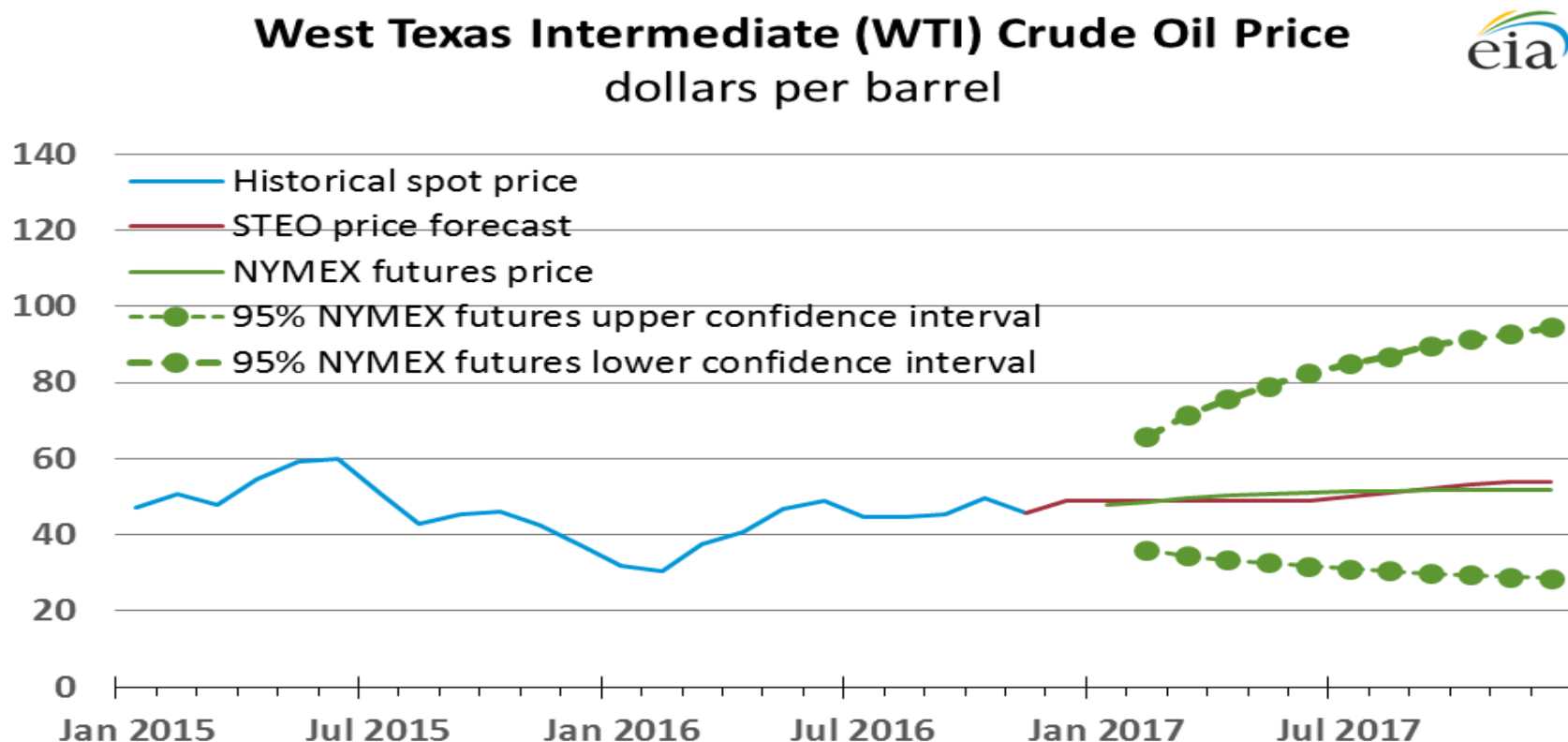
PRICE FORECAST: Historical ANS West Coast Price FY Oil Price Bands (Annual Average and Fall 2016 Forecast)



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 Dec 1, 2016. Intervals not calculated for months with sparse trading in near-the-money options contracts.

Source: Short-Term Energy Outlook, December 2016.

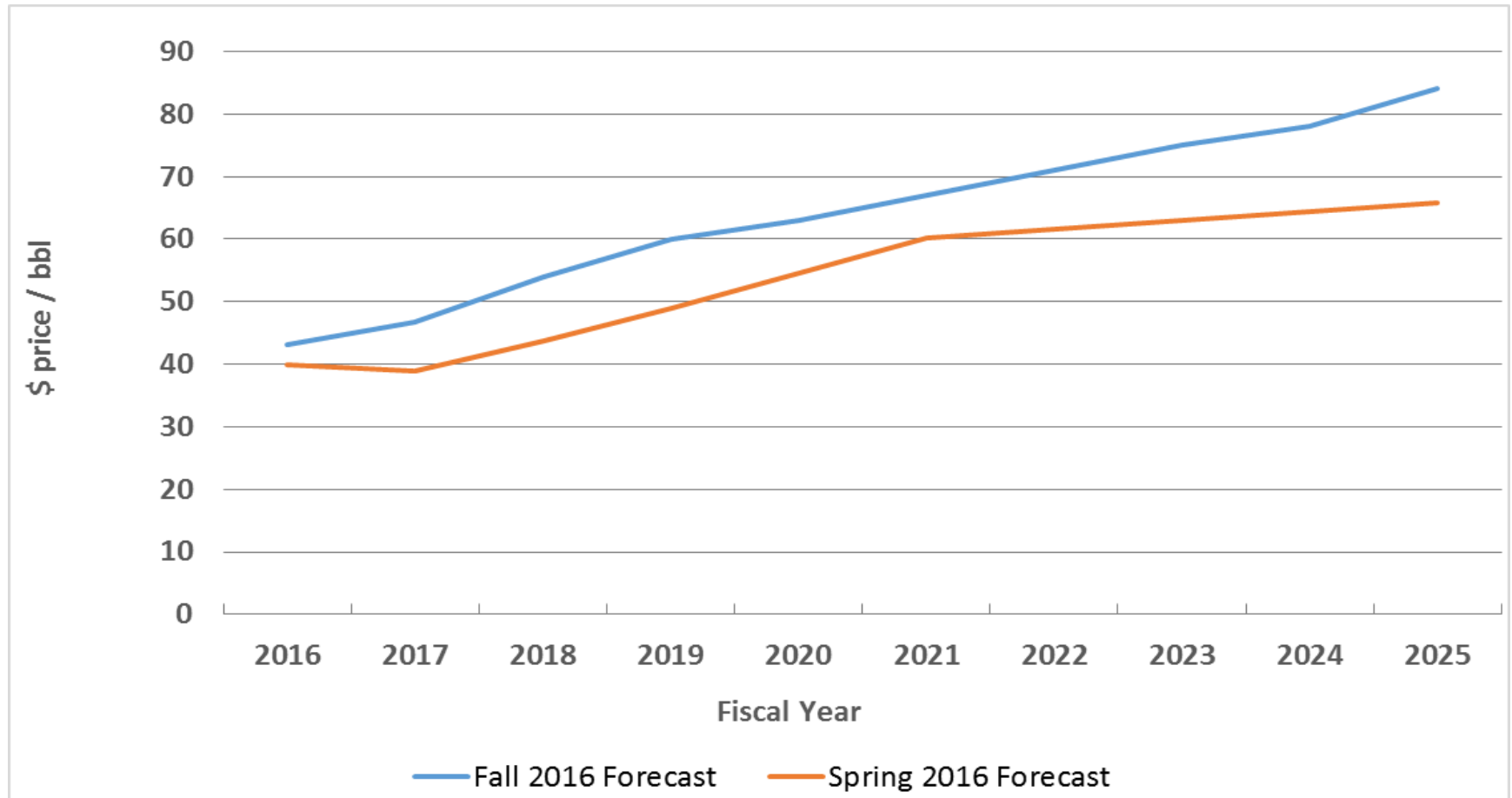
PRICE FORECAST: Impact of other prices in FY 2017

ANS Price Sensitivity

"What if price is..."	\$ 70	\$ 65	\$ 60	\$ 55	\$ 50	\$ 45	\$ 40	\$ 35	\$ 30
7/1/2016	44.07	44.07	44.07	44.07	44.07	44.07	44.07	44.07	44.07
8/1/2016	44.17	44.17	44.17	44.17	44.17	44.17	44.17	44.17	44.17
9/1/2016	44.51	44.51	44.51	44.51	44.51	44.51	44.51	44.51	44.51
10/1/2016	49.43	49.43	49.43	49.43	49.43	49.43	49.43	49.43	49.43
11/1/2016	45.97	45.97	45.97	45.97	45.97	45.97	45.97	45.97	45.97
12/1/2016	70.00	65.00	60.00	55.00	50.00	45.00	40.00	35.00	30.00
1/1/2017	70.00	65.00	60.00	55.00	50.00	45.00	40.00	35.00	30.00
2/1/2017	70.00	65.00	60.00	55.00	50.00	45.00	40.00	35.00	30.00
3/1/2017	70.00	65.00	60.00	55.00	50.00	45.00	40.00	35.00	30.00
4/1/2017	70.00	65.00	60.00	55.00	50.00	45.00	40.00	35.00	30.00
5/1/2017	70.00	65.00	60.00	55.00	50.00	45.00	40.00	35.00	30.00
6/1/2017	70.00	65.00	60.00	55.00	50.00	45.00	40.00	35.00	30.00
Forecast Price	\$ 59.85	\$ 56.93	\$ 54.01	\$ 51.10	\$ 48.18	\$ 45.26	\$ 42.35	\$ 39.43	\$ 36.51

Source for actuals: Prevailing Values, DOR Tax Division website

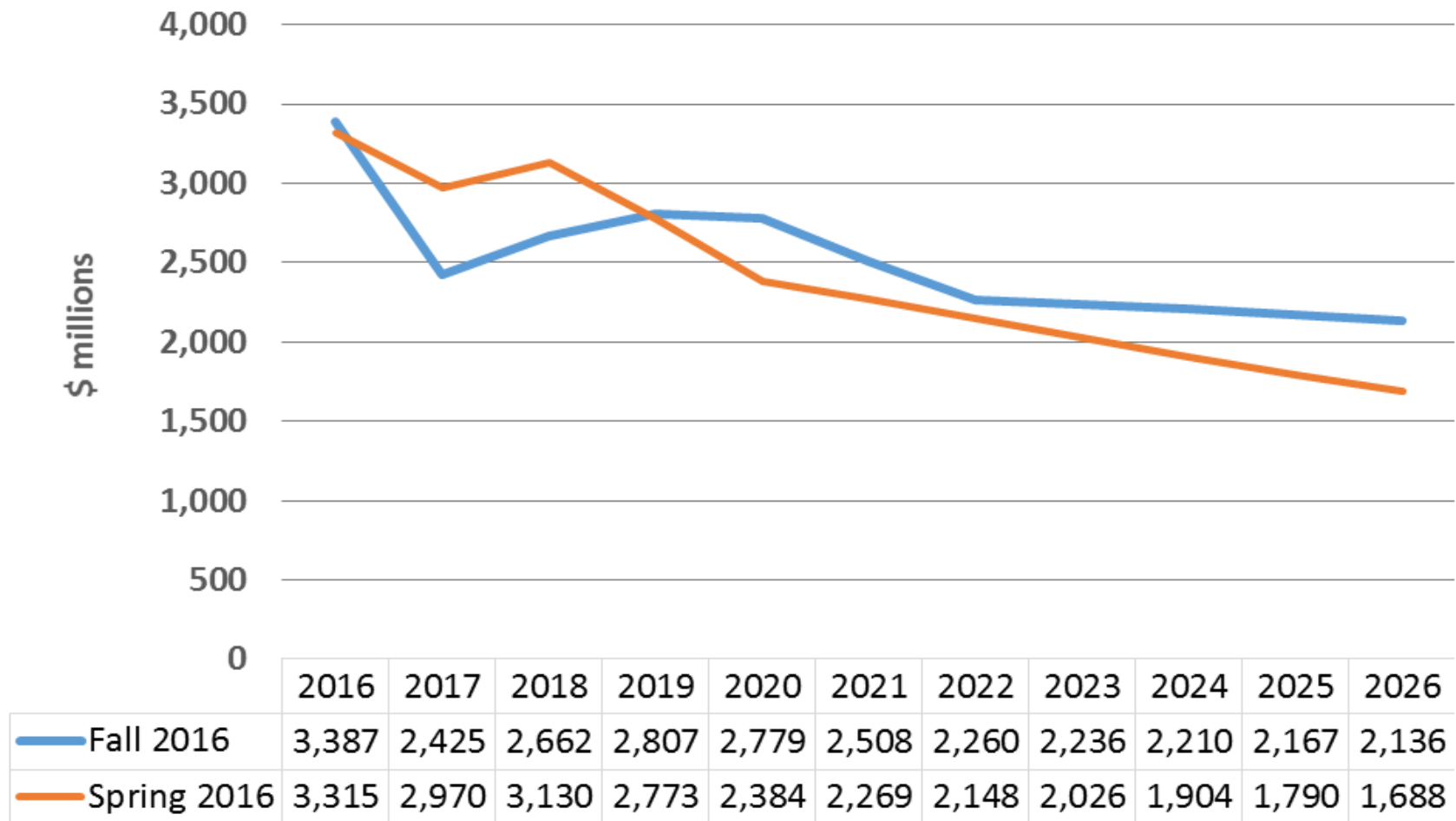
PRICE FORECAST: ANS Comparison to Prior Forecast



Fall 2016 Cost Forecast



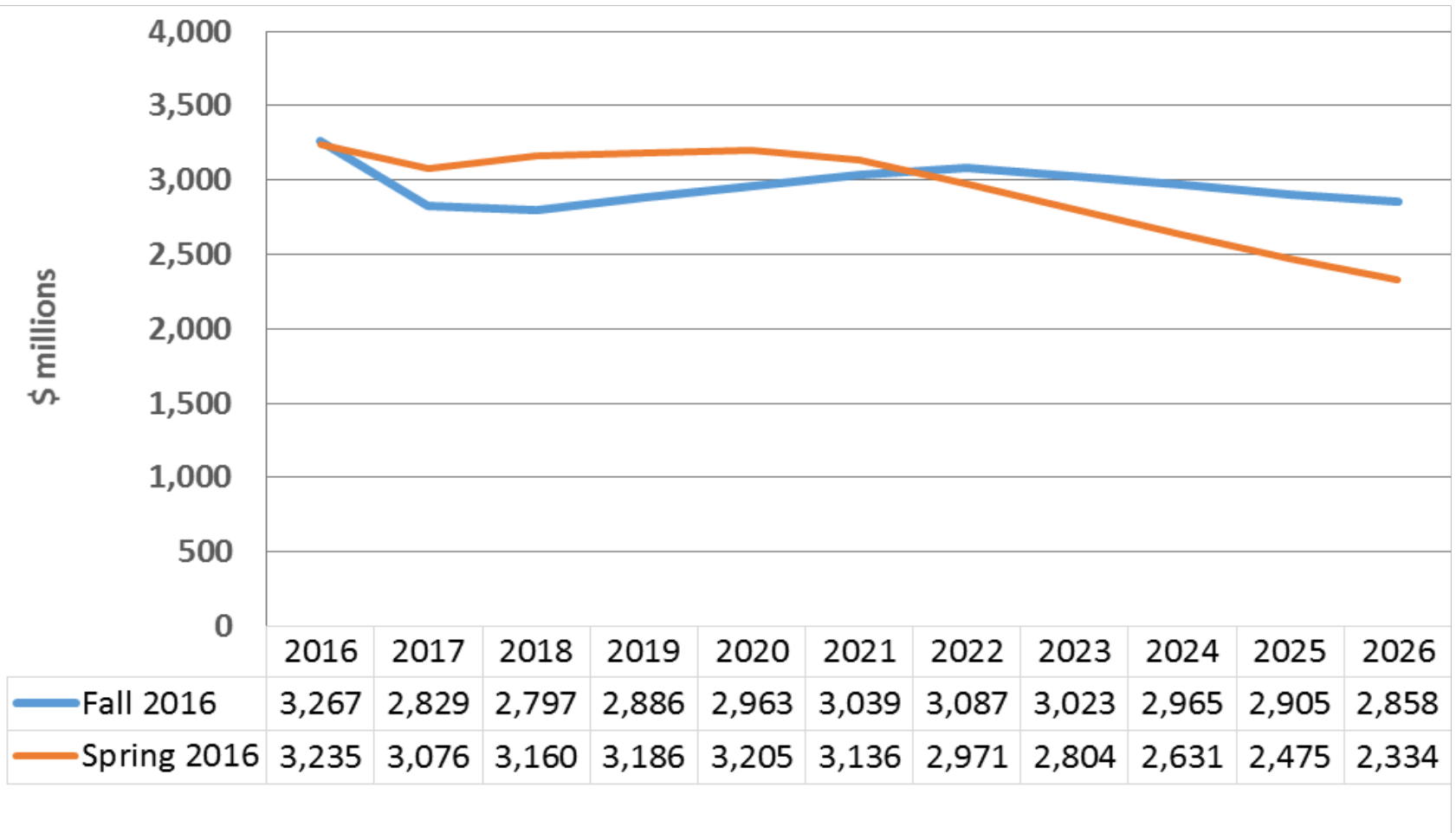
COST FORECAST: North Slope Capital Lease Expenditures



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

Source: Department of Revenue - Revenue Sources Book Fall 2016 and Spring 2016

COST FORECAST: North Slope Operating Lease Expenditures



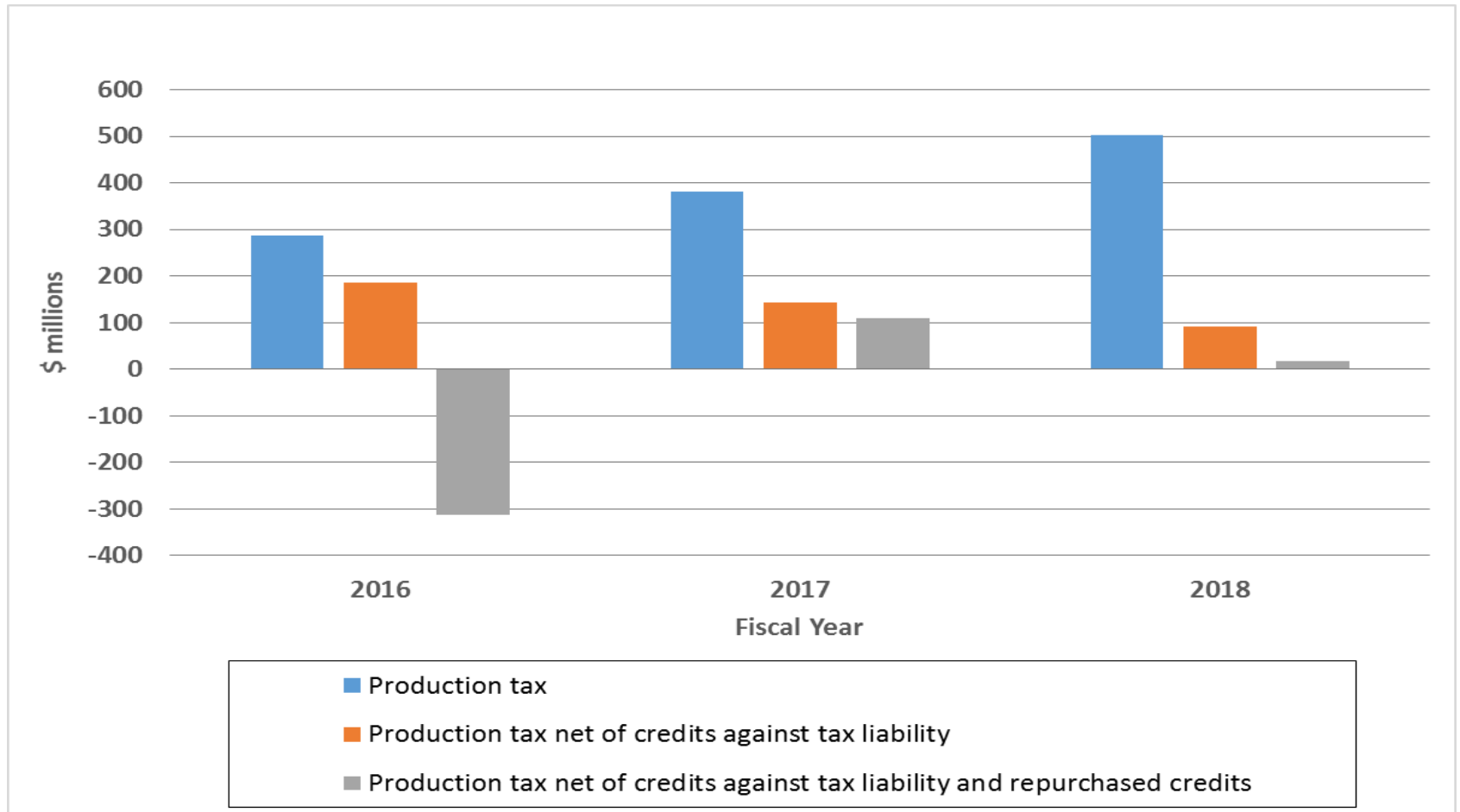
Note: These estimates include lease expenditures by companies that are not expected to have a tax liability.

Source: Department of Revenue - Revenue Sources Book Fall 2016 and Spring 2016

Fall 2016 Credits Forecast



CREDITS FORECAST: Compared with Production Tax

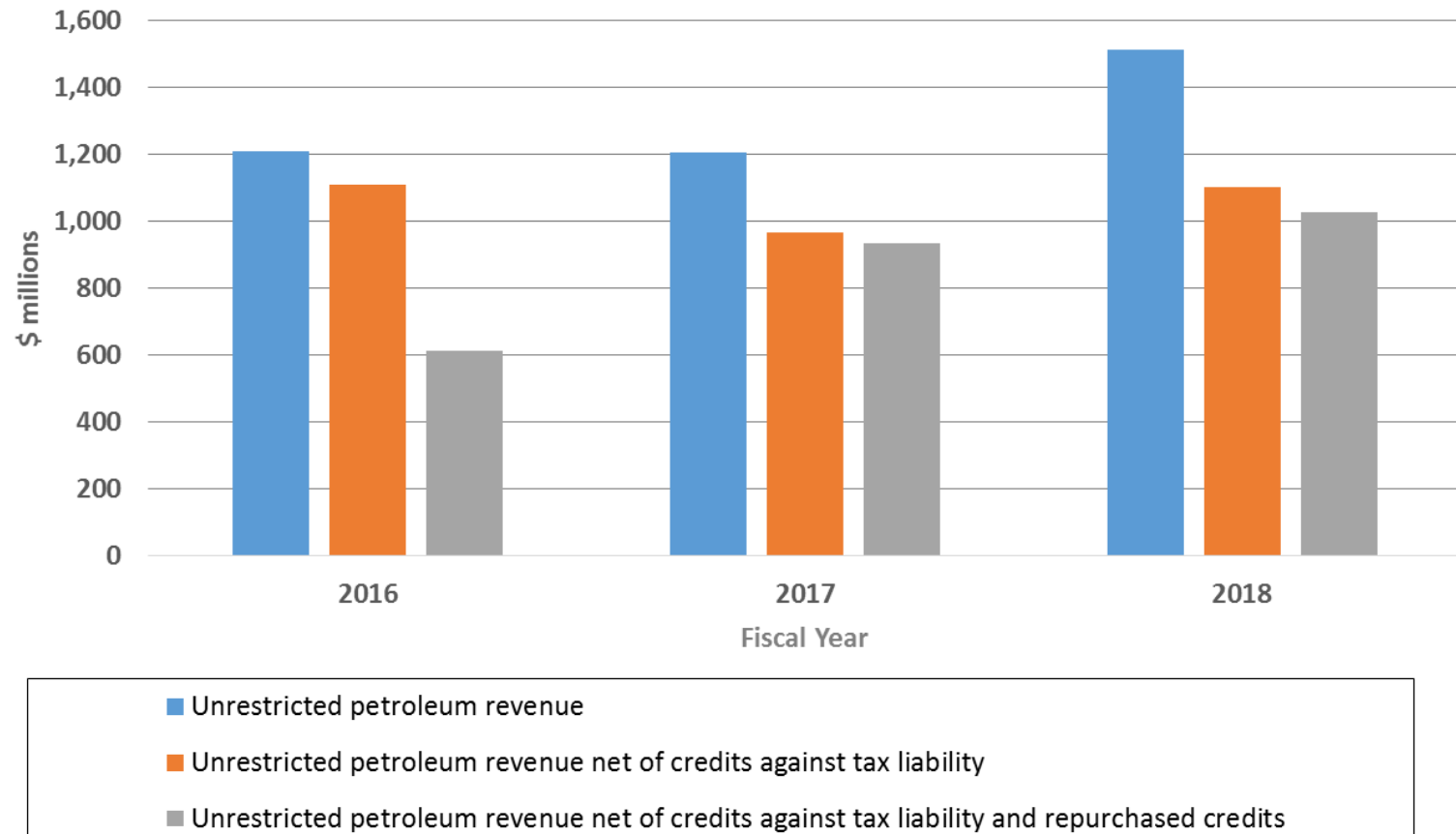


Notes: Repurchased credits for FY 2016 and FY 2017 include only credits actually repurchased during those years.

Repurchased credits for FY 2018 represents the statutory appropriation of \$74 million.

Under this scenario, estimated credits available for repurchase are \$646 million at end of FY17 and \$887 million at end of FY18.

CREDITS FORECAST: Compared with Unrestricted Petroleum Revenue

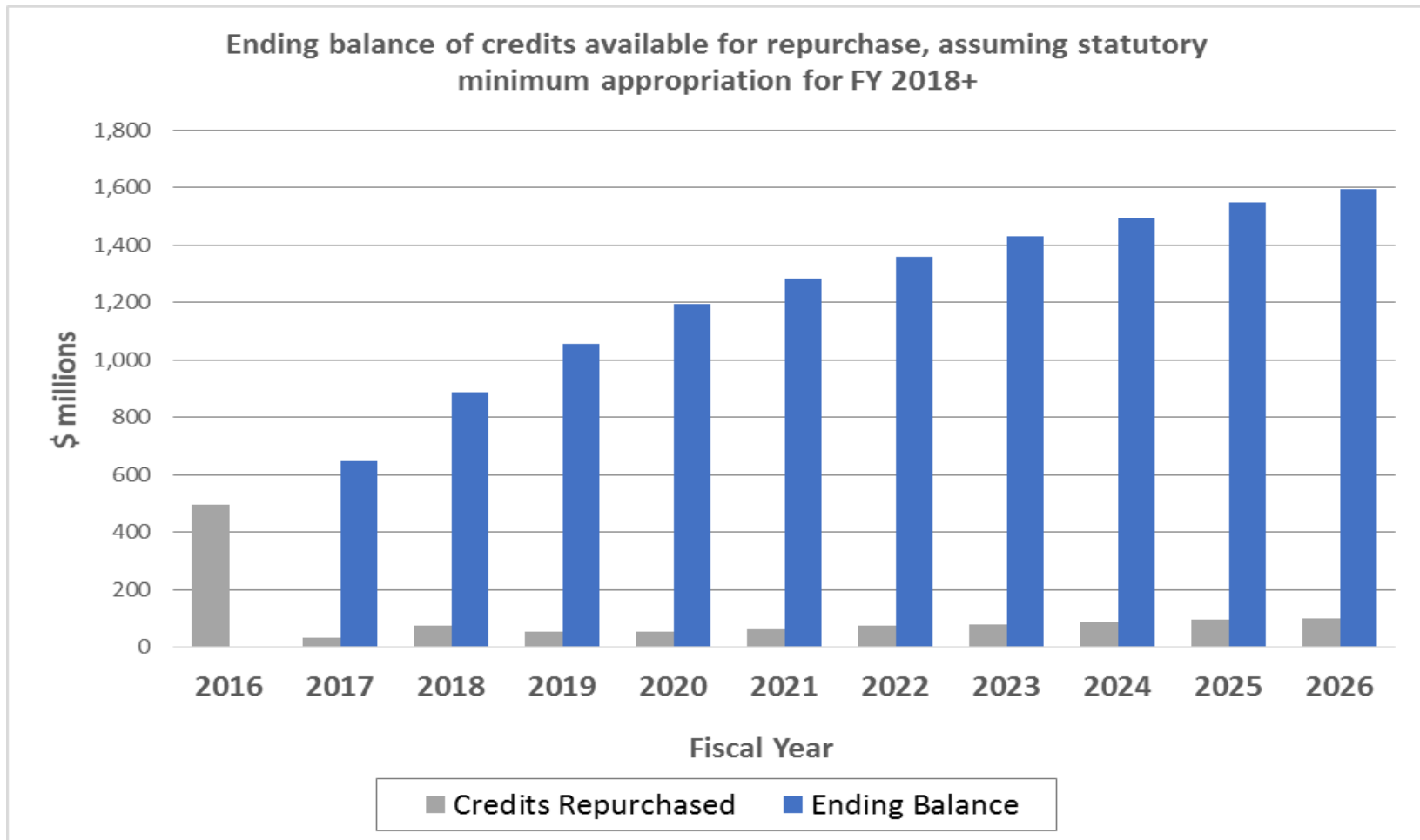


Notes: Repurchased credits for FY 2016 and FY 2017 include only credits actually repurchased during those years.

Repurchased credits for FY 2018 represents the statutory appropriation of \$74 million.

Under this scenario, estimated credits available for repurchase are \$646 million at end of FY17 and \$887 million at end of FY18.

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 2018 as a result of only making minimum appropriation.

Changes from Spring 2016 Petroleum Revenue Forecast



FORECAST CHANGE: Production Tax Revenue Highlights

- Oil price forecasts increased slightly from spring forecast
 - Long-term prices (FY2025+) now expected to settle around \$70-75 real
- Change to oil production forecast methods
 - Forecast now produced by technical experts at DNR
 - FY 2017-18 forecasts decreased, long-term forecast increased slightly
- Unrestricted revenue forecast increased somewhat due to higher oil price forecast
- Capital expenditures stabilize at lower level than last few years
- Companies cited oil prices and uncertainty regarding the state budget and fiscal system, as factors impacting decision making

FORECAST CHANGE: Comparison from Spring 2016 Forecast for FY 2017

Fiscal Year 2017	Spring 2016 Forecast	Fall 2016 Forecast	Difference	Change
Oil Price (ANS West Coast per barrel)	\$38.89	\$46.81	\$7.92	20%
ANS Oil Production (THS bbls/day)	507.1	490.3	(16.8)	-3%
ANS Deductible Lease Expenditures (\$ millions)	\$4,462.6	\$4,867.6	\$405.0	9%
Transportation Costs (\$/barrel)	\$10.86	\$9.33	(\$1.53)	-14%
GF Unrestricted Petroleum Revenue (\$ millions)	\$704.7	\$966.9	\$262.2	37%

FORECAST CHANGE: Comparison from Spring 2016 Forecast for FY 2018

Fiscal Year 2018	Spring 2016 Forecast	Fall 2016 Forecast	Difference	Change
Oil Price (ANS West Coast per barrel)	\$43.79	\$54.00	\$10.22	23%
ANS Oil Production (THS bbls/day)	488.8	455.6	(33.2)	-7%
ANS Deductible Lease Expenditures (\$ millions)	\$4,917.3	\$4,931.2	\$13.9	0%
Transportation Costs (\$/barrel)	\$11.35	\$9.77	(\$1.58)	-14%
GF Unrestricted Petroleum Revenue (\$ millions)	\$787.5	\$1,099.8	\$312.3	40%

Fall 2016

Total Revenue Forecast



REVENUE FORECAST: 2016 to 2018 Totals

\$ millions	History	Forecast	
Revenue Type	FY 2016	FY 2017	FY 2018
Unrestricted General Fund			
Oil Revenue	1,109.5	966.9	1,099.8
Non-Oil Revenue ⁽¹⁾	407.8	461.2	491.9
Investment Revenue	22.5	18.6	32.4
Total Unrestricted Revenue	1,539.8	1,446.7	1,624.1
Designated General Fund			
Non-Oil Revenue ⁽¹⁾	388.1	411.3	414.4
Investment Revenue	14.3	45.4	39.1
Subtotal	402.4	456.7	453.5
Other Restricted Revenue			
Oil Revenue	516.0	626.0	398.3
Non-Oil Revenue ⁽¹⁾	252.0	288.8	301.2
Investment Revenue ⁽²⁾	541.7	3,531.7	3,766.1
Subtotal	1,309.7	4,446.6	4,465.6
Federal Revenue			
Oil Revenue	1.8	4.3	4.3
Federal Receipts ⁽³⁾	2,512.7	3,554.2	3,149.4
Subtotal	2,514.5	3,558.5	3,153.7
Total State Revenue	5,766.4	9,908.5	9,696.9

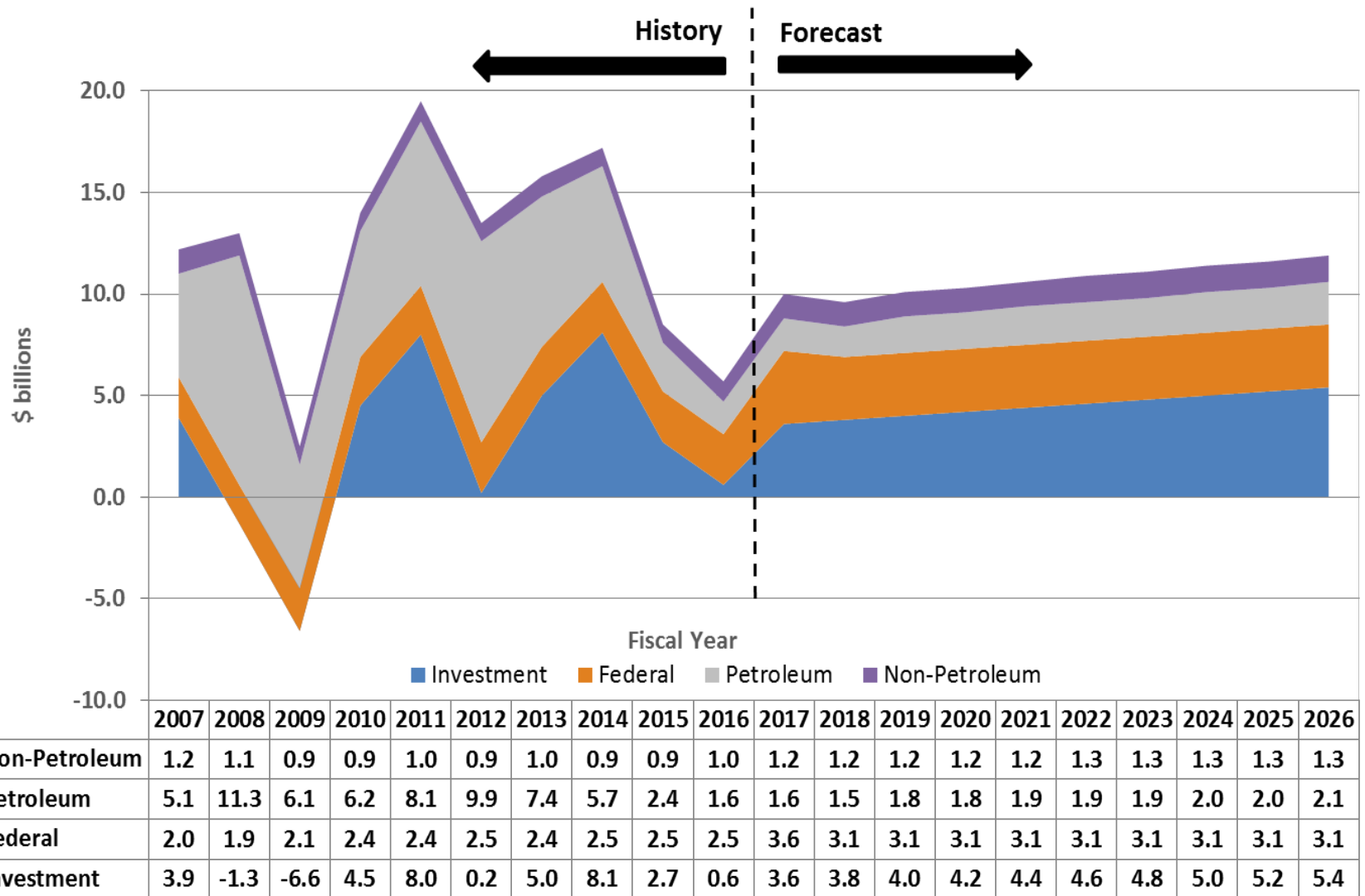
(1) Except Federal and Investment

(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 - Revenue Sources Book Fall 2016

REVENUE FORECAST: By Spending Category



Source: Department of Revenue - Revenue Sources Book Fall 2016

REVENUE FORECAST: 2016 to 2018 General Fund Unrestricted Revenue (GFUR)

\$ millions	History		Forecast			
Unrestricted Revenue Type	FY 2016	Percent	FY 2017	Percent	FY 2018	Percent
Non-Petroleum Revenue						
Non-Petroleum Corporate Income	90.2	5.9%	123.4	8.5%	139.3	8.6%
Mining License Tax	10.7	0.7%	35.5	2.5%	39.3	2.4%
Marijuana	0.0	0.0%	2.5	0.2%	5.3	0.3%
Tobacco	45.5	3.0%	43.2	3.0%	43.2	2.7%
Motor Fuel (Non Aviation)	42.3	2.7%	35.5	2.5%	35.7	2.2%
Motor Fuel (Conservation Surcharge)	6.5	0.4%	7.6	0.5%	7.7	0.5%
Other Taxes	56.8	3.7%	56.7	3.9%	58.9	3.6%
Other Non-Tax Revenue	155.8	10.1%	156.9	10.8%	162.6	10.0%
Total Non-Petroleum Revenue	407.8	26.5%	461.3	31.9%	492.0	30.3%
Investment Revenue	22.5	1.5%	18.6	1.3%	32.4	2.0%
Petroleum Revenue	1109.5	72.1%	966.9	66.8%	1,099.8	67.7%
Total Unrestricted General Fund Revenue	1539.8	100%	1446.7	100%	1624.1	100%

Source: Department of Revenue - Revenue Sources Book Fall 2016

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 GFUR 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: 2016 to 2018 Totals to Appropriate

\$ millions	History	Forecast	
Revenue Type	FY 2016	FY 2017	FY 2018
Petroleum Revenue			
Unrestricted General Fund	1,109.5	966.9	1,099.8
Royalties to Alaska Permanent Fund beyond 25% dedication ⁽¹⁾	73.6	49.7	52.7
Tax and Royalty Settlements to CBRF	119.1	350.0	100.0
Subtotal Petroleum Revenues	1,302.2	1,366.6	1,252.5
Non-Petroleum Revenue			
Unrestricted General Fund	407.8	461.2	491.9
Designated General Fund	388.1	411.3	414.4
Royalties to Alaska Permanent Fund beyond 25% dedication ⁽¹⁾	2.1	2.2	2.2
Tax and Royalty Settlements to CBRF	3.7	0.1	0.1
Subtotal Non-Petroleum Revenues	801.7	874.8	908.6
Investment Revenue			
Unrestricted General Fund	22.5	18.6	32.4
Designated General Fund	14.3	45.4	39.1
Constitutional Budget Reserve Fund	138.3	99.9	51.4
Alaska Permanent Fund - Realized Earnings	2,216.3	2,756.2	3,318.4
Subtotal Investment Revenues	2,391.4	2,920.1	3,441.3
Total Revenue Subject to Appropriation	4,495.3	5,161.5	5,602.3

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

WRAP-UP: Big Picture Takeaways for Forecast Period

- Oil Prices up by 7% and GFUR up by 5%
 - Current prices trending higher than forecasted price for FY 2017
- Oil Production down by 4% but potential for upside
 - Forecast doesn't include recent announcements new finds (i.e. Smith Bay, Nanushuk, Pikka)
 - Current production trending higher than forecasted volume for FY 2017
- Petroleum Revenue represents ~70% of our GFUR revenues
- The GFUR trend over forecast period:
 - Increase of 12% in FY 2018 or \$177M
 - Increase of 15% in FY 2019, or \$249M
 - Increases taper off in FY 2020 to average of 3% per year until FY 2026
 - Still low compared to past decade but no longer decreasing as had since FY 2015.

WRAP-UP: Big Picture Takeaways for Forecast Period (cont.)

- Investment Income is projected to increase 5% on average over the forecast period
 - Still have ~\$53B in the Permanent Fund Account
- Other Positive Revenue Trends:
 - Mining Taxes to recover from low of \$11M in FY 2016 to \$36M average over the forecast period
 - NPR-A Revenue is projected to increase 40% on average over the forecast period (from \$4M in FY2017 to a high of \$45M in FY2024)

THANK YOU

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