

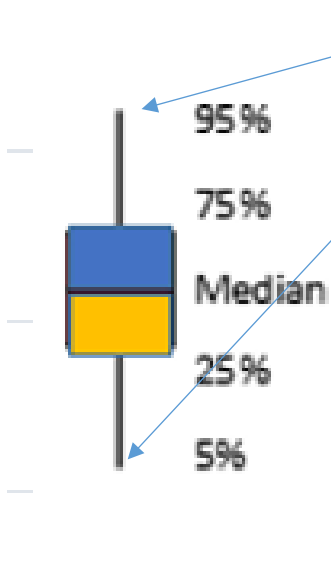
Dividend Forecast

Comparing the dividends anticipated under the status quo, the Alaska Permanent Fund Protection Act (SB 128), and SB114

February 23, 2016

Department of Revenue, Economic Research Group

How to read box plots



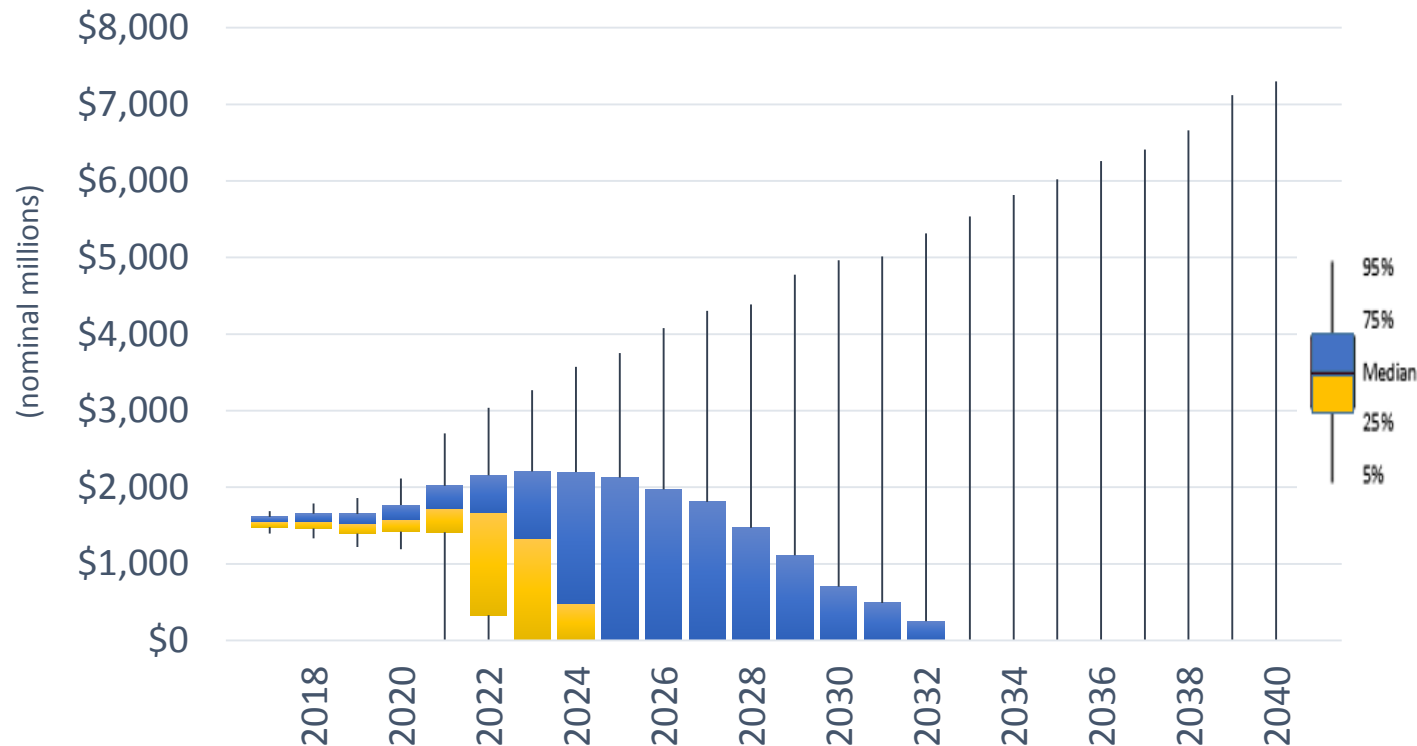
- We are 90% confident that the true value will be between the top and bottom of “whiskers” (the thin lines coming out of the box)
 - There is a 5% chance that the true value will be above the top
 - There is a 5% chance that the true value will be below the bottom
- We are 50% confident that the true value will be in the shaded area
- The line between the blue and yellow areas is the median
 - There is a 50% chance that the true value will be above the median
 - There is a 50% chance that the true value will be below the median

Scenarios

	Status Quo	APFPA	SB 114
Deposits	<ul style="list-style-type: none"> • Mineral Royalties <ul style="list-style-type: none"> • 30% deposited in the Permanent Fund corpus • 69.5% deposited in the General Fund • Production Taxes: 100% deposited in the General Fund • Realized Investment Income: deposited in the ERA 	<ul style="list-style-type: none"> • Mineral Royalties <ul style="list-style-type: none"> • 25% deposited in the Permanent Fund corpus • 74.5% deposited in the ERA • Production Taxes: 100% deposited in the ERA • Realized Investment Income: deposited in the ERA 	<ul style="list-style-type: none"> • Mineral Royalties <ul style="list-style-type: none"> • 25% deposited in the Permanent Fund corpus • 74.5% deposited in the dividend fund • Production Taxes: 100% deposited in the General Fund • Realized Investment Income: deposited in the ERA
Withdrawals	<ul style="list-style-type: none"> • Dividend: approximately half of 21% of the last 5 years of realized earnings drawn from the ERA • UGF: deficit filled with draw from ERA after CBR is exhausted 	<ul style="list-style-type: none"> • Dividend: 50% of prior year mineral royalties from the ERA • UGF: \$3.3 billion (adjusted for inflation starting in 2020) draw from the ERA to the General Fund 	<ul style="list-style-type: none"> • Dividend: <ul style="list-style-type: none"> • 74.5% of prior year royalties allocated to the dividend • Supplemental funds for the \$1,000 dividend floor drawn from the ERA • UGF: 5% POMV draw from the ERA to the General Fund

Status Quo: projected dividend appropriation

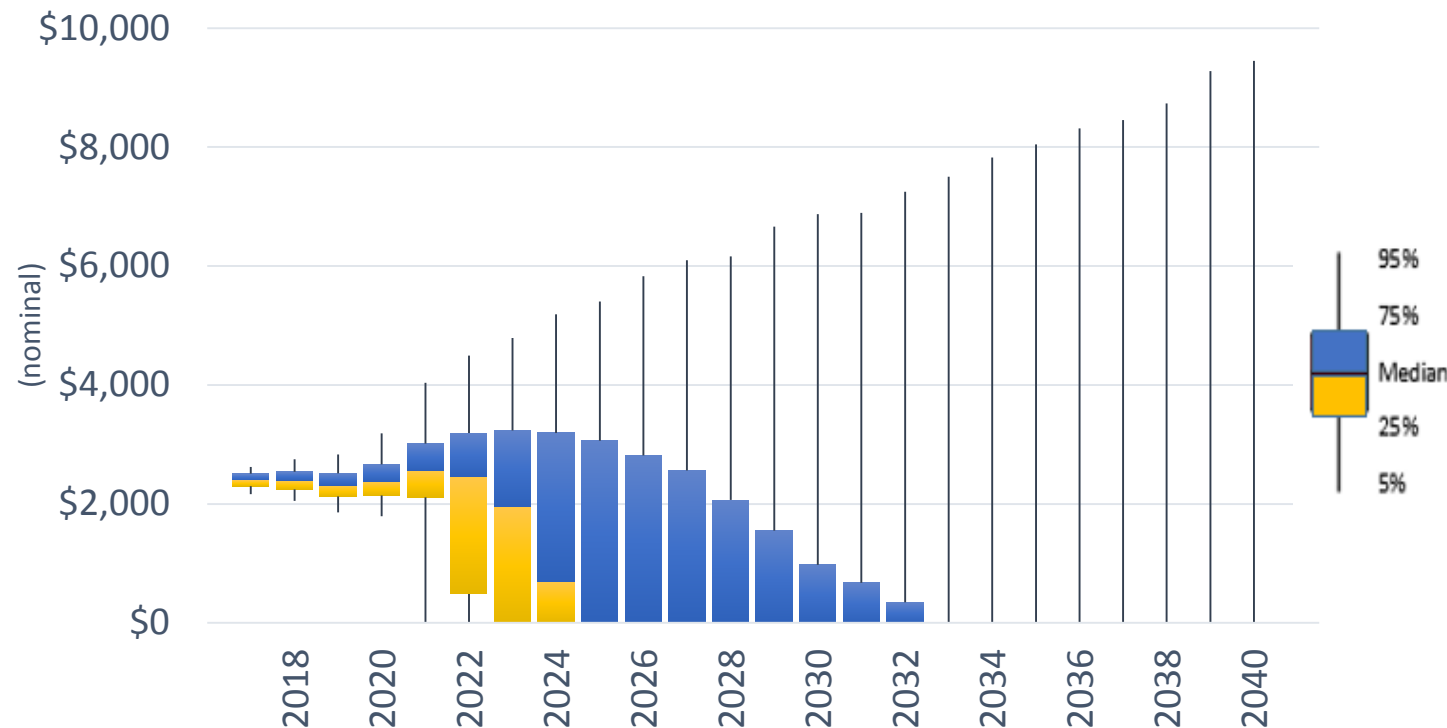
Limited by funds available after using earnings reserve to cover deficit once CBR depleted



- Under the status quo, we can anticipate appropriating between \$1.5 and \$1.7 billion each year for the dividend.
- However, the ongoing deficit would require drawing from the CBR and ERA for UGF expenditures as well. We expect to begin drawing from the ERA for UGF expenditures around FY19.
- Assuming we continue to pay dividends after FY19 when the ERA is the only source of funds to close the deficit, the ERA would likely be depleted by the end of FY22. Once savings are spent, only annual realized earnings are available for both the dividend and UGF expenditures.
- The expected result of the status quo is an inability to fund the dividend after 2024. But, this moment could arrive sooner; there is a chance that there will not be funds available for the dividend as soon as 2021.

Status Quo: projected dividends per person

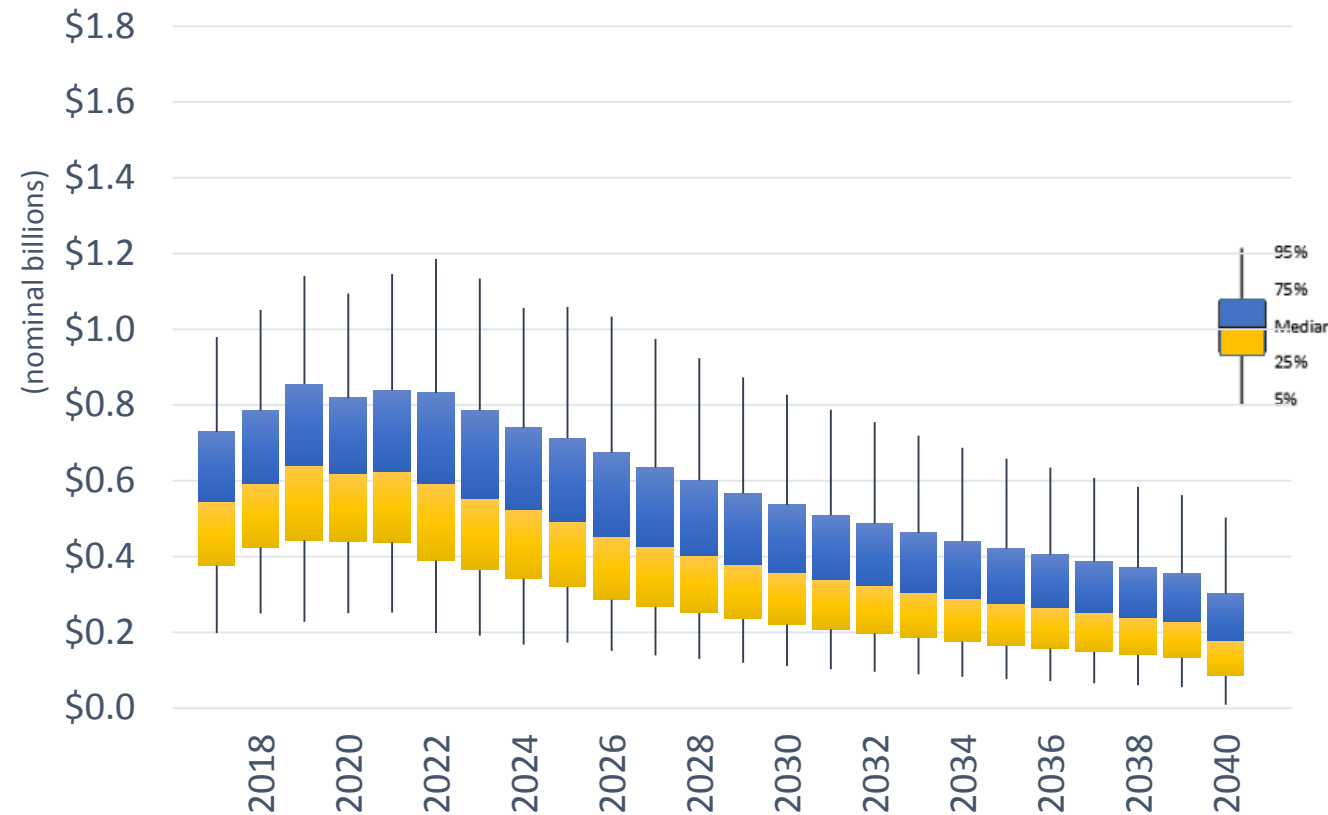
Limited by funds available after using earnings reserve to cover deficit once CBR depleted



- Under the status quo, we can expect dividends to exceed \$2,000 through 2022 or 2023.
- It is uncertain whether we would continue to pay dividends once the ERA is the only savings available for UGF expenditures (expected in FY19).
- But, the savings in the ERA will likely be depleted by FY22. Once savings are spent, only annual realized earnings are available for both the dividend and UGF expenditures. As a consequence, dividends will decline sharply beginning in 2023.
- There likely will not be adequate funds for the dividend after 2024.

APFPA: projected dividend appropriation

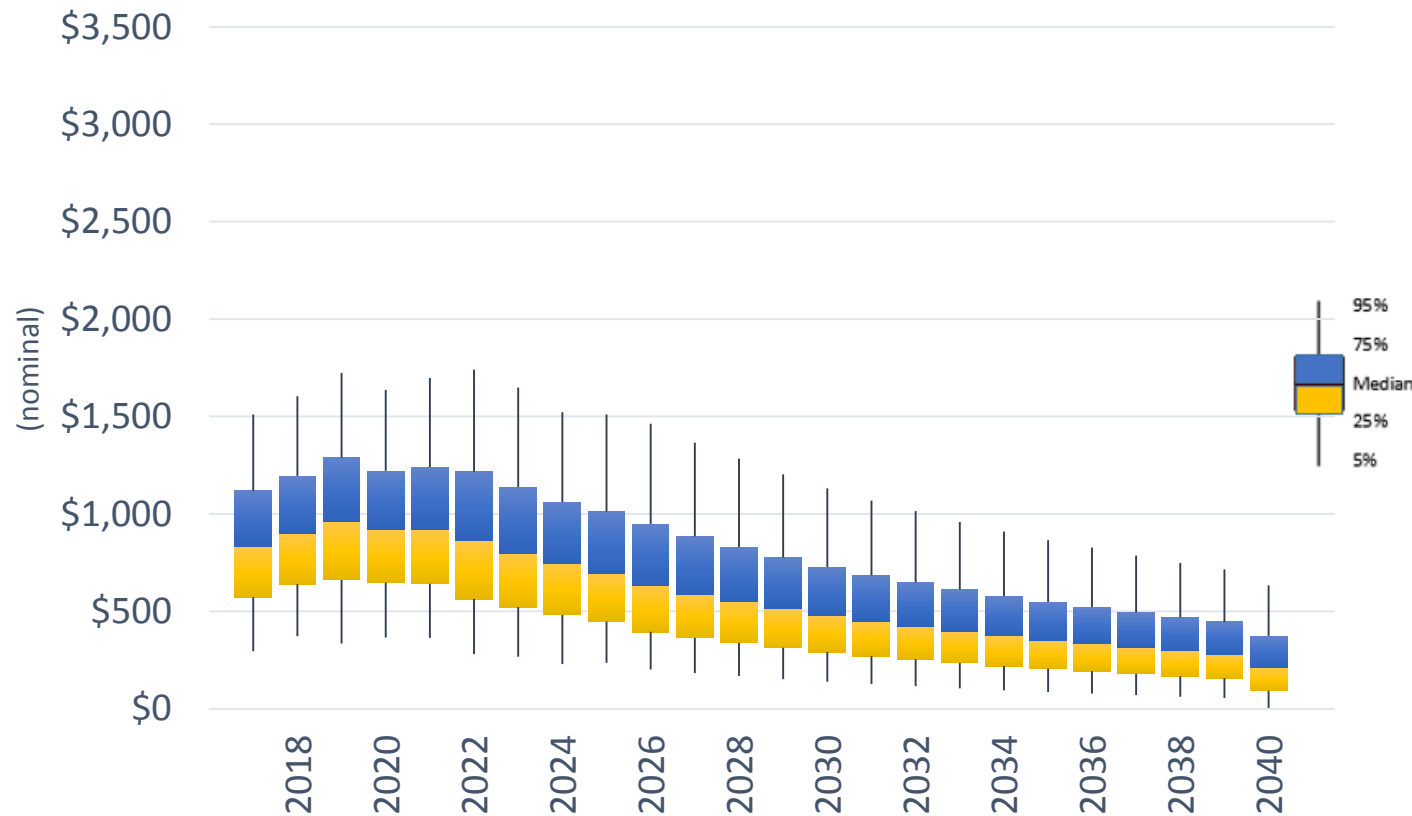
50% of royalties received in the prior fiscal year



- The APFPA proposes to allocate 50% of mineral royalties to the dividend program.
- This dividend formula means appropriating around \$0.6 to \$0.7 billion for dividends in the next several years. While this is less than the formula under the status quo, the revenue stream allocated to dividends is separate from UGF needs and continues far into the future.
- Dividends increase or decrease with the success or failure of resource development in Alaska.
- The trend in this graph reflects the trend in the Department of Revenue's conservative production forecast.
- There is great potential for additional development beyond what is reflected in the official forecast.

APFPA: projected dividends per person

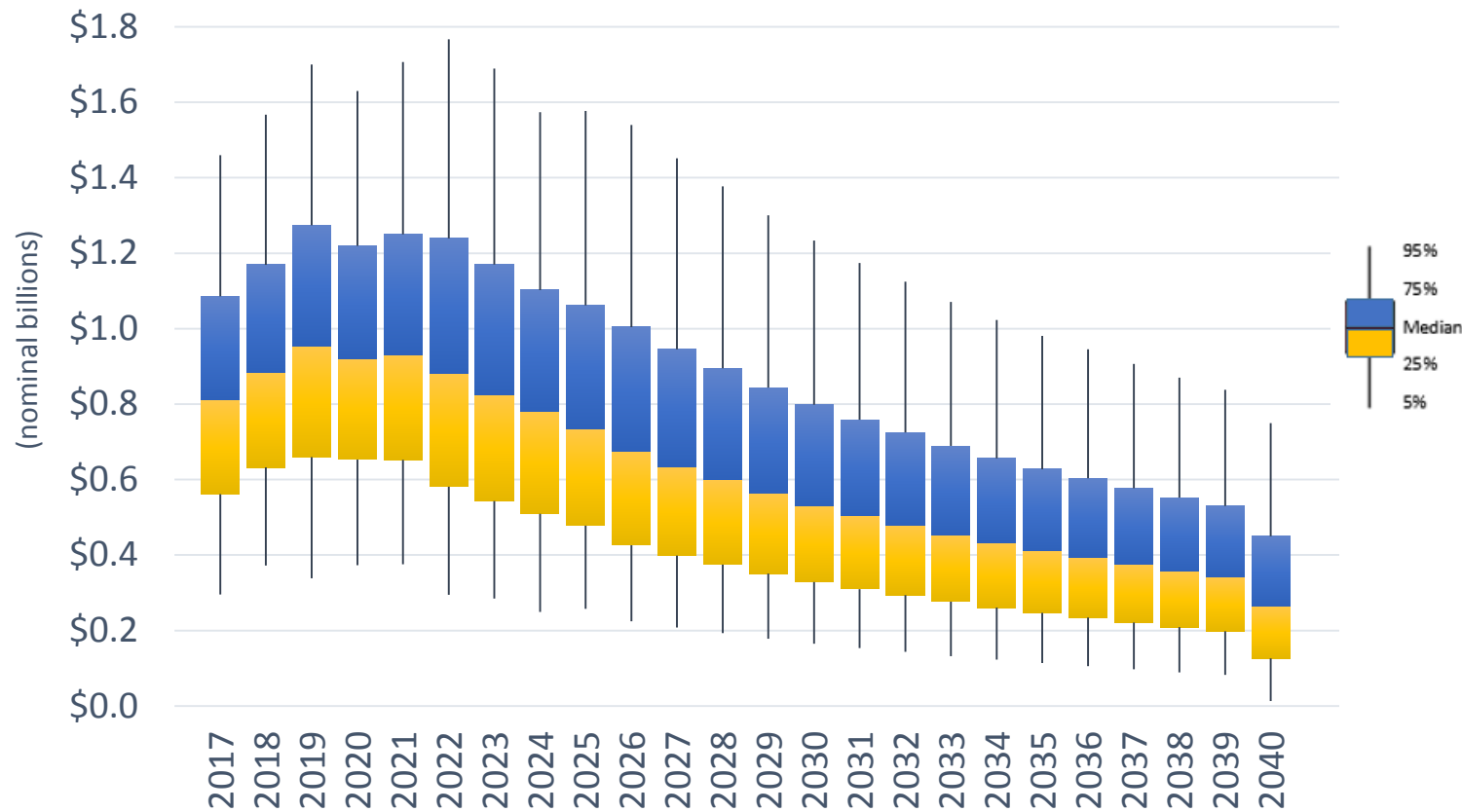
50% of royalties received in the prior fiscal year



- The APFPA proposes to allocate 50% of mineral royalties to the dividend program.
- \$1,000 dividend guaranteed for 2016
- Thereafter, we can expect dividends around \$1,000 for the next decade. While this is less than the formula under the status quo, the dividend survives into the future.
- Dividends increase or decrease with the success or failure of resource development in Alaska. As long as resources continue to be produced from Alaska, the dividend also continues.
- The trend in this graph reflects the trend in the Department of Revenue's conservative production forecast.
- There is great potential for additional development beyond what is reflected in the official forecast.

SB 114: projected dividend appropriation

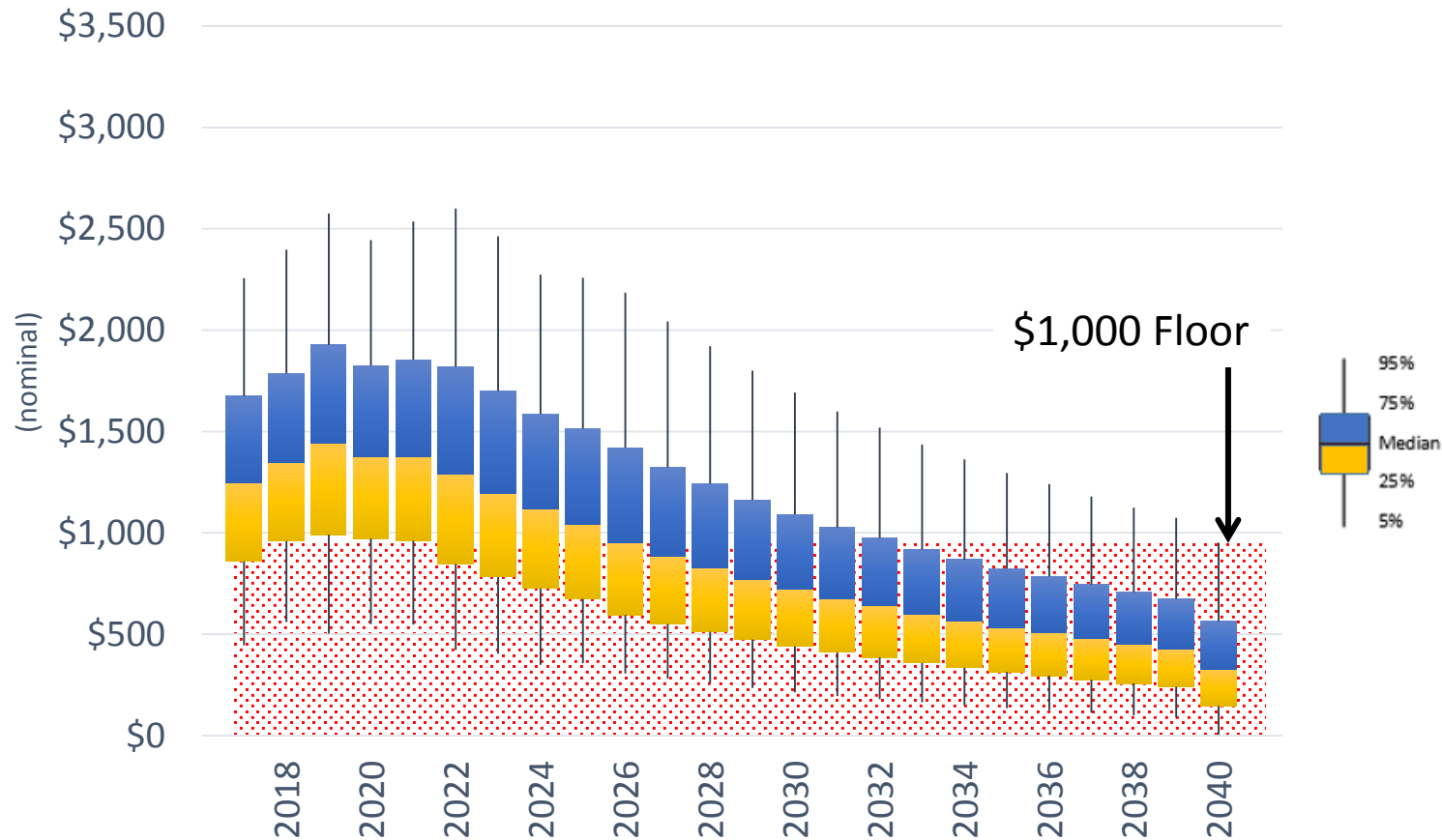
74.5% of royalties received in the prior fiscal year



- SB 114 proposes to allocate 74.5% of mineral royalties to the dividend program.
- This formula means appropriating around \$1 billion for the dividend. While this is less than the formula under the status quo, the dividend can be paid for a longer period.
- As with the APFPA formula, dividends increase or decrease with the success or failure of resource development in Alaska.
- As shown in slide 13, this is not the total amount appropriated for dividends under SB 114. Additional funds must be taken from the ERA to maintain the \$1,000 floor.
- The trend in this graph reflects the trend in the Department of Revenue's conservative production forecast.
- There is great potential for additional development beyond what is reflected in the official forecast.

SB 114: projected dividends per person

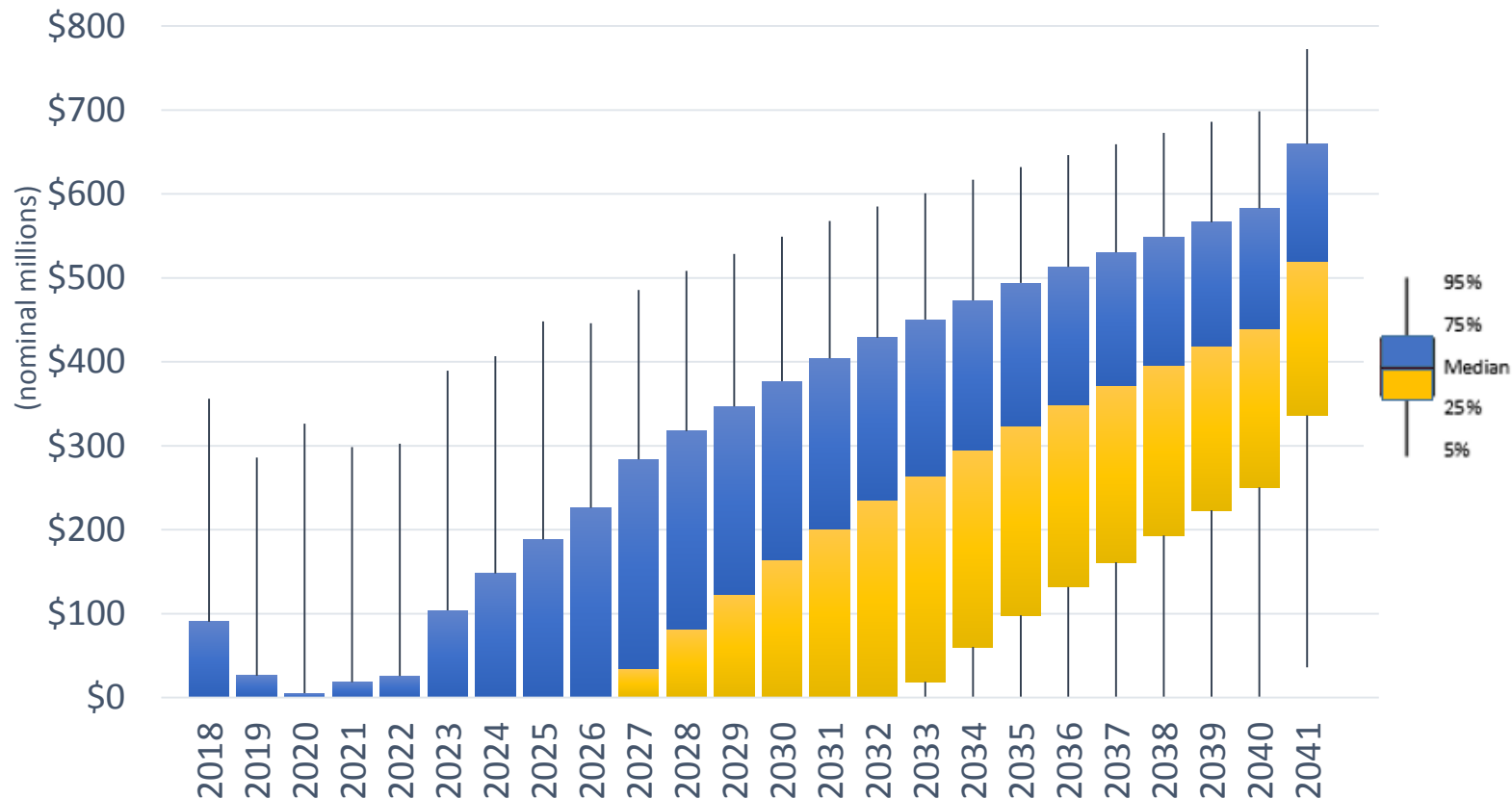
74.5% of royalties received in the prior fiscal year



- SB 114 proposes to allocate 74.5% of mineral royalties to the dividend program.
- This formula results in dividends that are 50% higher than proposed in the APFPA, but following the same production forecast trend.
- SB 114 also has a dividend floor of \$1,000 per person.
- To maintain the floor, we expect additional funds will be needed from the ERA to supplement the royalties by 2026. That said, there is better than a 1 in 4 chance that supplemental funds may be needed as soon as 2018.
- The trend in this graph reflects the trend in the Department of Revenue's conservative production forecast.
- There is great potential for additional development beyond what is reflected in the official forecast.

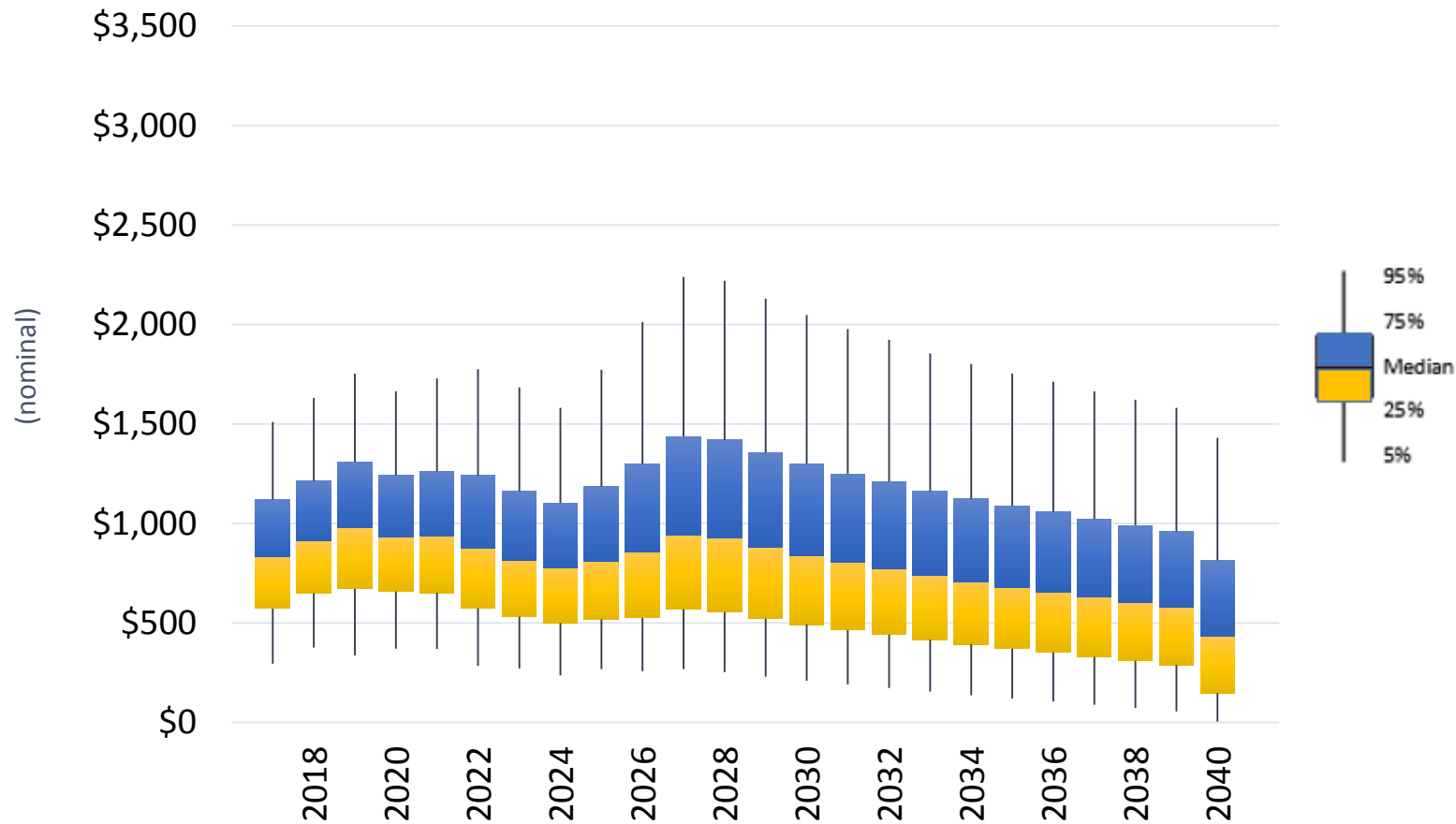
SB 114: dividend floor

Supplemental funds need to maintain the \$1,000 dividend floor from the ERA



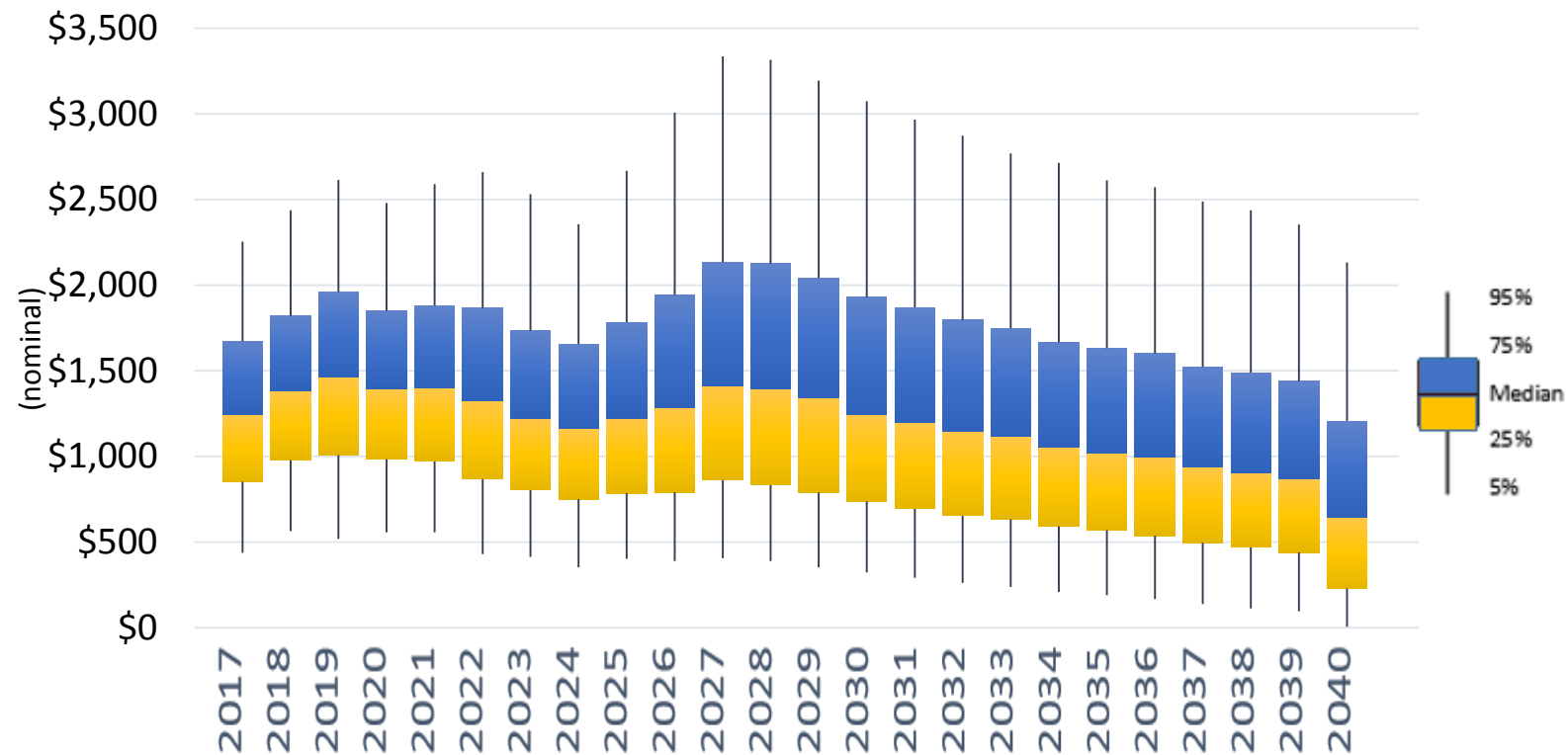
- SB 114 provides a floor of \$1,000 per person on the dividend.
- Royalties may not be enough to provide a \$1,000 dividend as production declines or under low oil prices.
- SB 114 draws from the ERA to cover the shortfall and maintain the \$1,000 floor. These supplemental draws are in addition to the 5% POMV draw. This graph shows the projected draws needed to maintain the floor.
- To maintain the floor, we expect additional funds will be needed from the ERA to supplement the royalties by 2024. That said, there is better than a 1 in 4 chance that supplemental funds may be needed as soon as 2018.

APFPA: projected dividends per person with a gas line



- A dividend formula based on mineral royalties increases with new projects and production not reflected in the official production forecast.
- By example, this chart shows the impact of additional royalties resulting from the construction of a gas line.

SB 114: projected dividends per person with a gas line



- A dividend formula based on mineral royalties increases with new projects and production not reflected in the official production forecast.
- By example, this chart shows the impact of additional royalties resulting from the construction of a gas line.

Potential Increases North Slope Production

Increases in production will increase the dividend beyond the current forecast: values for 50% royalty dividend

Peak Rate Increment (barrels/day)	Rate-Comparable Pools, Peak Basis	Potential Size (millions of barrels recoverable)	Likelihood of Individual New Pools Placed on Production*	Impact on per person dividend per pool at peak year
10K	Tabasco, Meltwater, O3 Kuparuk Pools	20-50	Highly Likely (up to 10 or more pools?)	\$20-\$30
50K	10% less than Milne Kuparuk Pool, 20% less than Lisburne Pool	150-250	Highly Likely (several pools?)	\$100-\$150
100K	25% higher than Northstar Ivishak Pool, 33% less than Endicott Pool	300-500	Likely (a few pools?)	\$220-\$280
500K	40% higher than Kuparuk Pool	3,000-6,000	Very Unlikely (one at the most?)	\$1000-\$1500
1,000K	~3x maximum Kuparuk Pool rate 55% lower than Prudhoe Pool	7,000-10,000	Extremely Unlikely	\$2250-\$2750

** Qualitative estimates. Assumes development of certain discoveries, considers assessed undiscovered resource, likelihood and extent of exploration access to ANWR, OCS, and NPRA, and assumes at least three decade timeframe (TAPS remains mechanically and commercially viable through 2045 or longer). Does not attempt to capture unconventional (heavy oil, shale oil) not currently economically exploited on the North Slope.*

Method, Inputs, and Assumptions

- Forecast produced from the Alaska Permanent Fund Protection Act model, *available at* <http://gov.alaska.gov/Walker/priorities/new-sustainable-alaska-plan.html>
- **Permanent Fund Starting Value:** \$52 billion
 - Realized portion of corpus: \$40 billion
 - Realized portion of earnings reserve account: \$6.5 billion
 - Unrealized earnings held by the fund: \$5.5 billion
- **Constitutional Budget Reserve Starting Value:** \$7 billion
- **Investment Return:** Callan Associate's 10-year forecast
 - Total return: 6.9% geometric, 13.90% standard deviation
 - Statutory return: P10 = 3.70%, P50 = 6.01%, P90 = 8.14%
- **Petroleum Revenues**
 - **Oil price:** mean outcomes from probabilistic analysis of ANS oil prices using a PERT distribution from the fall price forecasting session. See Fall 2015 RSB (pages 33 and 104); *also see* note on slide 4 of this document
 - **Production:** Fall 2015 RSB (page 39)

Method, Inputs, and Assumptions

- Dividend Recipients: Department of Labor population forecast with dividend participation rate from historic data
- Dividend Program Costs: Department of Revenue estimate of \$8 million, increasing with inflation. The forecast does not include any other transfers from the dividend fund
- Status Quo Draws for UGF: FY16 budget net of unrestricted General Fund revenues. The calculation likely underestimates the UGF draw as it does not account for anticipated growth in formula programs or large projects.

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
\$3,150	\$3,124	\$2,951	\$3,061	\$3,112	\$3,241	\$3,390	\$3,517	\$3,640	\$3,812	\$3,963

- When earnings reserve account funds are limited priority is given first to the UGF transfer, then to the dividend transfer, and finally to the inflation proofing transfer to the Permanent Fund corpus
- Unless otherwise stated, all dollar amounts are in nominal terms.
- Unless otherwise stated, years are the calendar year in which the dividend is paid.

Method, Inputs, and Assumptions

- Though the model uses the same underlying data, the petroleum revenues vary slightly from those reported in the Fall 2015 RSB for the reasons stated in this excerpt from page 43 of the RSB
- For the gas line scenarios, natural gas was converted to barrels of oil equivalent (BOE)

At times, the department's forecast numbers may appear different for different analyses even if they come from the same data source. This can happen for many reasons and does not necessarily discount other analyses, nor should it be considered an "error."

One example is in petroleum revenue forecasting, where results can differ depending on whether the department uses confidential company-specific data versus statewide aggregated summary data.

Another example where differences can occur is when the department provides deterministic and

probabilistic results of oil revenue calculations. The *Revenue Sources Book* relies more heavily on deterministic (single-value) inputs and results. A probabilistic analysis of oil revenues brings the possibility of higher prices in the petroleum tax calculation, and because the tax calculation is progressive at higher prices, results can be higher than a deterministic analysis utilizing the same basic price data.

Therefore, even though all the department's models start with the same set of data, the results can differ depending on assumptions about central tendency and the distribution of potential results.

Projected AKLNG BOE Royalty Barrels

Fiscal Year	2018	2019	2020	2021	2022	2023	2024	2025
Millions bbl/day	0.008	0.008	0.008	0.008	0.008	0.008	0.014	0.055
Fiscal Year	2026	2027	2028	2029	2030	2031	2032	2033
Millions bbl/day	0.109	0.171	0.182	0.179	0.176	0.173	0.171	0.168
Fiscal Year	2034	2035	2036	2037	2038	2039	2040	
Millions bbl/day	0.166	0.164	0.162	0.160	0.158	0.156	0.155	