Fall 2024 Oil Production Forecast

Senate Finance Committee

Presented by:
John Boyle, Commissioner
John Crowther, Deputy Commissioner
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Alaska Department of Natural Resources
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Reference List of Acronyms

Units

Bn or **b:** Billion
MM or **mm**: Million; **M** or **m**: Thousand

Volumes

BO or **bbl**: Barrels of Oil (e.g. mmbo = million barrels of oil)
BOPD or bopd: Barrels Oil Per Day
BCPD: Barrels Condensate Per Day
BWPD: Barrels Water Per Day
BCF/D: Billion Cubic Feet / Day
EUR: Expected Ultimate Recovery
GOR: Gas Oil Ratio
OOIP: Original Oil In Place
OGIP: Original Gas In Place
TCF: Trillion Cubic Feet (usually a reference for natural gas)

Project Terms

FEED: Front End Engineering Design
FID: Final Investment Decision
POD: Plan Of Development
POE: Plan Of Exploration

Other

DS: Drill-Site
RWO: Rig workover
NPSL: Net Profit Sharing Lease
NGL: Natural Gas Liquids; **WF:** Waterflood; **EOR:** Enhanced Oil Rec.
OPEX: Operating Expense
Q: Quarter; **H:** Half; **Y:** Year; **YE**: Year End
FY: Fiscal Year
ESG: Environmental, Social, and Governance
CP: Currently Producing; **UD**: Under Development; **UE**: Under Evaluation

Federal

BLM: US Department of Interior (US DOI) Bureau of Land Management
BOEM: US DOI Bureau of Ocean Energy Management
BSEE: US DOI Bureau of Safety and Environmental Enforcement
(S)EIS: (Supplemental)Environmental Impact Statement
IAP: Integrated Activity Plan
NPRA: National Petroleum Reserve in Alaska
OCS: Outer Continental Shelf
ROD: Record of Decision

State of Alaska

AOGCC: Alaska Oil and Gas Conservation Commission
DOG: Alaska Division of Oil and Gas
DNR: Alaska Department of Natural Resources
DOR: Alaska Department of Revenue
RSB: Revenue Sources Book

Areas, Units, and Facilities

ANS: Alaska North Slope
CI: Cook Inlet
CRU: Colville River Unit
- **CD8:** CRU Drillsite 8

GMT: Greater Mooses Tooth Unit
- **GMT2:** Greater Mooses Tooth Unit Pad #2

KRU: Kuparuk River Unit
MPU: Milne Point Unit
NPF: Nanushuk Processing Facility
- **NDB:** Nanushuk Development pad B

PBU: Prudhoe Bay Unit
PTU: Point Thomson Unit
- **IPS:** Initial Production System

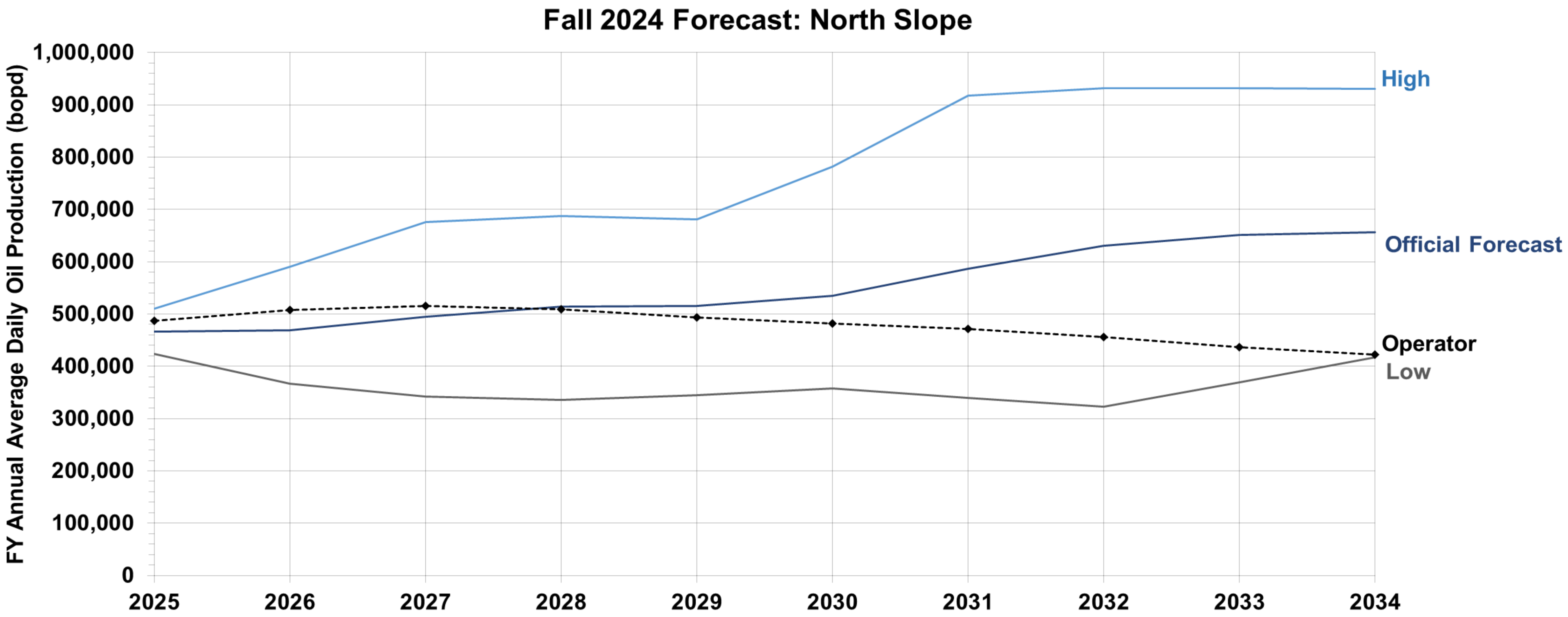
TAPS: Trans-Alaska Pipeline System
WCF: Willow Central Facility

Agenda

- Introduction & Forecast Preview
- FY2024 in Review
- DNR Fall 2024 Production Forecasting Approach
- Fall 2024 Forecast Results & Summary
- Appendix

List of Acronyms:
FY: Fiscal Year (July 1 of the previous year to June 30 of the listed year.)
DNR: Alaska Department of Natural Resources

Fall 2024: North Slope Annualized Forecast



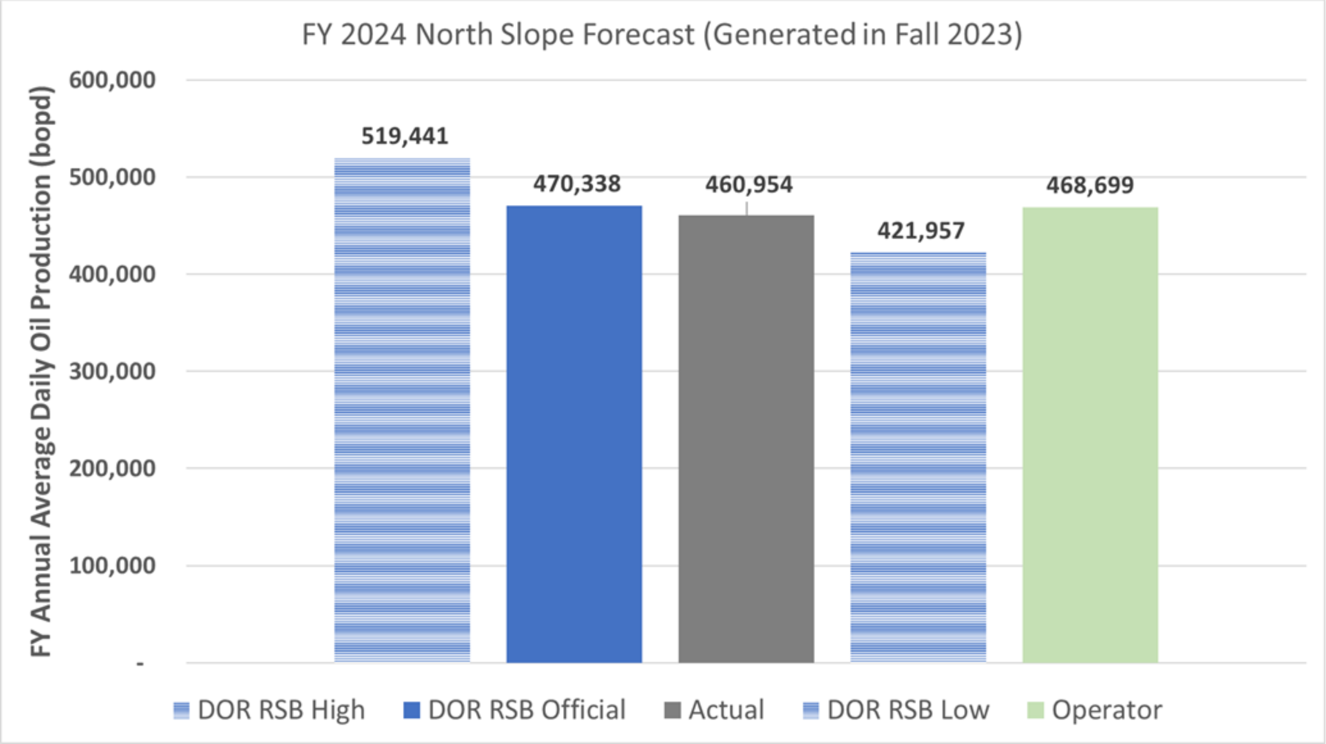
Data sourced from the **Operator(s)** does not include future projects outside of currently producing Units, while the **official forecast** includes production from all future projects.

List of Acronyms:
bopd: barrels of oil per day

FY2024 in Review

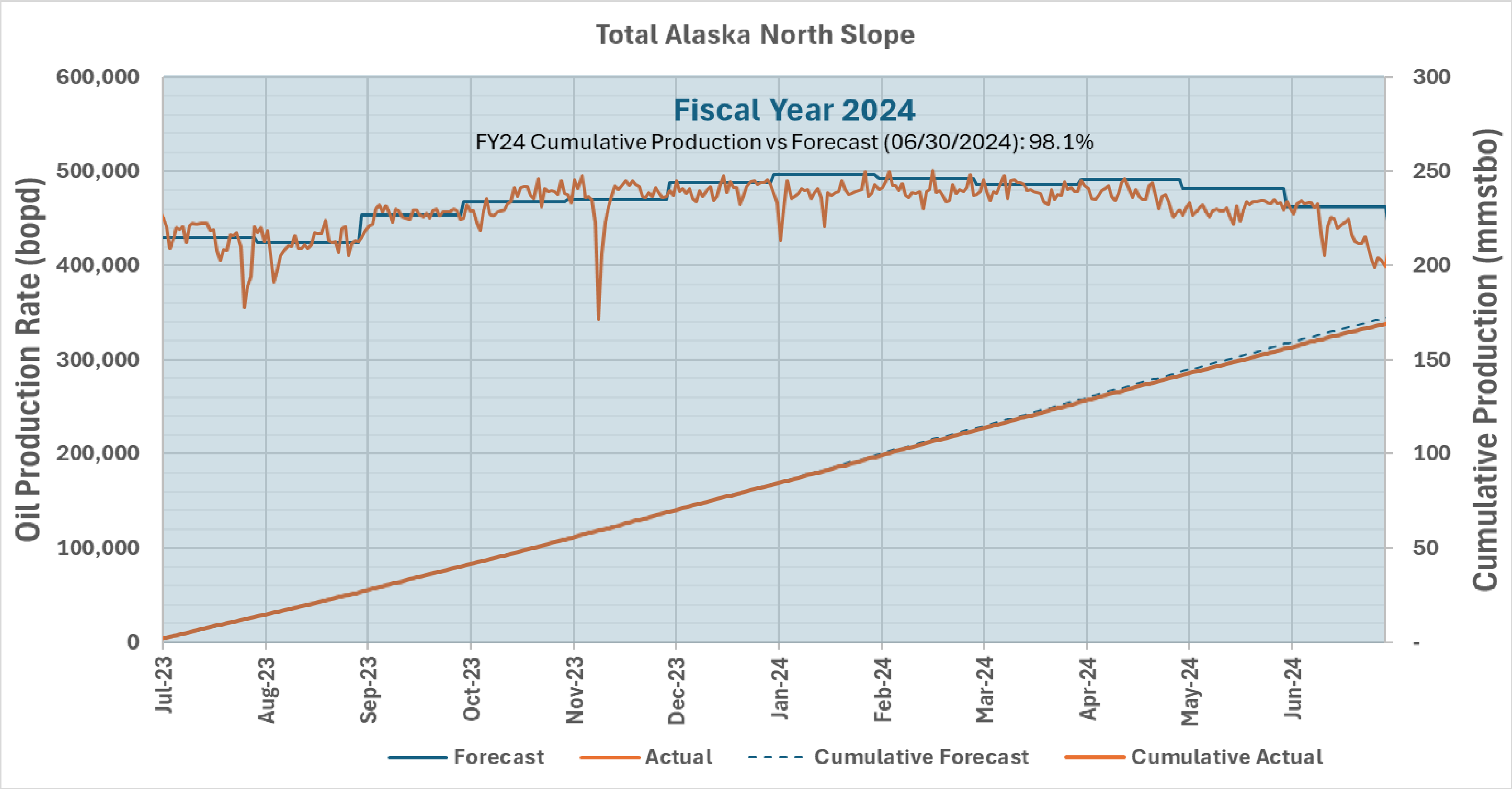
FY2024 AS FORECASTED BY DNR IN FALL 2023: HOW DID WE DO?

- **Actual FY2024 production was within DNR's forecasted range**
- **DNR's mean forecast was ~2% higher than actual FY2024 production**
- **Factors currently shaping the forecast horizon:**
  - Industry interest continues in Brookian age plays (*i.e.*, Nanushuk) across the North Slope
  - Recent Federal regulatory and leasing restrictions present challenges – but may materially change with new administration
  - Equipment constraints (as Pikka and Willow ramp up) and overall inflation are affecting North Slope exploration project costs and operations



List of Acronyms:
DOR: Alaska Department of Revenue
RSB: Revenue Sources Book
DNR: Alaska Department of Natural Resources
FY: Fiscal Year

FY2024 as Forecasted by DNR in Fall 2023: Monthly Forecast with Daily Actuals



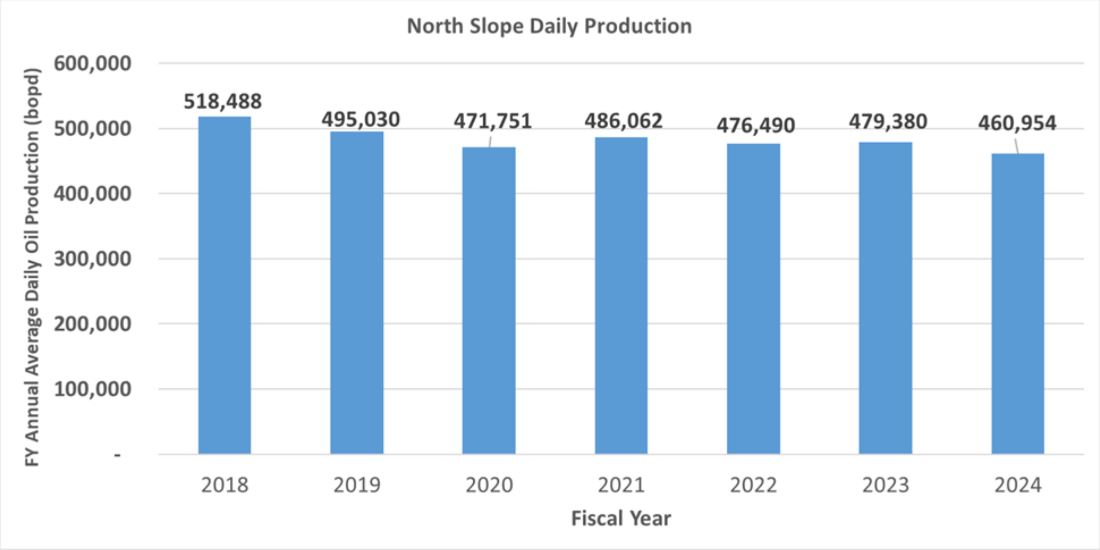
List of Acronyms:
bopd: barrels of oil per day
mmstbo: million stock tank barrels oil

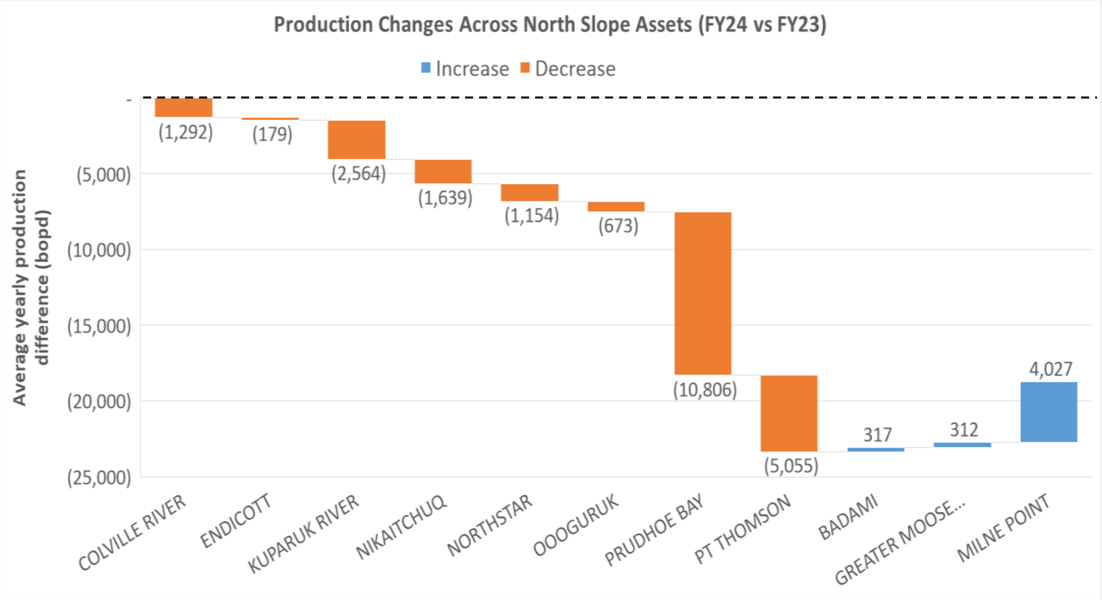
FY2024 SUMMARY: NORTH SLOPE

Highlights (FY2024 vs FY2023)

- All fields are generally expected to see a year-on-year decline
- Compared to FY2023, in FY2024 North Slope production decreased by ~4% (~18,700 bopd)
- **Decreases**
  - Colville River, Endicott and Kuparuk River: Natural decline offset with development drilling.
  - Nikaitchuq, Northstar, and Oooguruk: Natural reservoir decline.
  - Prudhoe Bay: Late summer 2023 turnarounds deeper than previous cycles under Hilcorp and natural decline.
  - Point Thomson: Sales pipeline frozen in 1H-24.
- **Increases**
  - Badami: Successful workover of B1-07 well
  - Greater Mooses Tooth: GMT2 pad continued development drilling
  - Milne Point: production growth due to infill drilling and RWO efforts.

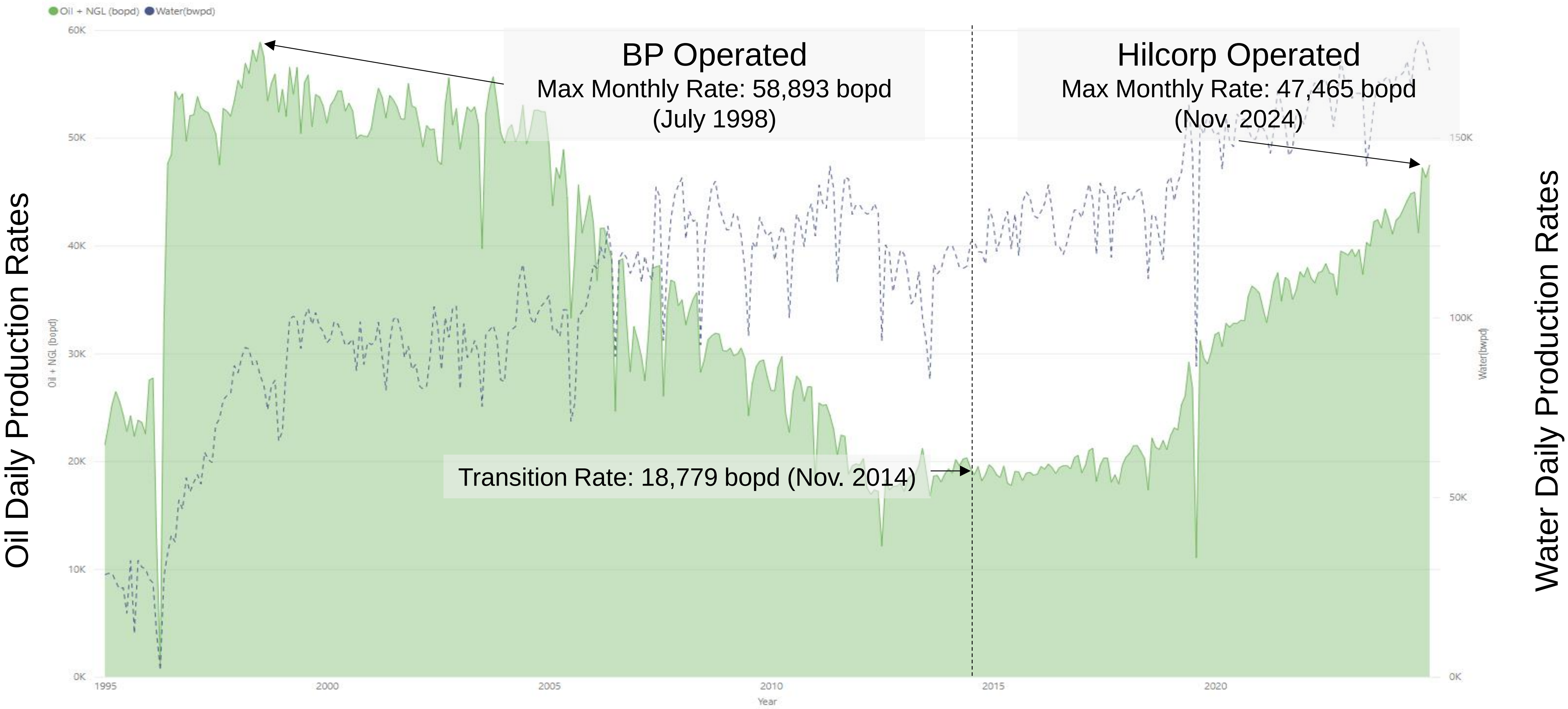
Detailed Field Charts: https://dog.dnr.alaska.gov/Information/PowerBI





List of Acronyms:
GMT2: Greater Moose's Tooth Pad #2
bopd: barrels of oil per day

Status Update: Milne Point Unit



List of Acronyms:

BOPD: barrels of oil per day
bopd: barrels of oil per day
BWPD: barrels of water per day
bwpd: barrels of water per day
MSCF/D: thousand standard cubic feet per day
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Detailed Field Charts:
https://dog.dnr.alaska.gov/Information/PowerBI

Status Update of Key Future Projects: North Slope

	Status: January 2024	Status: January 2025	Production Rate Estimates
KRU Nuna-Torok	Conoco project funding approved in 2023, and subsequently DNR approved drill site 3T expansion activities. Construction activities are ongoing, and first oil is anticipated in 2025.	Production start-up December 2024.	Peak rate up to 20,000 bopd
Mustang	Finnex, LLC took over for AIDEA as Unit Operator in October 2023.	Pad expansion, pipeline tie-in, pad restart activities approved and Finnex completed drilling of two development wells in 2024. Production start-up within the last month.	Peak rate up to 4,000 bopd
CRU Minke	This Conoco project was not included in the Fall 2023 forecast by the Alaska Division of Oil and Gas.	CD5-32X drilled in area of interest, and Minke Oil Pool application submitted to AOGCC in 2024. A producer-injector well-pair is planned for 2025.	Depends on results of initial well pattern
Pikka Phase 1	Santos construction and drilling activities ongoing, and project first oil anticipated in Q2 of 2026.	Project construction and drilling activities are ongoing. Project first oil anticipated in Q2 of 2026.	Peak rate: 80,000 bopd
Pikka Phase 2	Santos project not shared in testimony in January 2024 by the Alaska Division of Oil and Gas.	Conceptual engineering, cost estimation, and schedule development activities on-going. Plan to move to FEED stage in 2025 and FID 2027.	Peak rate: An additional 80,000 bopd capacity to the Pikka production facility
Willow	BLM ROD on SEIS issued in 2023 and Conoco started construction activities in April 2023. FID announced December 2023. First oil expected in 2029.	Project construction is ongoing. Project first oil anticipated in 2029.	Peak rate: ~180,000 bopd

List of Acronyms:

POD: Plan of Development
FEED: Front End Engineering Design
FID: Final Investment Decision
BLM: US Department of Interior Bureau of Land Management
ROD: Record of Decision
SEIS: Supplemental Environmental Impact Statement
CRU: Colville River Unit
MPU: Milne Point Unit
KRU: Kuparuk River Unit
YE: Year End
Q: Quarter

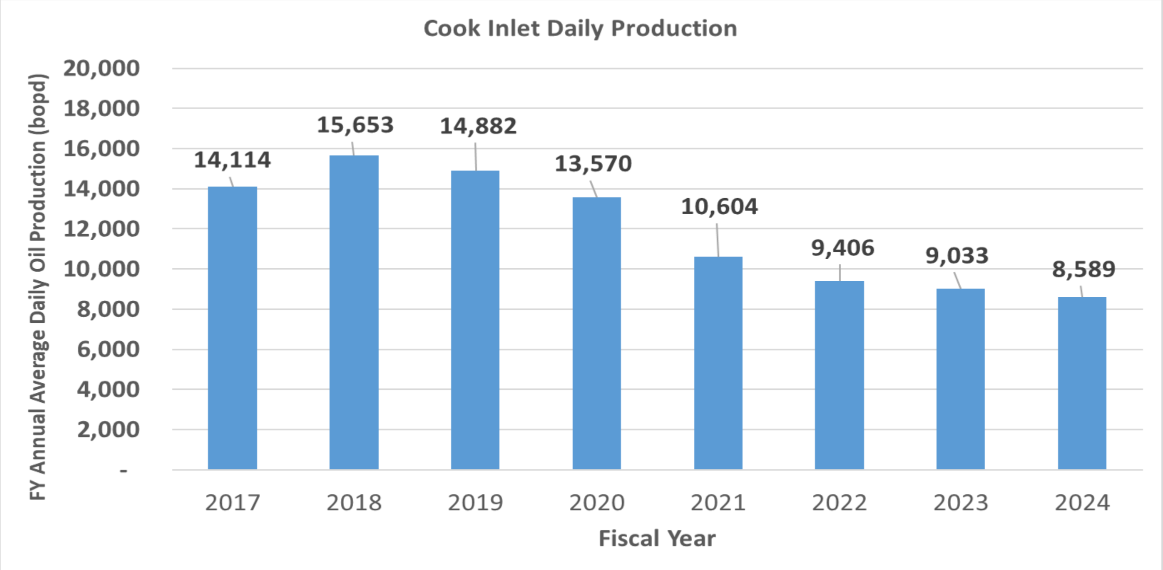
FY2024 Summary: Cook Inlet

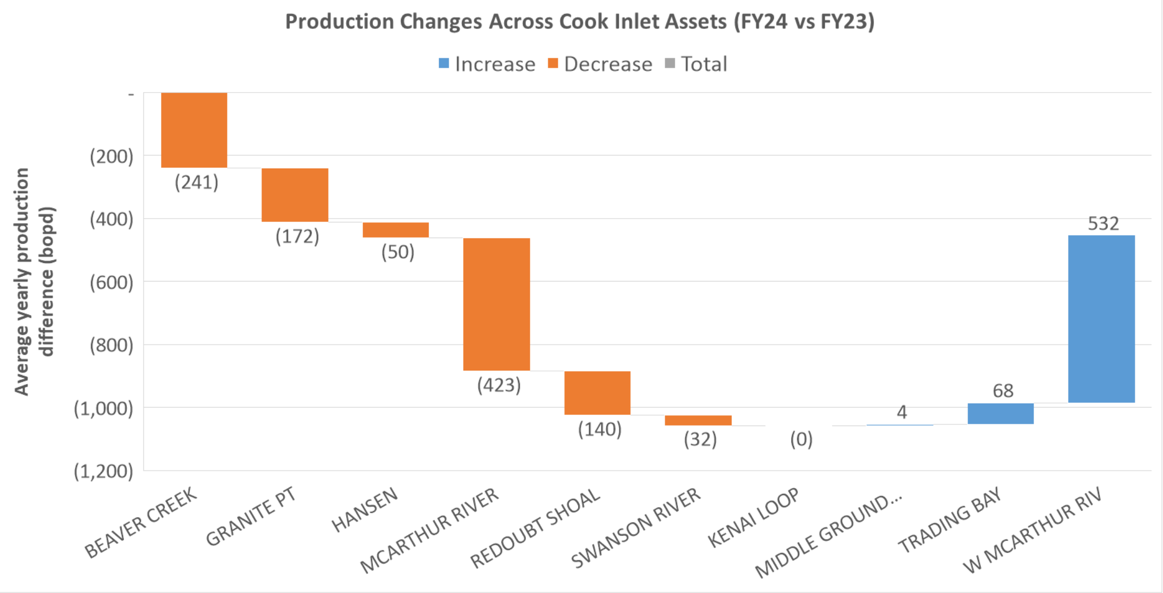
Highlights (FY2024 vs FY2023)

- All fields are generally expected to see a year-on-year decline
- Compared to FY2023, in FY2024 Cook Inlet production decreased by ~5% (~450 bopd)
- Oil from the Cook Inlet basin critical to the supply of in-state refineries

- **Decreases**
  - Beaver Creek, Granite Point, Hansen, McArthur River and Swanson River experiencing natural decline
  - Redoubt Shoal natural decline and well attrition partially offset by rate-adding wellwork
  - Kenai Loop and Middle Ground Shoal are both effectively offline
- **Increases**
  - Trading Bay and West McArthur River offsetting natural decline with rate-adding wellwork

Detailed Field Charts: https://dog.dnr.alaska.gov/Information/PowerBI





DNR Fall 2024 Production Forecasting Approach

No changes in methods used from Fall 2022/Spring 2023 to Fall 2024

DNR Forecast Process: Projects/Pools Included in Forecast

- **DOG performed bottoms-up decline curve forecasts for all producing pools**
  - Forecast of current production uses AOGCC ***publicly available data***
  - ~40 pools (ANS and CI), producing as of 6/30/2024

- **DOG engaged with operators through DOR-arranged in-person and in-writing interviews**

- **16 projects under development/under evaluation were researched/reviewed**
  - Forecasts for these projects use ***confidential information*** from operators
  - Future production from these projects was adjusted and risked for scope of contribution, chance of occurrence and start date
  - 15 located in ANS, 1 located in CI

List of Acronyms:
DOG: Alaska Division of Oil and Gas, within the Alaska Department of Natural Resources
AOGCC: Alaska Oil and Gas Conservation Commission
ANS: Alaska North Slope
CI: Cook Inlet
DOR: Alaska Department of Revenue

Categories of Production: Ongoing/Current vs Future Production

Current Production (CP):

- Ongoing production from existing fields
- Features and considerations:
  - Well and facility uptime
  - Operator spending to maintain base production
  - Reservoir management

Projects Under Development (UD) and Under Evaluation (UE):

- Future production requiring new investments
- Rate contribution:
  - Uncertainty in future well performance
  - Uncertainty in project scope
- Project occurrence and timing:
  - Uncertainty in timing (including outright project cancellation/deferral)
    - Commerciality risk (economic, regulatory, etc.)

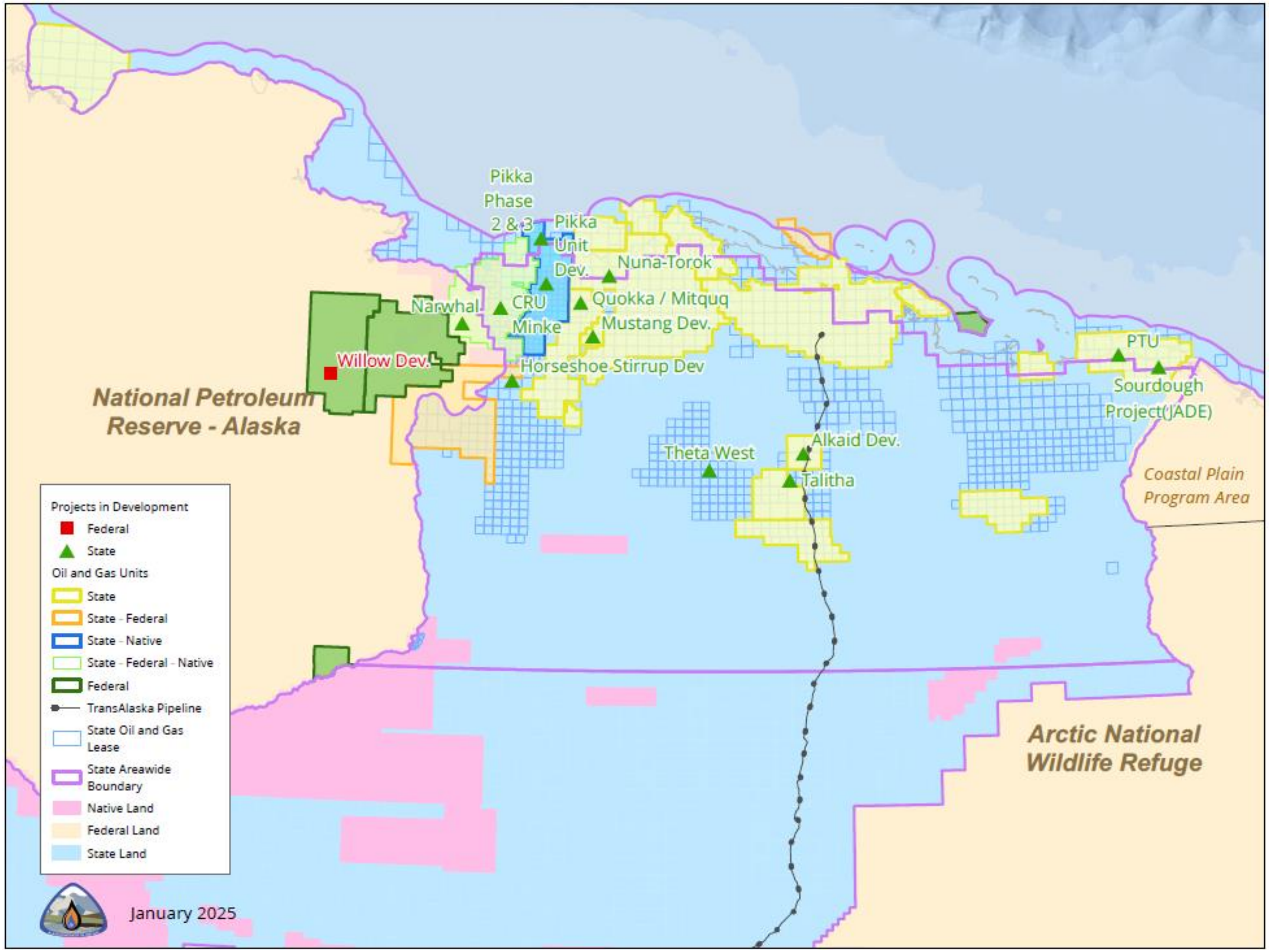
Major Projects Under Evaluation (UE) Considered in Fall 2024 Forecast

General Characteristics:

- Projects that were not online by end of FY2024 (data cut-off date of 6/2024)
- Higher risk factors than currently producing fields
- Known discoveries with identifiable operators
- Require major investments

North Slope Major Projects:

- Willow
- CRU Narwhal CD8
- CRU Minke
- Horseshoe Stirrup
- Pikka Unit Dev.
- Pikka Phase 2
- Pikka Phase 3
- Quokka/Mitquq
- Mustang
- Nuna-Torok
- Theta West
- Talitha
- Alkaid
- PTU Expansion
- Sourdough Project



List of Acronyms:
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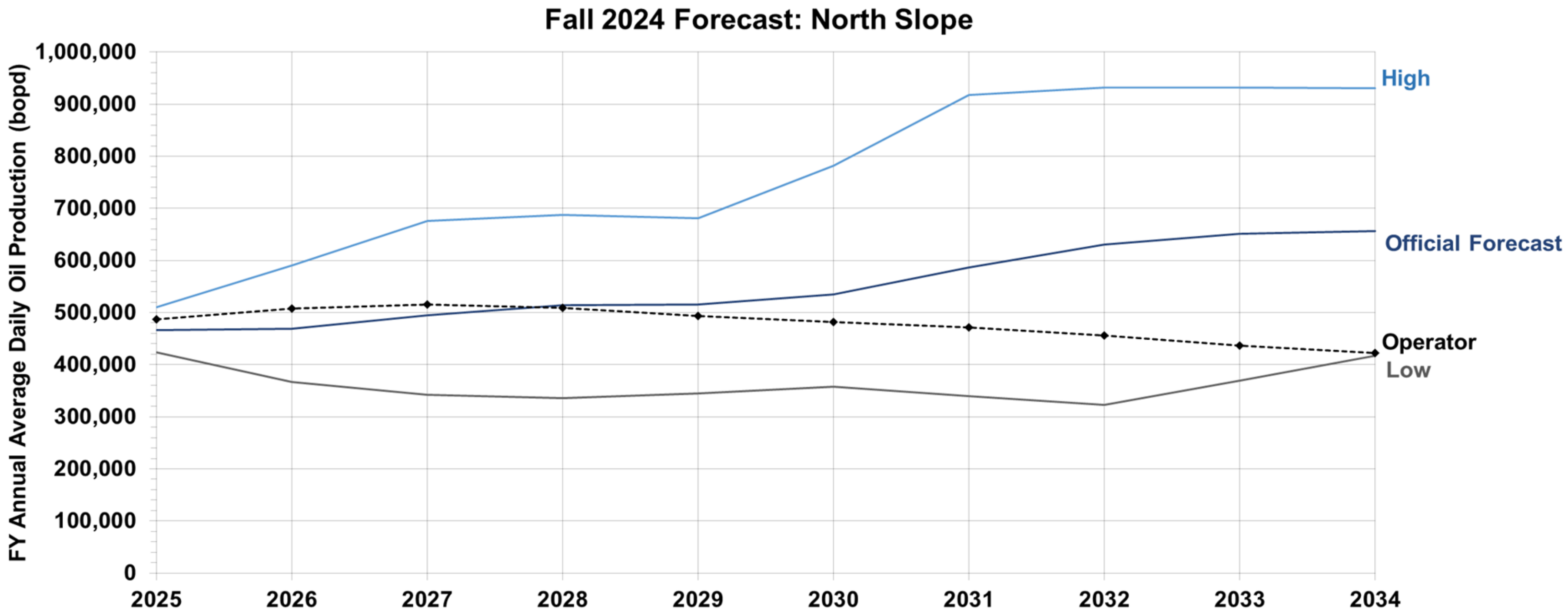
PTU: Point Thomson Unit

Fall 2024 Production Forecast Results & Summary

Fall 2024: North Slope Annualized Forecast



*Data sourced from the **operator(s)** does not include future projects outside of existing producing Units, while the **official forecast** includes production from future projects*

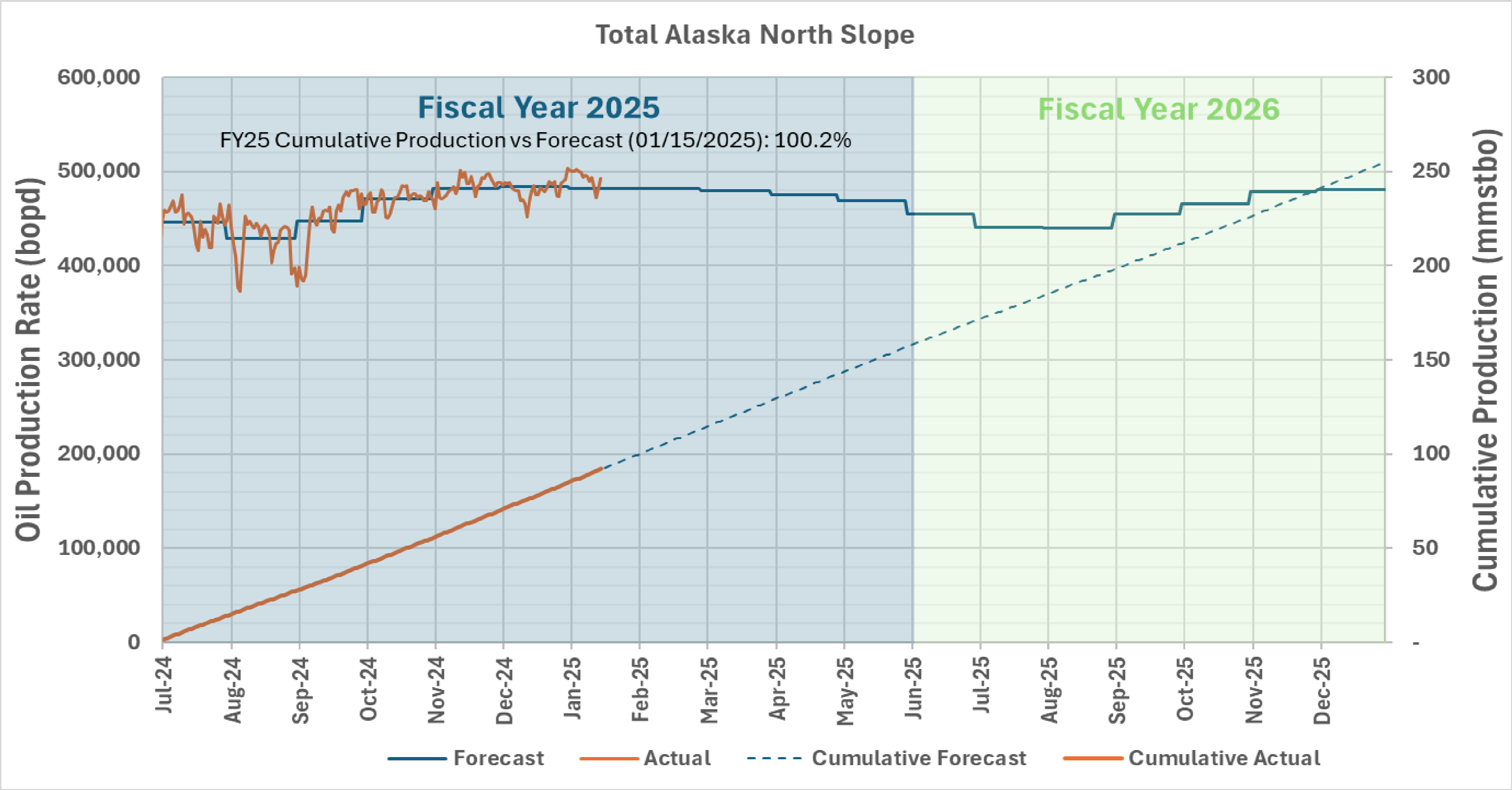
- Short Term:
  - DNR forecasts FY2025 annualized average daily statewide production at 474 MBOPD, and North Slope production at 466 MBOPD, with a range of 424 MBOPD and 510 MBOPD
- Long term:
  - Long-term forecast reliability is gauged by general comparison between DNR and operators' aggregate forecasts. Operators' long-term outlook falls within DNR's long term forecast range
  - Specific differences are expected and do highlight DNR's ground-up uncertainty analysis on all included projects
- Outlook on production assumes that operators' plans, and other project drivers remain unchanged

List of Acronyms:

MBOPD: thousand barrels of oil per day

bopd: barrels of oil per day

FY2025 as Forecasted by DNR in Fall 2024: Monthly Forecast with Daily Actuals



List of Acronyms:

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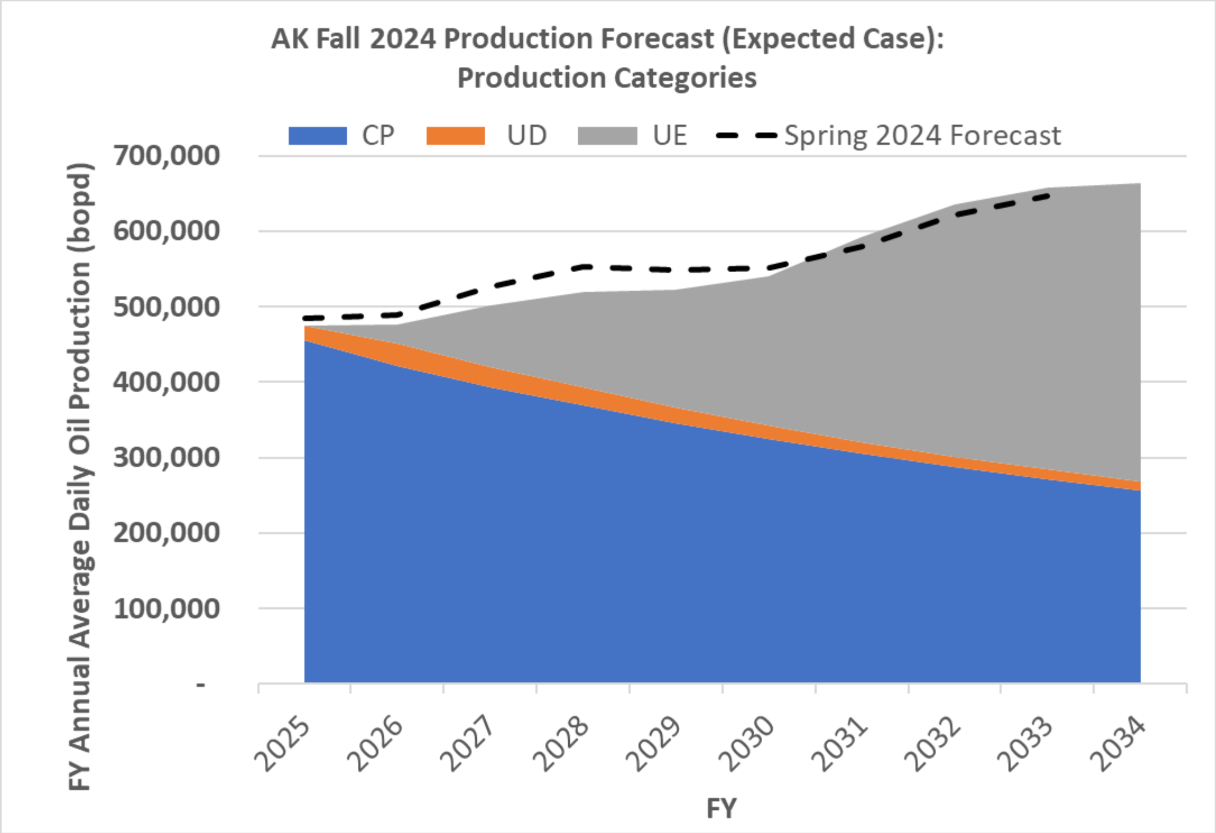
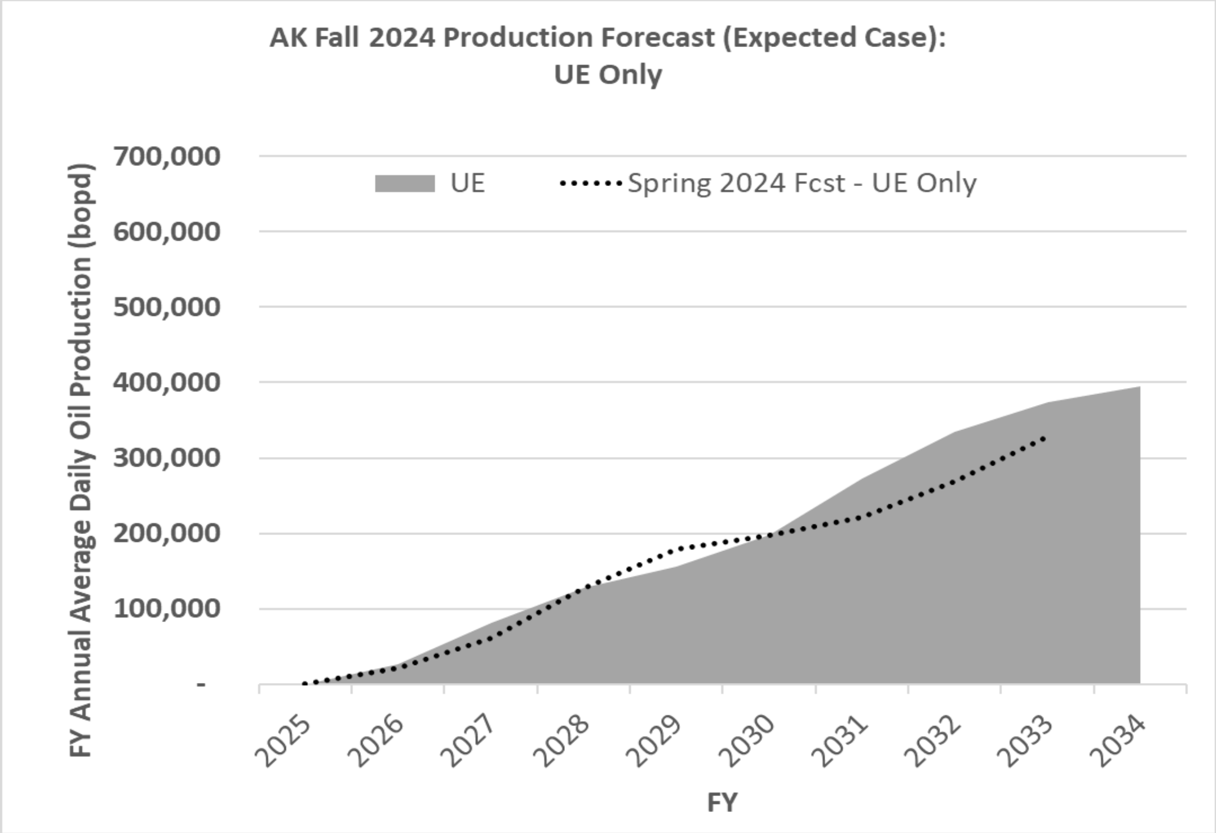
mmstbo: million stock tank barrels oil

Fall 2024: AK Statewide Annualized Forecast (Expected Case with Production Categories)





- Current Production (CP) remains the backbone of state production in near and medium term
- Under Development (UD) segment represents production expected from wells drilled in FY2025
- In the first 7 years, the new forecast is lower than the Spring 2024 Forecast due to greater than expected decline rates in key fields and less than expected production results from recent development projects
- Under Evaluation (UE) begins to play a more significant role in production in the next five to ten years as Pikka, Pikka Phase 2, Willow, and other major projects materialize

Fall 2024: Production Forecast Summary

- DNR forecast continues to use the best information available to DNR/DOR to generate production outlooks for oil fields within the state, with a focus on generating accurate near-term and realistic long-term forecasts

- Fall 2024 forecast is a static view on production; DNR's outlook is updated annually (Fall and Spring) to incorporate latest operator plans and the State's official updated price outlook at the time of the forecast

- DNR's Fall 2024 outlook shows mean annual production of approximately 475 - 500 MBOPD in the first few years of the outlook period, while increasing towards the middle and end towards 660 MBOPD based on the current snapshot of operators' plans

- Production estimates from projects under evaluation account for several considerations such as technical factors, commercial factors, and project execution risks

Thank You

Thank you on behalf of the DOG Fall 2024 Production Forecasting Core Team:

Bernhard Stechauner, Linda Liu, Shaun Peterson, Chalinda Weerasinghe, Adi Chaobal, Ryan Fitzpatrick, and Travis Peltier

https://dnr.alaska.gov/

https://dog.dnr.alaska.gov/

Appendix

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STATE PETROLEUM REVENUE BY LAND TYPE

Land status	Revenue component			
	Production tax / credits	Royalty	Corporate Income Tax	Property Tax
Offshore beyond 6 miles - Federal OCS	Do not apply	Federal royalties applies; zero shared back to state (in Alaska; other states do receive shared royalties)	Not included in apportionment factor	Does not apply
Offshore 3-6 miles - Federal OCS 8(g) area	Do not apply	Federal royalties applies; 27% shared back to state with no restrictions	Not included in apportionment factor	Does not apply
State lands and offshore 0-3 miles	All credits available; tax applies to all taxable production	State royalty applies	All property, production, and sales included in apportionment factor	Applies to all oil and gas property
NPR-A - federal owned	All credits available; tax applies to all taxable production	Federal royalty applies; 50% of royalties are shared back to state but must be used for benefit of local communities	All property, production, and sales included in apportionment factor	Applies to all oil and gas property
ANWR	All credits available; tax applies to all taxable production	Federal royalty applies; 50% shared back to state with no restrictions (under current law)	All property, production, and sales included in apportionment factor	Applies to all oil and gas property
Other federal land	All credits available; tax applies to all taxable production	Federal royalties applies; 90% shared back to state with no restrictions	All property, production, and sales included in apportionment factor	Applies to all oil and gas property
Private land (including Alaska Native Corporation)	All credits available; tax applies to all taxable production	Privately negotiated royalty applies; not shared with state. However state levies 5% (oil) or 1.667% (gas) gross tax on the value of private landowner royalty interest as part of production tax	All property, production, and sales included in apportionment factor	Applies to all oil and gas property

Fall 2024 DOR Revenue Sources Book, Chapter 6, Table 6: [Alaska Department of Revenue - Tax Division]

Alaska North Slope Oil and Gas Units