

Fall 2023 Oil Production Forecast

Senate Finance Committee

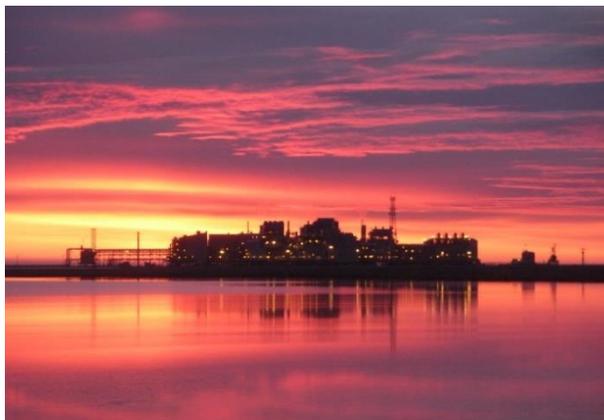


Presented by:

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Alaska Department of Natural Resources

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AGENDA



- Introduction & Forecast Preview
- FY2023 in Review
- DNR Fall 2023 Production Forecasting Approach
- Fall 2023 Forecast Results & Summary
- Appendix

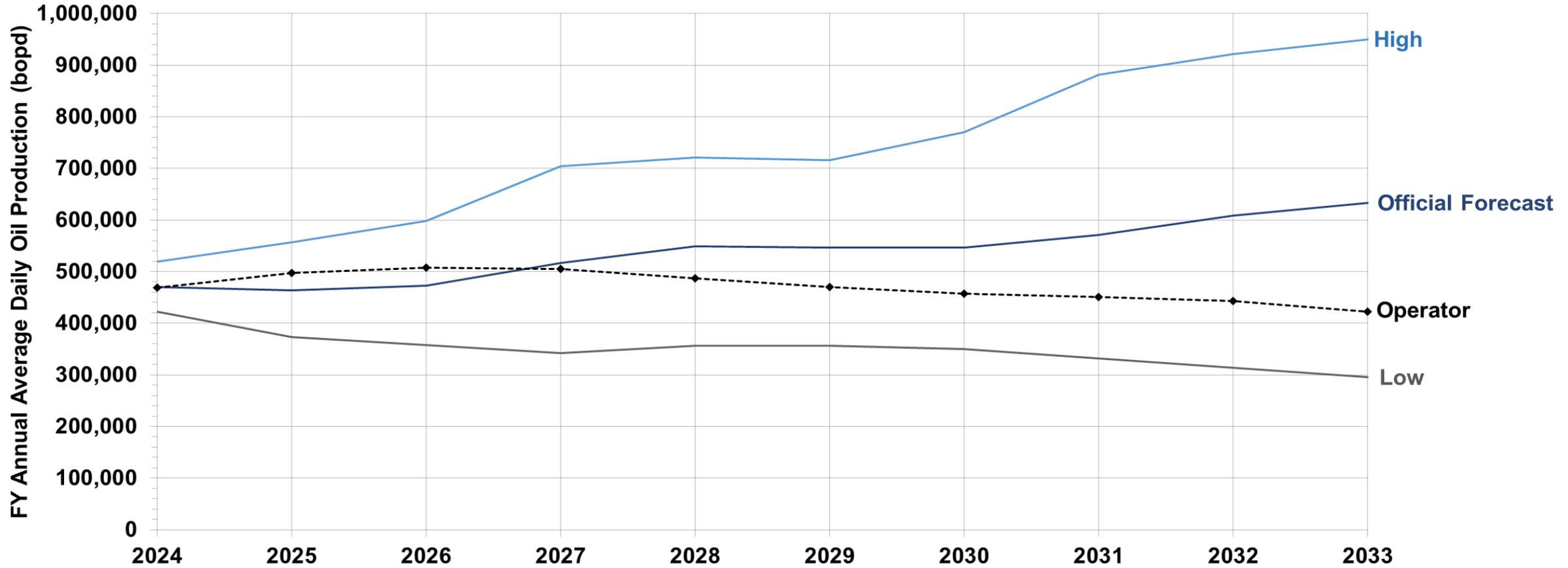
List of Acronyms:

FY: Fiscal Year (July 1 of the previous year to June 30 of the listed year.)

DNR: Alaska Department of Natural Resources

FALL 2023: NORTH SLOPE ANNUALIZED FORECAST

Fall 2023 Forecast: North Slope

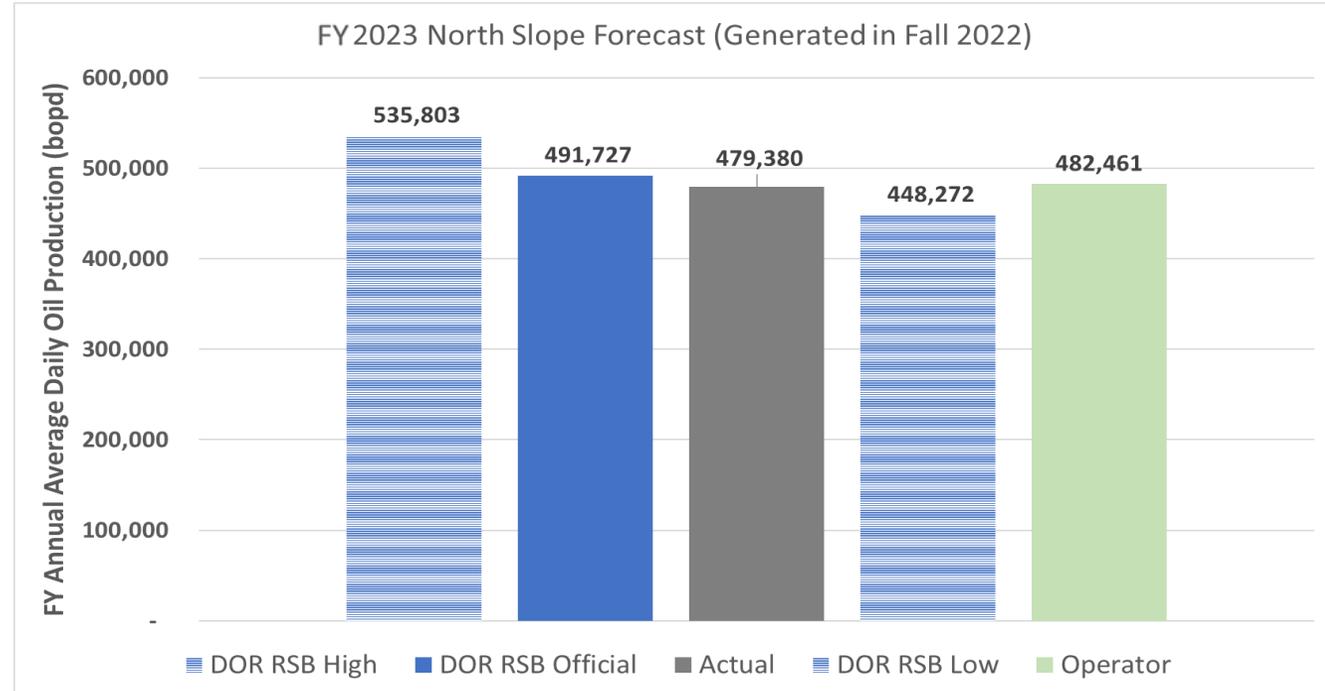


Data sourced from the **operator(s)** does not include future projects, while the **official forecast** includes production from future projects.

FY2023 IN REVIEW

FY2023 AS FORECASTED BY DNR IN FALL 2022: HOW DID WE DO?

- **Actual FY2023 production was within DNR's forecasted range**
- **DNR's mean forecast was ~3% higher than actual FY2023 production**
- **Factors currently shaping the forecast horizon:**
 - Industry interest is expanding in Brookian age plays (i.e., Nanushuk) across the North Slope
 - Evolving ESG influences continue to challenge capital allocation decisions in Alaska, but companies and investors are also adapting
 - Federal regulatory changes and leasing restrictions present challenges



List of Acronyms:

ESG: Environmental, Social, and Governance

DOR: Alaska Department of Revenue

RSB: Revenue Sources Book

FY: Fiscal Year

DNR: Alaska Department of Natural Resources

FY2023 SUMMARY: NORTH SLOPE

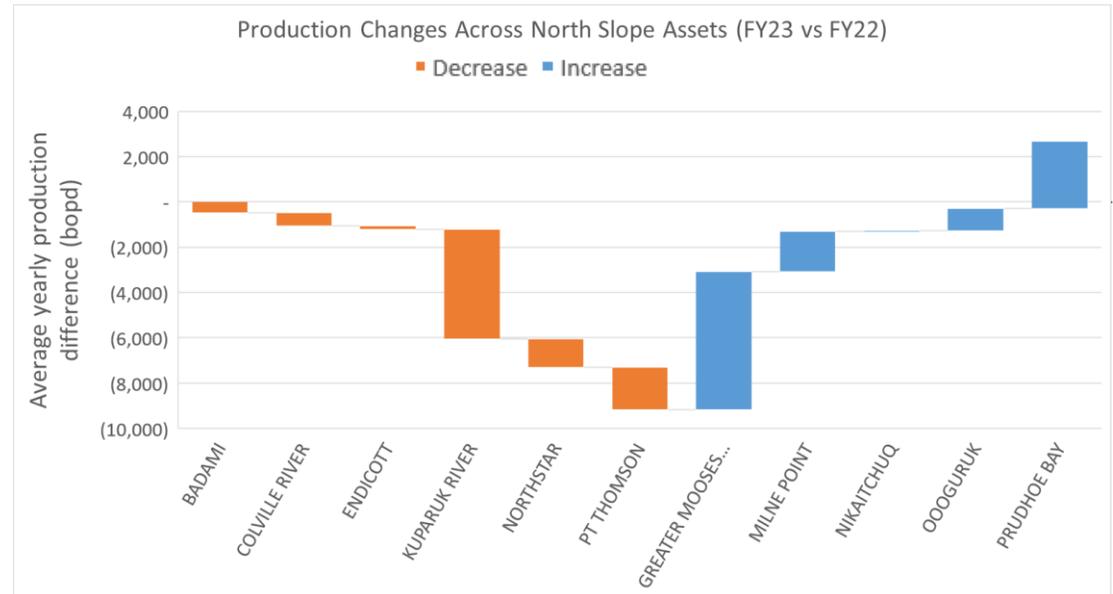
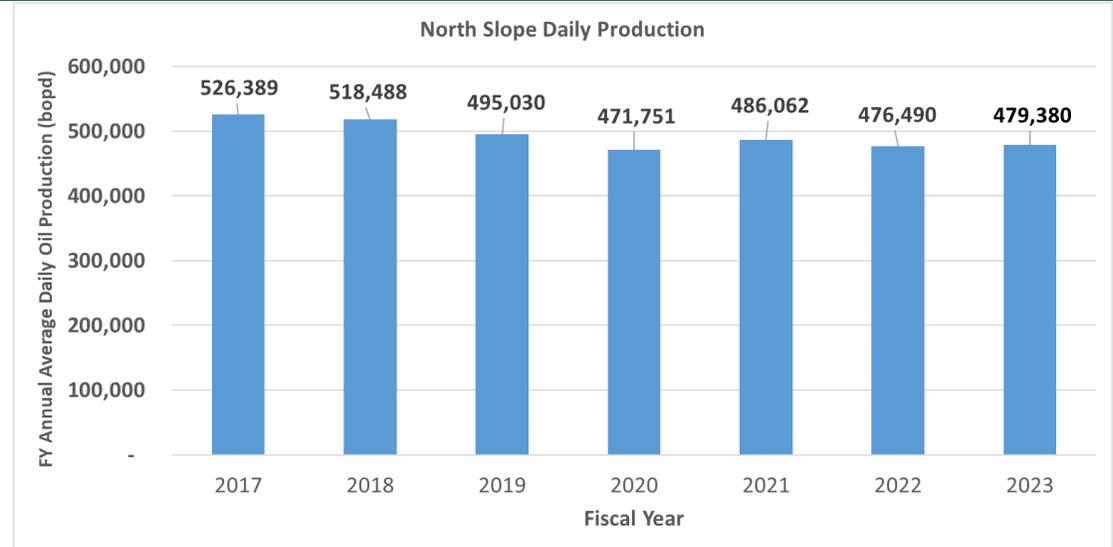
Highlights (FY2023 vs FY2022)

- All fields are generally expected to see a year-on-year decline
- Compared to FY2022, in FY2023 North Slope production increased by ~1% (~2,890 bopd)
- **Decreases**
 - Badami: Best producing well offline for much of FY2023, back online in May 2023
 - Colville River and Kuparuk River: Natural decline offset with development drilling
 - Endicott and Northstar: Natural reservoir decline
 - Point Thomson: Single production well suffering technical challenges which continue into FY2024
- **Increases**
 - Greater Mooses Tooth: GMT2 pad continued development drilling
 - Milne Point, Nikaitchuq and Oooguruk: Production growth due to infill drilling and rig workover efforts
 - Prudhoe Bay: Growth from improved facility reliability and increased gas throughput in the winter

List of Acronyms:

GMT2: Greater Moose's Tooth Pad #2

bopd: barrels of oil per day



STATUS UPDATE OF KEY FUTURE PROJECTS: NORTH SLOPE

	Status: January 2023	Status: January 2024	Production Rate Estimates
Pikka	Project Final Investment Decision (FID) approved in August 2022 for Pikka Phase 1. Project first oil anticipated in 2026.	Project construction and drilling activities ongoing, and project first oil anticipated in Q2 of 2026.	Peak design capacity rate, Phase 1: 80,000 bopd
Willow	Awaiting BLM Record of Decision (ROD) on SEIS. FID cannot be made before the ROD is made. First oil expected 6 years after FID, if approved.	BLM ROD on SEIS issued in 2023 and Conoco started construction activities in April 2023. FID announced December 2023. First oil expected in 2029.	Peak rate: ~180,000 bopd
CRU Narwhal CD8	Sustained production from CD8 could commence as early as 2028, pending stakeholder alignment, permitting, internal studies and alignment. This conceptual first oil date remains consistent with the 23rd POD submitted in 2021.	The conceptual first oil date changed to 2030 in the 25 th CRU POD submitted in 2023, pending stakeholder alignment, permitting, and internal studies and alignment.	Peak DNR estimates >32,000 bopd
MPU Raven Pad	November 2022 Hilcorp applied for approval to construct a new drilling and production pad (R Pad) within the Milne Point Unit.	DNR approval granted for R Pad construction in February 2023 within the Milne Point Unit. Construction activities ongoing.	Peak DNR estimates ~10,000 bopd. Analogous to the 2018 M Pad development at MPU.
KRU Nuna-Torok	2022 KRU POD states rotary drilling is planned in Q3 of 2022 with an additional injector/producer pair for additional Torok reservoir appraisal to inform future developments.	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.	Peak rate up to 20,000 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

FY2023 SUMMARY: COOK INLET

Highlights (FY2023 vs FY2022)

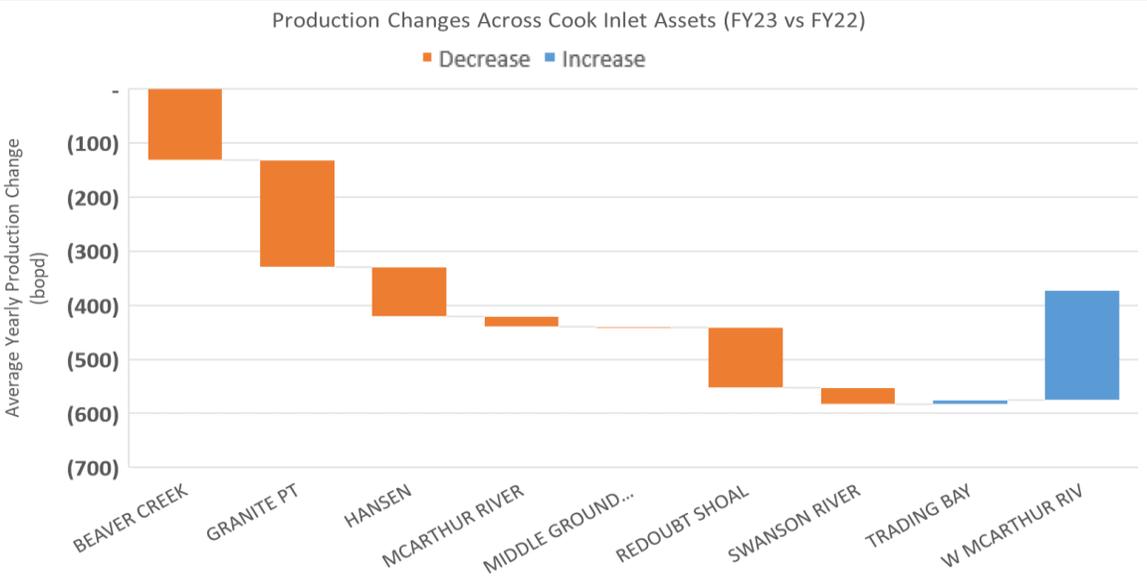
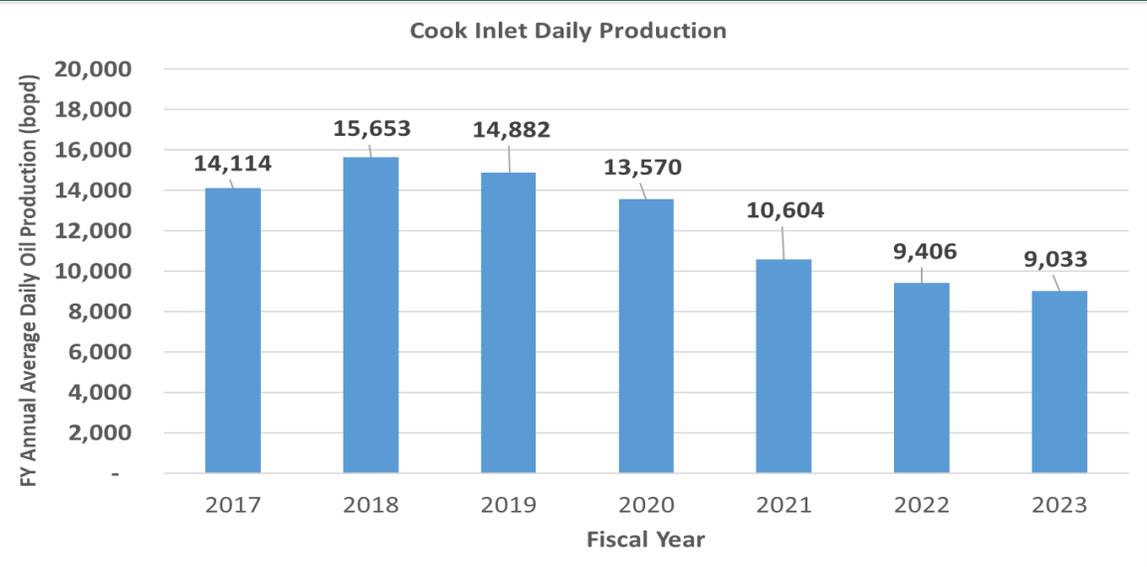
- All fields are generally expected to see a year-on-year decline
- Compared to FY2022, in FY2023 Cook Inlet production decreased by ~4% (~370 bopd)
- Oil from the Cook Inlet basin critical to the supply of in-state refineries

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

Increases

- Trading Bay and West McArthur River offsetting natural decline with rate-adding wellwork



DNR FALL 2023 PRODUCTION FORECASTING APPROACH

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

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*
 - ~39 pools (ANS and CI), producing as of 6/30/2023
- **DOG engaged with operators through DOR-arranged in-person and in-writing interviews**
- **15 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

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.)

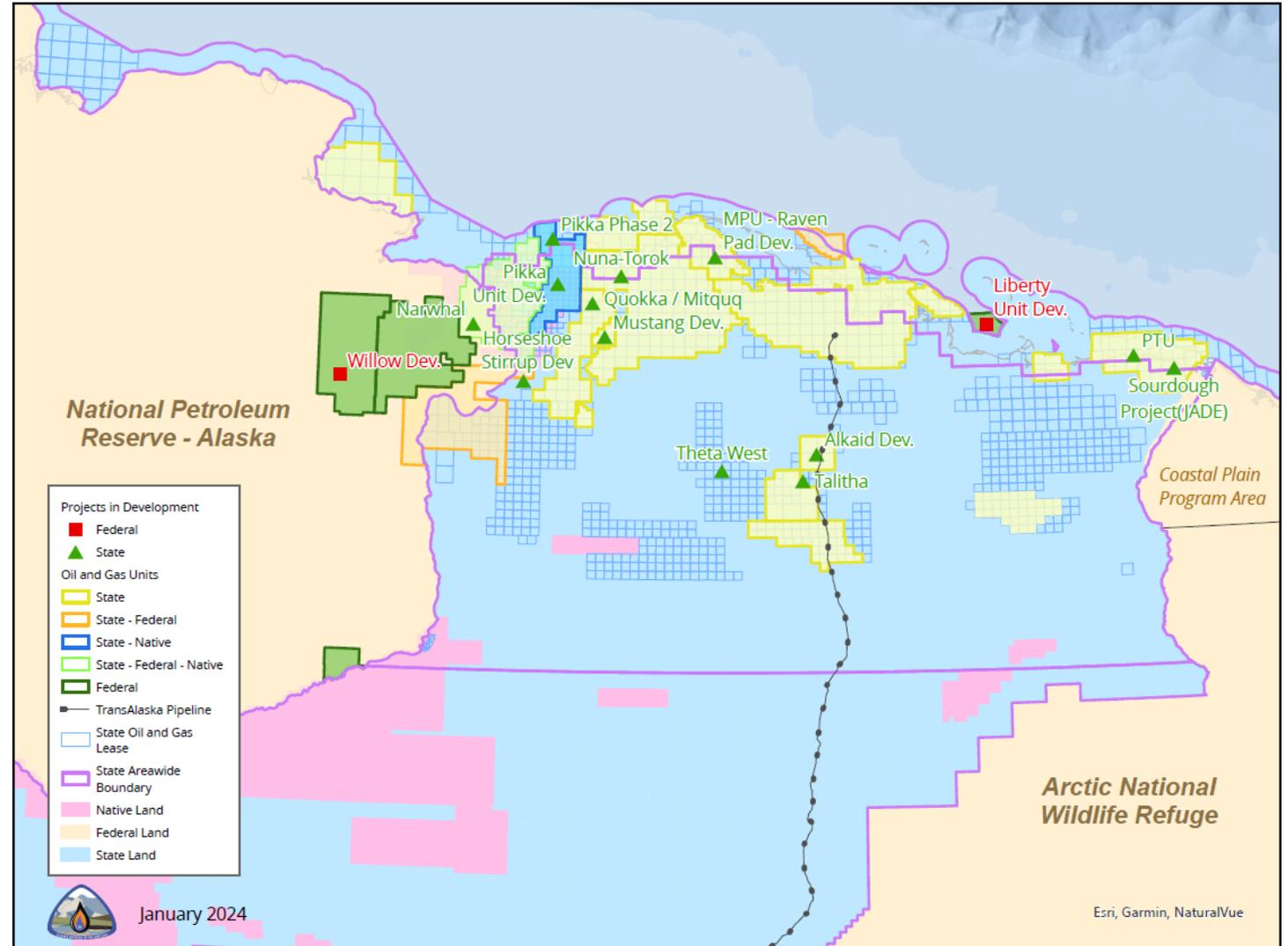
MAJOR PROJECTS UNDER EVALUATION (UE) CONSIDERED IN FALL 2023 FORECAST

General Characteristics:

- Projects that were not online by end of FY2023 (data cut-off date of 6/2023)
- Higher risk factors than currently producing fields
- Known discoveries with identifiable operators
- Require major investments

North Slope Major Projects:

- Willow
- CRU Narwhal CD8
- Horseshoe Stirrup
- Pikka Unit Dev.
- Pikka Phase 2
- Quokka/Mitquq
- Mustang
- Nuna-Torok
- MPU – Raven Pad
- Theta West
- Talitha
- Alkaid
- Liberty Unit
- PTU Expansion
- Sourdough Project



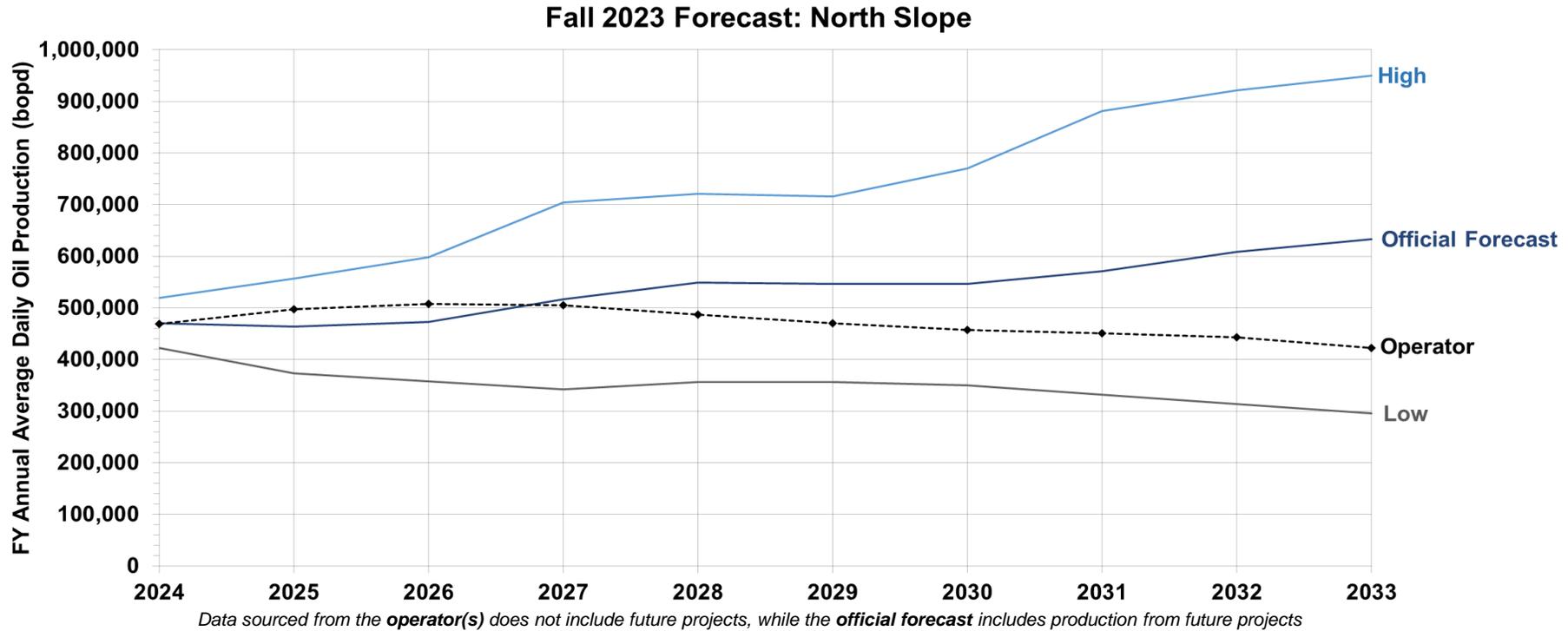
List of Acronyms:

MPU: Milne Point Unit
CRU: Colville River Unit

PTU: Point Thomson Unit

FALL 2023 PRODUCTION FORECAST RESULTS & SUMMARY

FALL 2023: NORTH SLOPE ANNUALIZED FORECAST

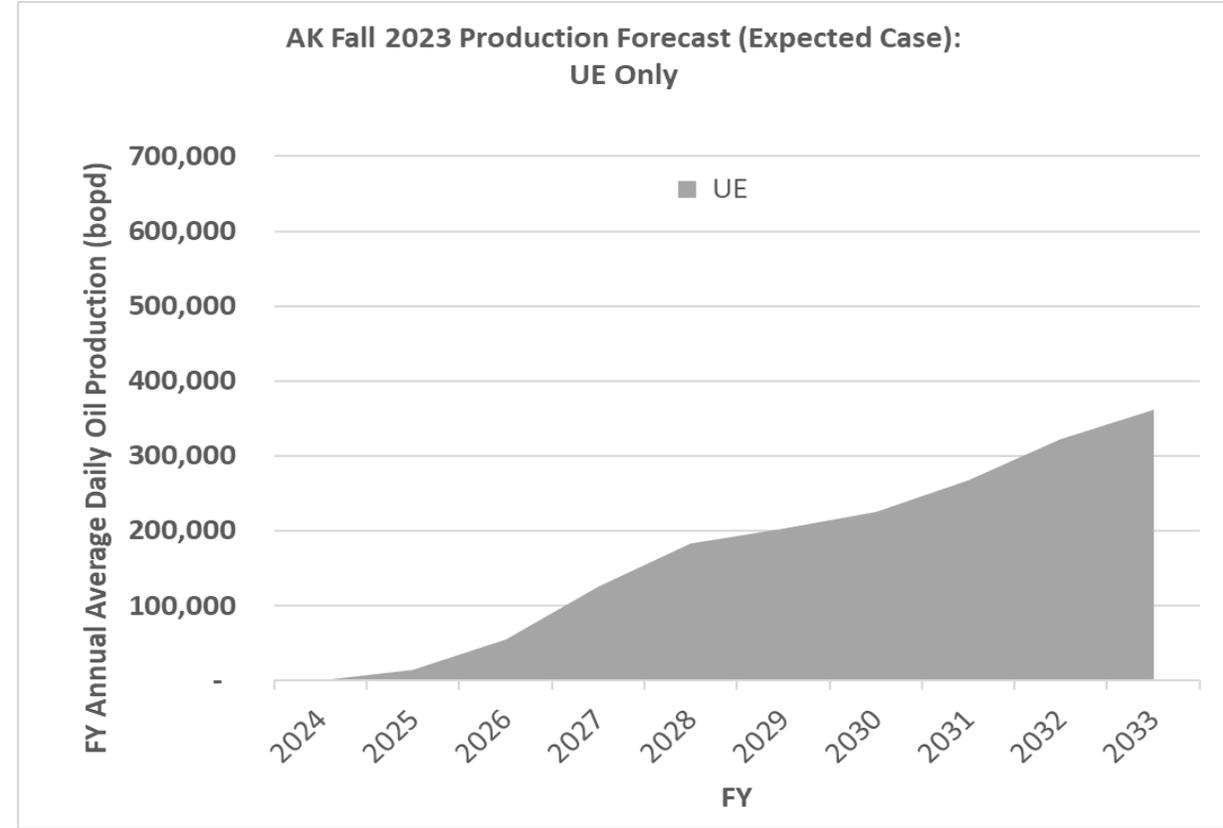
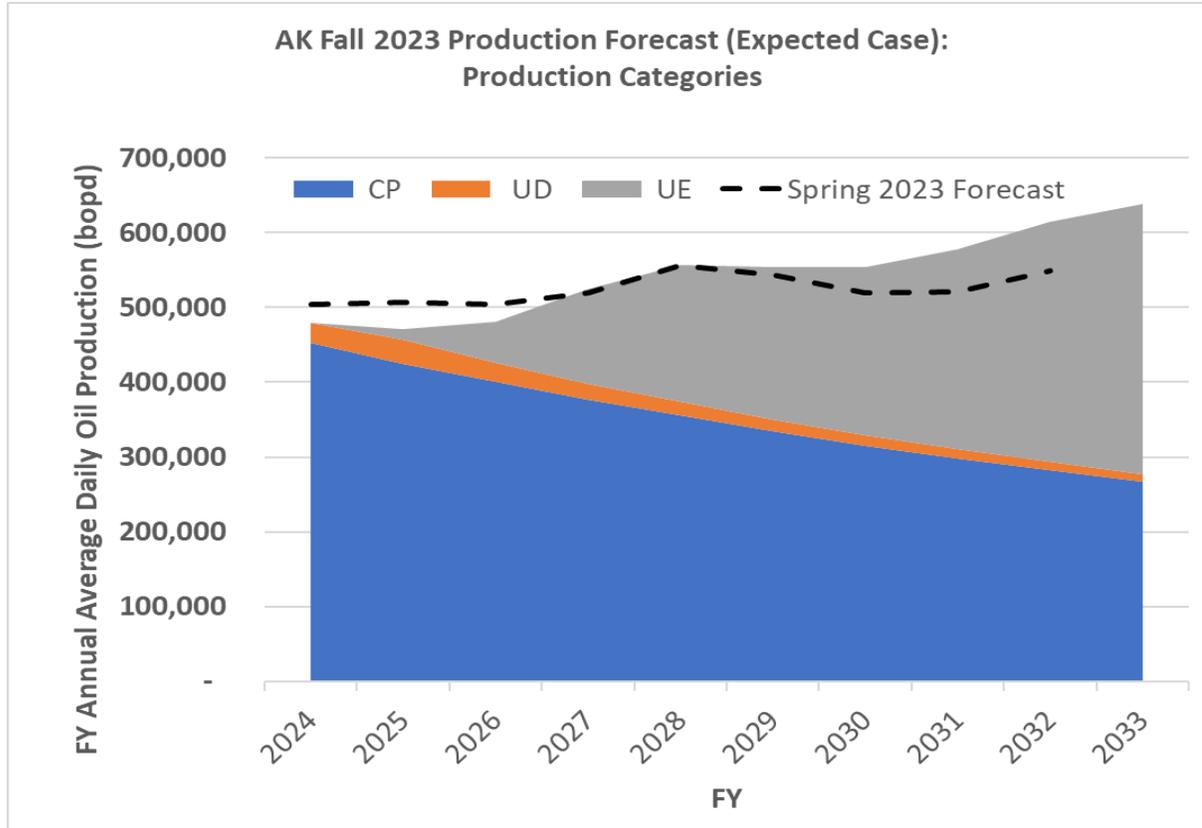


- **Short Term:**
 - DNR forecasts FY2024 annualized average daily statewide production at 478 MBOPD, and North Slope production at 470 MBOPD, with a range of 422 MBOPD and 519 MBOPD
- **Long term:**
 - Long-term forecast reliability is gauged by general comparison between DNR and operators' aggregate 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

FALL 2023: 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 FY2023
- Near term (i.e. 3 to 4 years out), the new forecast is lower than the Spring 2023 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 5 to 10 years as Pikka, Willow, and other major projects materialize

FALL 2023: 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 2023 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 2023 outlook shows mean annual production of approximately 480 - 500 MBOPD in the first few years of the outlook period, while increasing towards the middle and end towards 630 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 2023
Production Forecasting Core Team:**

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Chaobal, Jhonny Meza, and Travis Peltier**



<https://dnr.alaska.gov/>



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

APPENDIX

REFERENCE LIST OF ACRONYMS

Units

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

Volumes

BO or **bbbl**: 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

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