

Alaska Department of Natural Resources: Oil & Gas Outlook & Permitting

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January 25, 2019



DEPARTMENT OF NATURAL RESOURCES

- LAND BASE & OWNERSHIP -

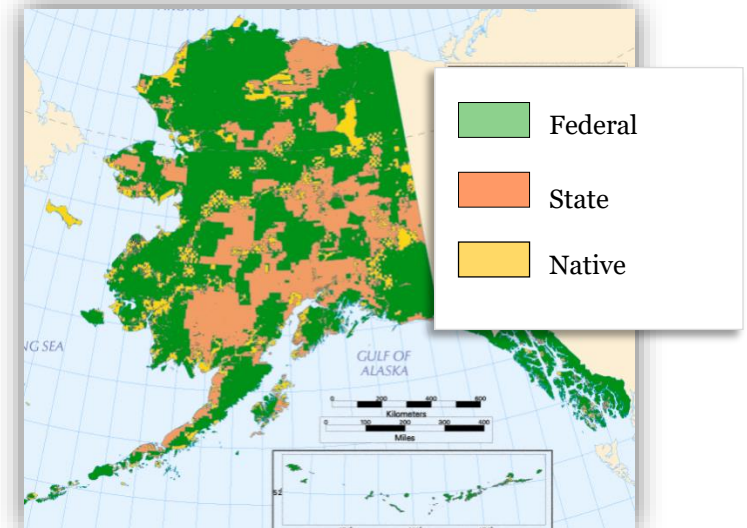


Land Base

- 586,412 sq. miles—more than twice the size of Texas
- Larger than all but 18 sovereign nations
- More coastline than all other 49 states combined
- More than 3 million lakes; half of world's glaciers
- Approximately 40% of the nation's freshwater supply

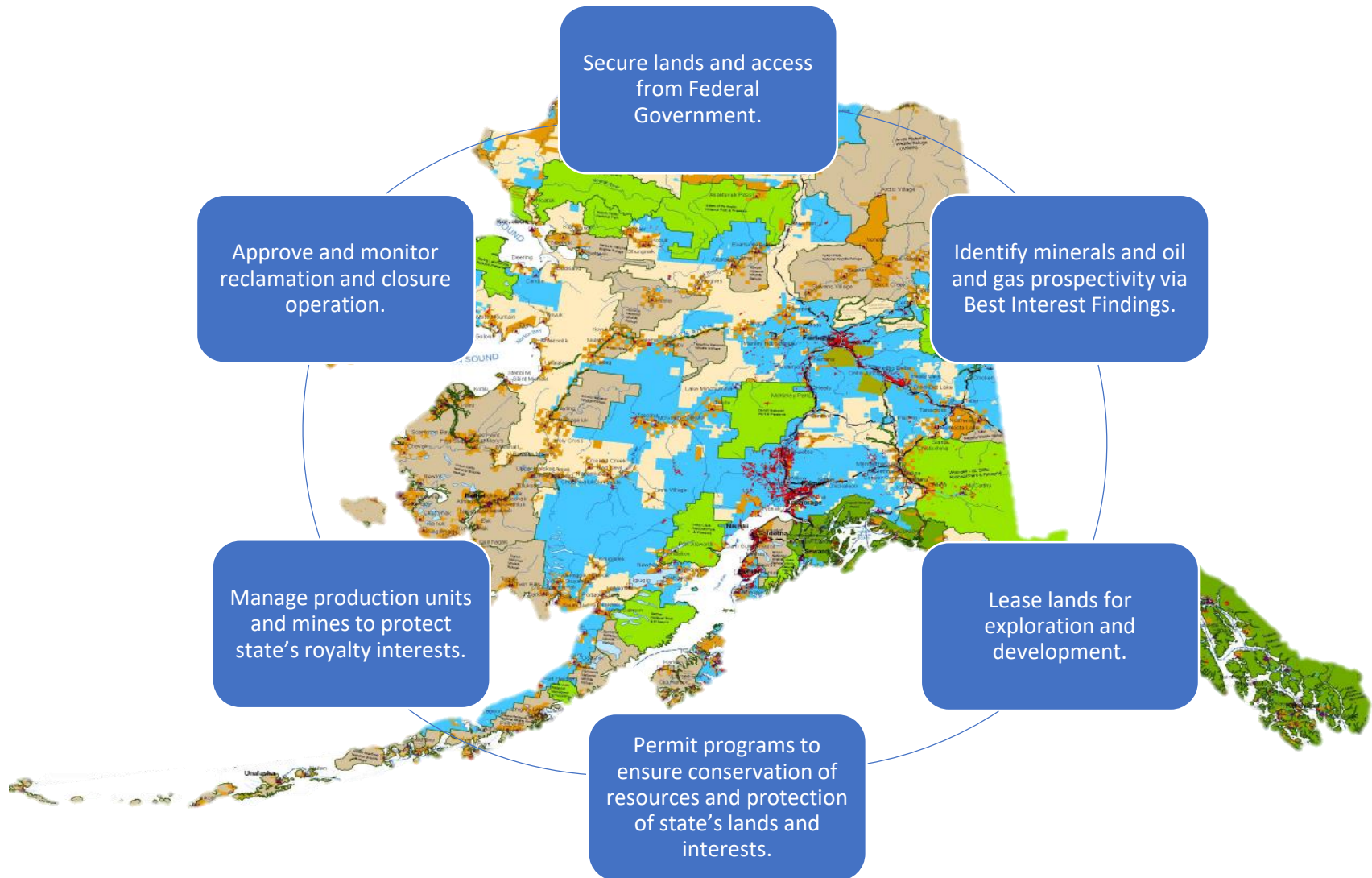
Land Ownership

- *Federal Land*: more than 200 million acres
- *State Land*: Approx. 100 million acres of uplands, 60 million acres of tidelands, shore lands, and submerged lands, and 40,000 miles of coastline
- *Native Corporation Land*: 44 million acres



DEPARTMENT OF NATURAL RESOURCES

- LAND LIFE CYCLE -



DEPARTMENT OF NATURAL RESOURCES

- OIL & GAS RESOURCE POTENTIAL-

North Slope

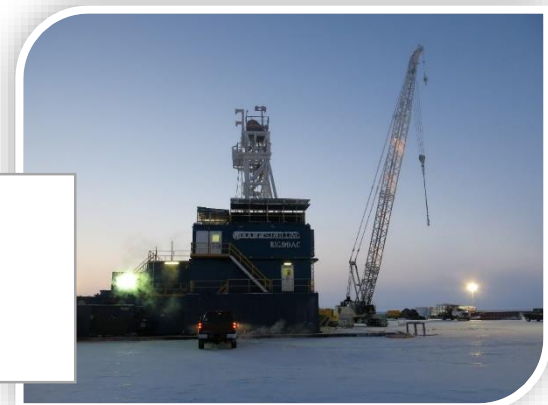
- More undiscovered, potentially recoverable oil than any other Arctic nation
 - **OIL:** Est. 40 billion barrels of conventional oil
 - **GAS:** Est. over 200 trillion cubic feet of conventional natural gas
- Untapped unconventional resource potential, including tens of billions of barrels of heavy oil, shale oil, and viscous oil, and hundreds of trillions of cubic feet of shale gas, tight gas, and gas hydrates

Compared to most basins, Alaska is relatively underexplored, with 500 exploration wells on the North Slope, compared to Wyoming's 19,000.

Cook Inlet

- Significant undiscovered resources remain
 - 19 trillion cubic feet of natural gas
 - 600 million barrels of oil
 - 46 million barrels of natural gas liquids

Sources: USGS & BOEM



DEPARTMENT OF NATURAL RESOURCES

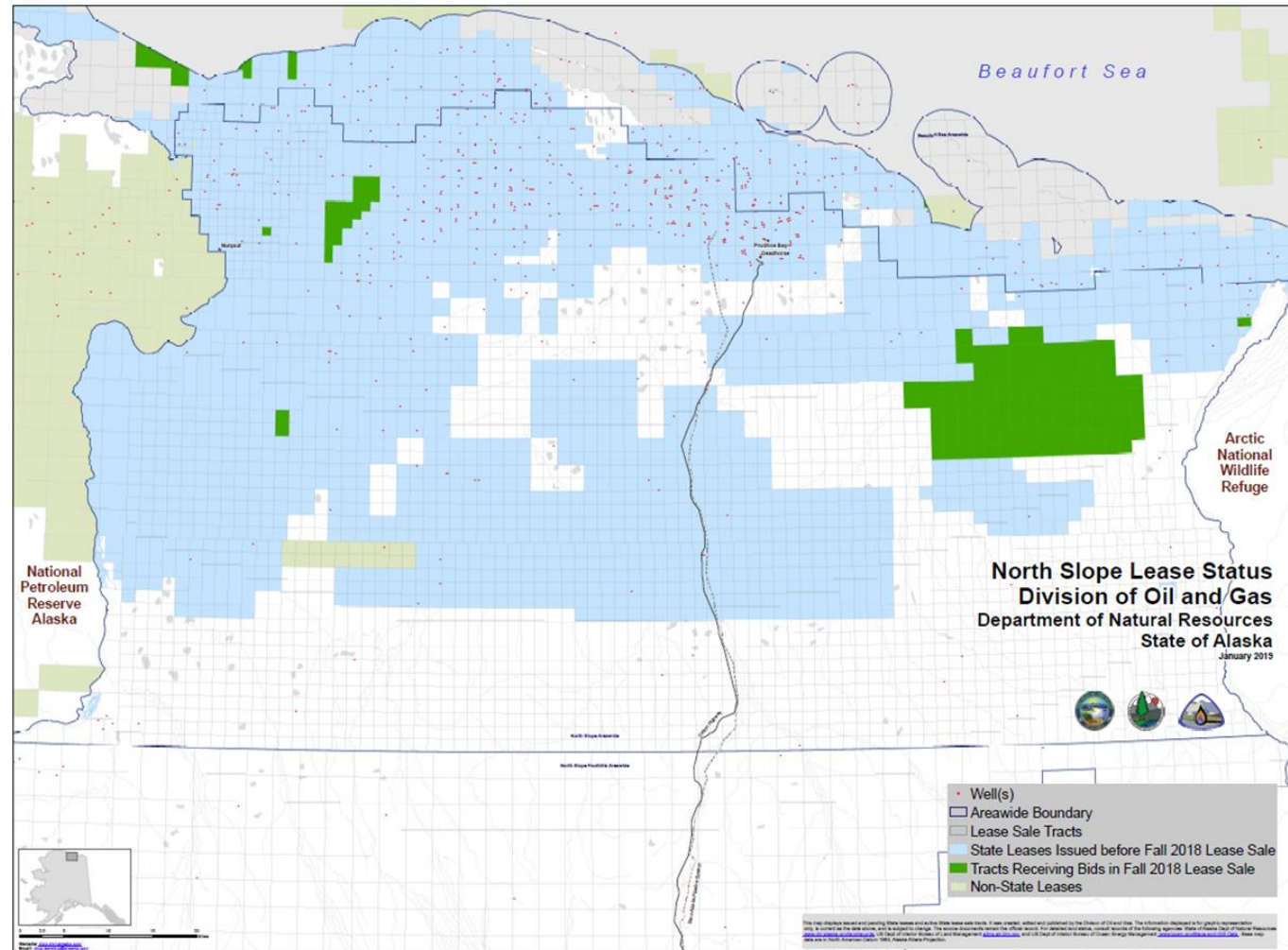
- OIL & GAS OUTLOOK -

2018 Fall Lease Sale brought the 3rd highest amount of winning bids since 1998

Total Bonus Bid:
\$29,234,028.10

Highest Bid Per
Acre: **\$586.00**

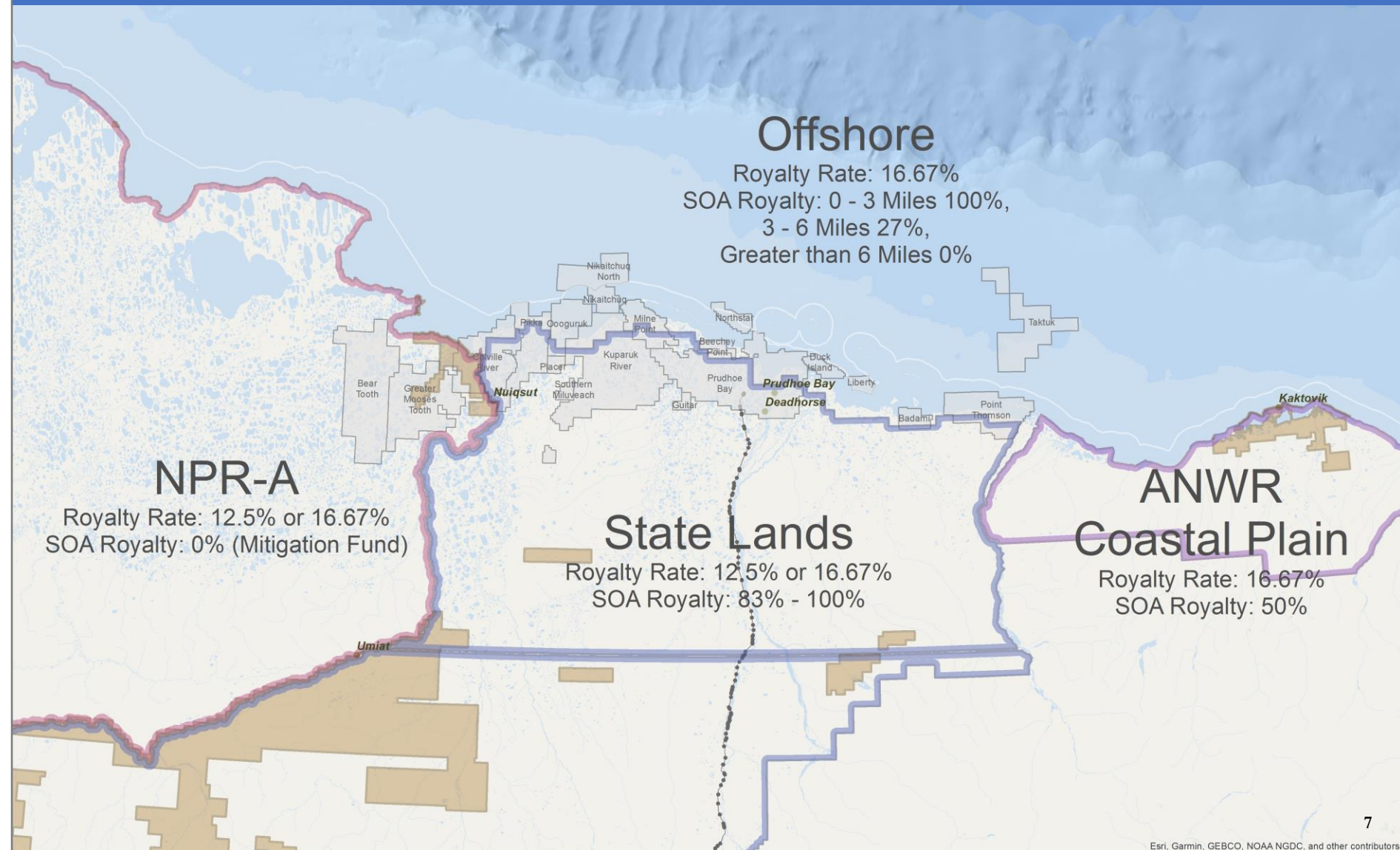
Total Leased Acres:
243,950



Alaska Department of Natural Resources: Production Highlights

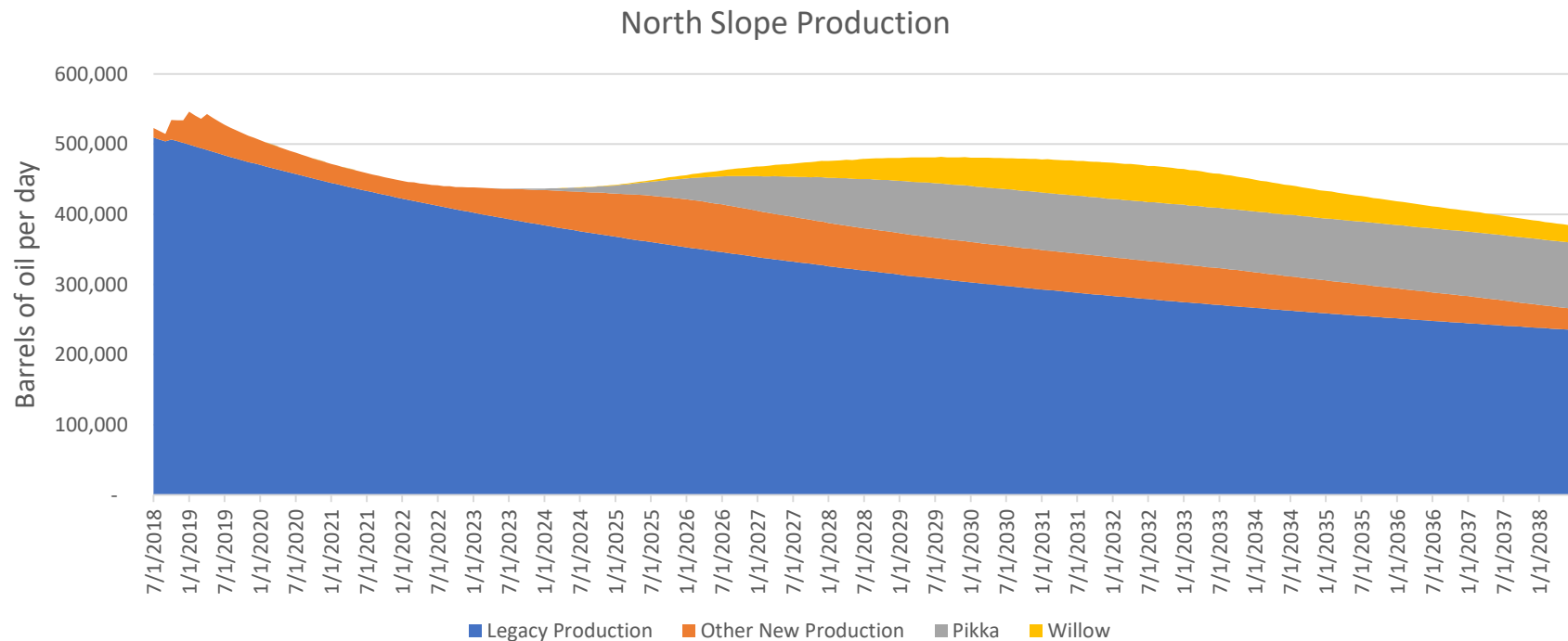
STATE OF ALASKA

- ROYALTY RATE -



STATE OF ALASKA

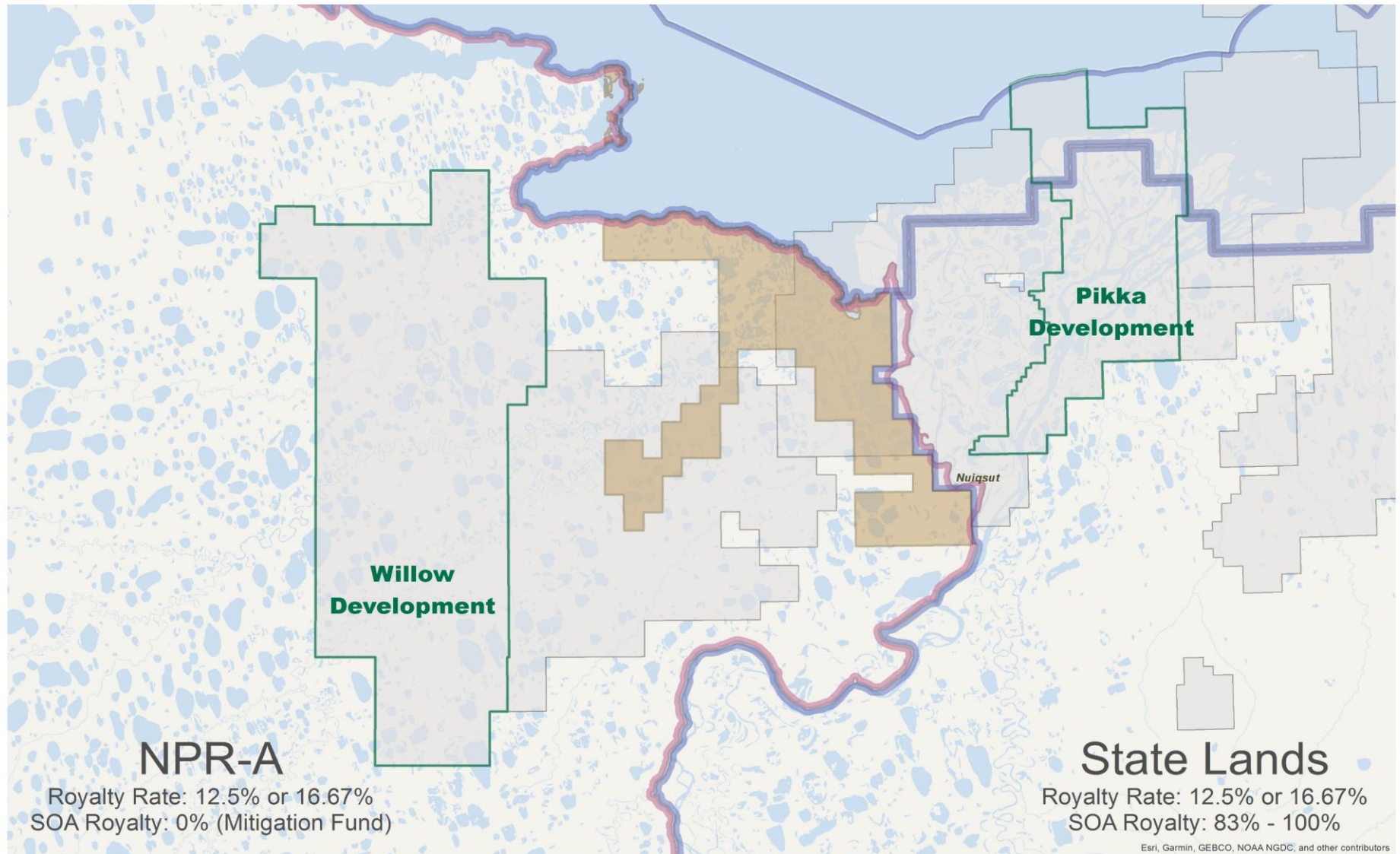
- 20-YEAR PRODUCTION OUTLOOK -



- Risked profiles (Includes risks of occurrence, start time and performance applied to success case profile)
- Legacy fields remain backbone of state oil production in near and medium term
- Future fields which are currently being evaluated by operators, begin to play a more significant role in production in the next 5-6 years

STATE OF ALASKA

- ANALYSIS OF WILLOW VS PIKKA



STATE OF ALASKA

- WILLOW DEVELOPMENT (SUCCESS CASE) -

2019 WIO:

100% ConocoPhillips

Land Ownership:

Federal

Project Milestones (operator):

- 2019 Further Appraisal
- 2024 or 2025 First Oil

Project Scale (operator):

- Resource size (500 – 1100 mmboe)
- Likely plateau (over 100 mbbls/day)

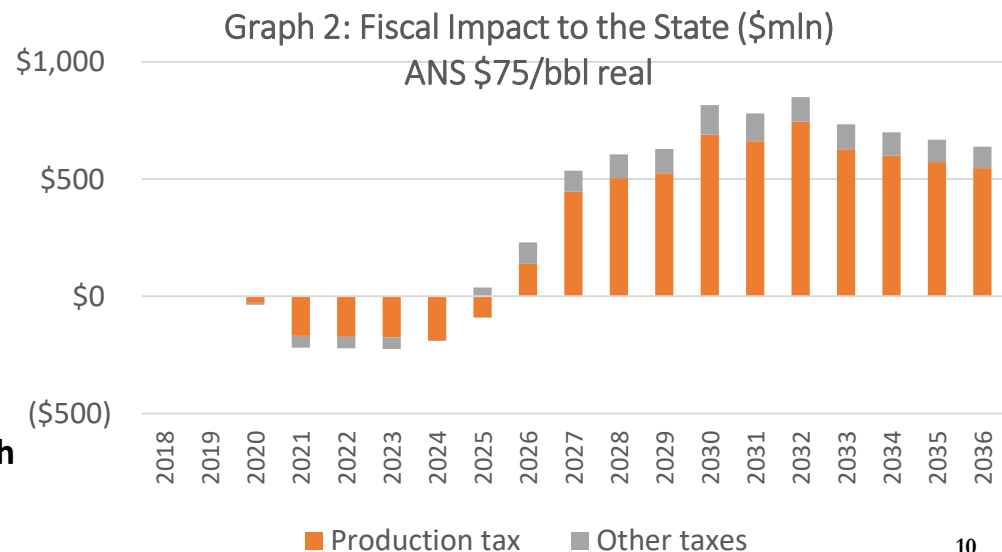
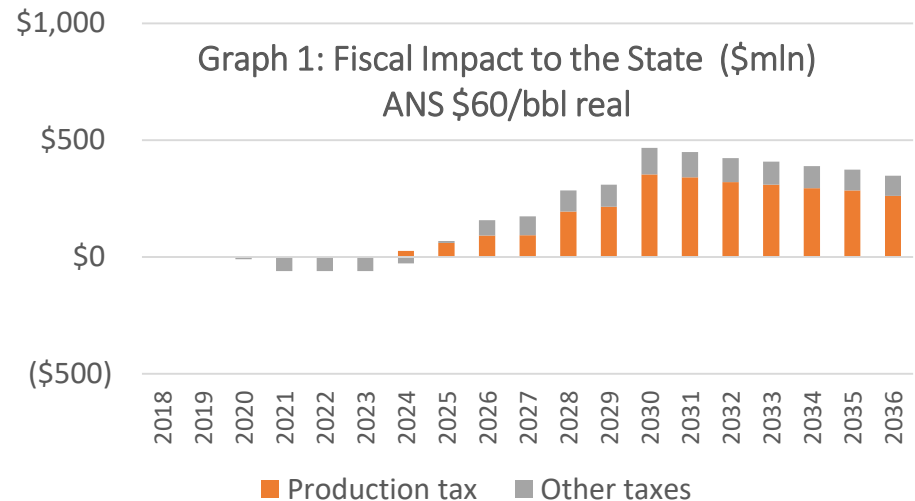
Scenarios

- Graph 1: CPAI is a minimum tax payer
- Graph 2: CPAI is a net tax payer

Tax Impacts:

- Expenditure
- Price

Potential to generate over \$8B - \$13B to SOA through 2040 (undiscounted)



STATE OF ALASKA

- PIKKA DEVELOPMENT (SUCCESS CASE) -

2019 WIO:

51% Oil Search, 49% Repsol

Land Ownership:

83% State, 17% ASRC

Project Milestones (operator)

- 2018 Winter Appraisal (2 wells)
- 2019 – 2020 FEED
- 2021 – 2023 Development
- 2023 or 2024 First Oil

Project Scale (operator):

- Resource size (400 – 720 mmbbls)
- Likely plateau (120 mbbls/day)

Scenarios

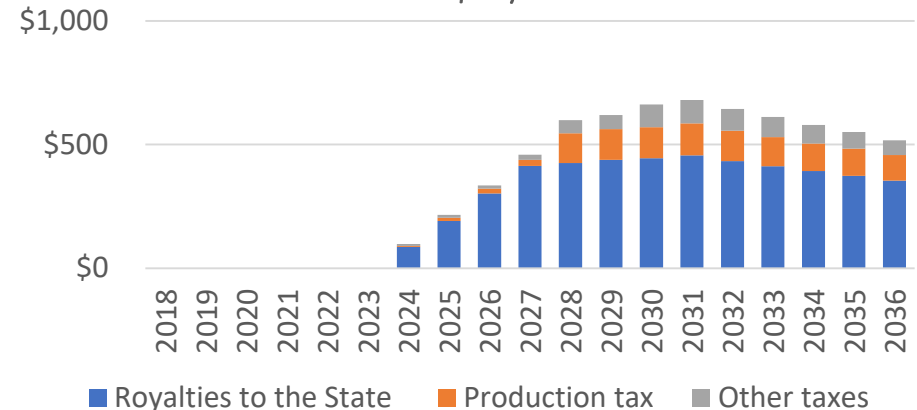
- Graph 1: Min tax for extended time due to spent and loss carryforward (LCF)
- Graph 2: LCF impacts fewer years of tax

Tax impacts:

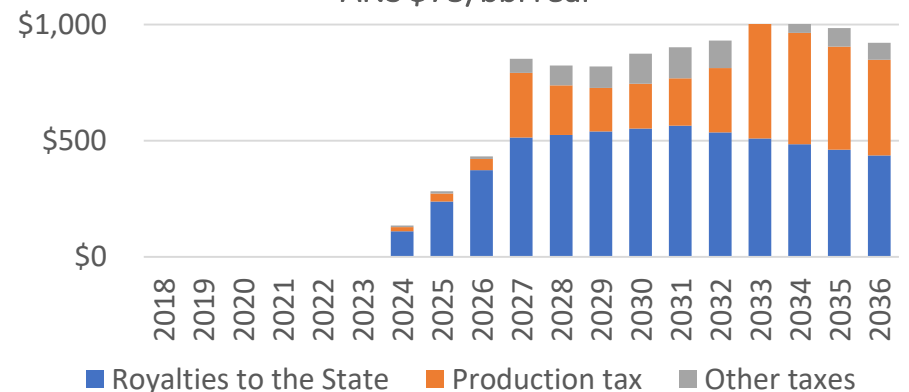
- No negative pre-production stream
- Little to no tax production for early years

Potential to generate over \$8B - \$13B to SOA through 2040 (undiscounted)

Graph 1: Fiscal Impact to the State (\$mln)
ANS \$60/bbl real



Graph 2: Fiscal Impact to the State (\$mln)
ANS \$75/bbl real



STATE OF ALASKA

- ROYALTY ANALYSIS -

| Field or Area | Royalty Rate | Alaska Native Royalty* | Federal Royalty* | Mitigation Impact Fund Royalty | State Royalty | Publicly announced barrels/day | 1 Year <i>Total Royalty Revenue</i> based on peak production | Estimated First Oil |
|--------------------|-----------------|------------------------|------------------|--------------------------------|---------------|---------------------------------|--|---------------------|
| NPR-A | | | | | | | | |
| GMT-1 | 16.67% | 82% | 9% | 9% | 0%** | 30,000 | \$125 million | October 2018 |
| GMT-2 | 16.67% | 8% | 46% | 46% | 0%** | 38,000 | \$149 million | 2021 |
| Willow | 16.67% or 12.5% | 0% | 50% | 50% | 0%** | 100k + | \$345 million | 2024-2025 |
| State Land | | | | | | | | |
| Current Production | 16.67 or 12.5% | n/a | 0% | 0% | 100% | 486,622 (state only production) | \$1.528 billion *** | n/a |
| Pikka | 16.67% | 17% | 0% | 0% | 83% | 100k + | \$345 million | 2024/2025 |
| Offshore | | | | | | | | |
| 0-3 miles | 16.67% | n/a | 0% | 0% | 100% | n/a | | n/a |
| 3-6 miles | 16.67% | n/a | 50% | 0% | 27% | n/a | | |
| ANWR | | | | | | | | |
| | 16.67% | n/a | 50% | 0% | 50% | n/a | | First lease sale |

* Surface ownership. Until tract factors are allocated to individual tracts and it is determined which leases overlie the producing reservoirs, the Division can only estimate based on surface ownership.

** Assumes there are more grant/project applications to the Impact Fund than there are funds, a highly likely occurrence based on previous years.

*** For comparison use only. Numbers do not comport with Revenue Sources Book or other published analyses. Assumes 486,622 barrels/day at blended average royalty rate of 12.2%.

Alaska Department of Natural Resources: Status of Development

STATE OF ALASKA

- STATUS OF DEVELOPMENT -

- 2019 is expected to be the highest year in the last 20 years for exploration and production rig activity.
- Pikka, Mustang, and Placer finds demonstrate great potential.
- New data suggests enormous potential in Nanushuk and Torok formations.
- Legacy fields including Prudhoe and Kuparuk have exceeded internal expectations through infield work.
- Smaller companies, like Caelus, BlueCrest & Armstrong, are engaging in exploration plans that will help maximize TAPS throughput into the future.
- New players, like Oil Search, indicate industry acknowledgment of large, viable fields that were unknown.
- Continuous work with North Slope communities, presidential administration, and Congressional delegation on Arctic energy policy and decision making that support responsible development (ANWR Coastal Plain, OCS, NPR-A)

DEPARTMENT OF NATURAL RESOURCES

- STATUS OF DEVELOPMENT -

North Slope Oil and Gas Activity

State of Alaska, Department of Natural Resources, Division of Oil and Gas, as of October 2018

Beaufort Sea



Caelus
Deferring work at Smith Bay this winter.

Smith Bay
CT-1 & CT-2

Division of Oil and Gas
Additional tax credit datasets have recently been publicly released to Alaska Geologic Materials Center (Umiat 2D/3D, Puvituk South 3D, Ikpikuk River 2D, and North Shore 3D). Datasets from two more surveys and 32 wells to be released in November.

Oil Search
Planning to drill Pikka B and C appraisal wells at Pikka Unit this winter from ice roads and ice pads. Pikka Nanushuk development is currently in pre-Front-End Engineering Design stage. Final Investment Decision expected in mid-2020. Targeting first oil in 2023.

Caelus
Received approval to expand Nuiqsut, Kuparuk, and Torok PAs at Oooguruk Unit.

Eni
May resume development drilling at Nikaitchuk Unit this fall. Planning to drill up to three new wells and add laterals to as many as 8 existing single lateral wells at Spy Island.

Hilcorp
Plan to drill 50-70 wells from Moose pad at Milne Point field. Drilling to start late 2018 and first production expected in November. Peak production anticipated to be 16,000 BOPD in 2020 with 30-50 million barrels ultimately recovered.

BOEM
Issued final EIS for Hilcorp's Liberty project to develop field from gravel island five miles offshore and utilize buried subsea pipe-in-pipe pipeline.

Glacier Oil and Gas
Starfish exploration well B1-07 on production since May; September flow rate averaged 1,148 BOPD.

Badami
BADAMI B1-07

ConocoPhillips
Achieved first oil from GMT1 in October; expect peak production of 25,000-30,000 BOPD from Jurassic Alpine C Lookout reservoir.
Planning to drill 4-8 exploration wells in Bear Tooth Unit Willow trend during early 2019.

BLM
Published final Supplemental EIS for GMT2 Rendezvous field development. Preferred alternative is ConocoPhillips' plan to build 14-acre drill pad capable of up to 48 wells as a satellite of CRU Alpine Processing Facility.

National Petroleum Reserve - Alaska

Exploratory Wells Spud

- 2018
- 2017
- 2016
- Oil & Gas Unit Boundary

0 5 10 15 20 Miles



Map Location

The accuracy of this map is subject to pending decisions currently on appeal and other administrative actions. Please visit www.dnr.alaska.gov/Information/MapsandGIS to see our most current maps.

ConocoPhillips
Planning pad expansions at CRU in 2019 to add 10 more well slots at CD5 and more slots at CD2 to accommodate 32 wells at Fiord West. May drill late 2018 CD4-95 exploratory well into Narwhal Nanushuk trend just west of Putu 2 from existing CD4 pad in southern CRU.

Nikaitchuk
Nikaitchuk NORTH 01

Oooguruk

Milne Point

Northstar

Beechey Point

Duck Island

Liberty

Point Thomson

Prudhoe Bay

Deadhorse

ICEWINE 2

88 Energy
Ended production testing of HRZ shale at Icewine 2 and suspended well with plans to farm out interest.

Brooks Range
Proposing to produce Mustang field using early production facility.

ConocoPhillips
Planning expansion of Eastern NEWS with second phase of development. Expected to come online in 2023.

Planning to drill three new wells at KRU Drill Site 2M.

Planning to drill Cairn prospect (Seabee Fm) east of Tam field from DS 2S in late 2018.

BP Exploration
2018 POD called for 7 wells in Prudhoe's Flow Station 2 region. Planning to conduct field-wide 3D seismic survey. Three additional wells possible at Lisburne PA. Planning for major gas sale in accordance with AGDC progress on AKLNG project.

Eni
Acquired Caelus' 350,000 acre onshore exploration fairway between Prudhoe Bay and Point Thomson.

BLM
Received application from SAEExploration, ASRC, and Kaktovik Inupiat Corp to conduct 3D seismic survey in 1002 area of Arctic National Wildlife Refuge. Proposed Marsh Creek 3D survey would take two winter seasons to complete.

Alaska LNG
Project at de-risk regulatory stage. FERC expects EIS to be finalized in late 2019, allowing for Final Investment Decision in 2020 with project execution completion and first gas in 2024-2025.

Division of Oil and Gas
Bid opening for fall lease sales for Beaufort Sea, North Slope, and North Slope Foothills Area-wide sales and three sales of blocks of leases: Gwydyr Bay, Harrison Bay, and Storms scheduled for November 15 at 9 AM. Combining unleased acreage backed by publicly available information to offer three blocks of leases in fall oil and gas lease sales.

Elixir Petroleum
Announced purchase of 35,423 acres in NPRPA north of Umiat from Paul Craig.

Great Bear Petroleum
Filed lease plan of operations for Wink 1 exploration well to be drilled east of Horseshoe wells by 88 Energy affiliate Captivate Energy. Partners also include Otto Energy and Red Emperor Ltd.

Colville River
PUTU 2 & 2A

Greater Mooses Tooth
STONY HILL 1

Horseshoe
HORSESHOE 1 & 1A

Umiat

DEPARTMENT OF NATURAL RESOURCES

- STATUS OF DEVELOPMENT -

Cook Inlet Oil and Gas Activity

State of Alaska, Department of Natural Resources, Division of Oil and Gas, as of October 2018

Division of Oil and Gas
Issued call for substantial new information for Spring 2019 Alaska Peninsula Areawide oil and gas lease sale. Deadline for receiving information is October 26, 2018. Issued preliminary best interest finding for proposed Cook Inlet Areawide oil and gas lease sales, 2019-2028.

Visit
<http://list.state.ak.us/mailman/listinfo/DOG.Licensing> to subscribe to leasing announcements.

Division of Oil and Gas
Soliciting Statewide Nominations of Lands with geothermal resources for potential future disposal.

Amaroq Resources
(Previously Aurora Exploration)
Nicolai Creek Unit 2018 plan included three well cleanouts and drilling NGU 12 well targeting Beluga and Upper Tyonek gas sands. Anticipated negotiating purchase of Apache's 3D seismic shot in 2012 to evaluate future exploration targets.

Hilcorp
Planning to sidetrack a well from the Monopod platform in the Trading Bay Unit into the North Trading Bay field in an attempt to restore unit production. Sidetrack will target Tyonek G and Hemlock reservoirs.

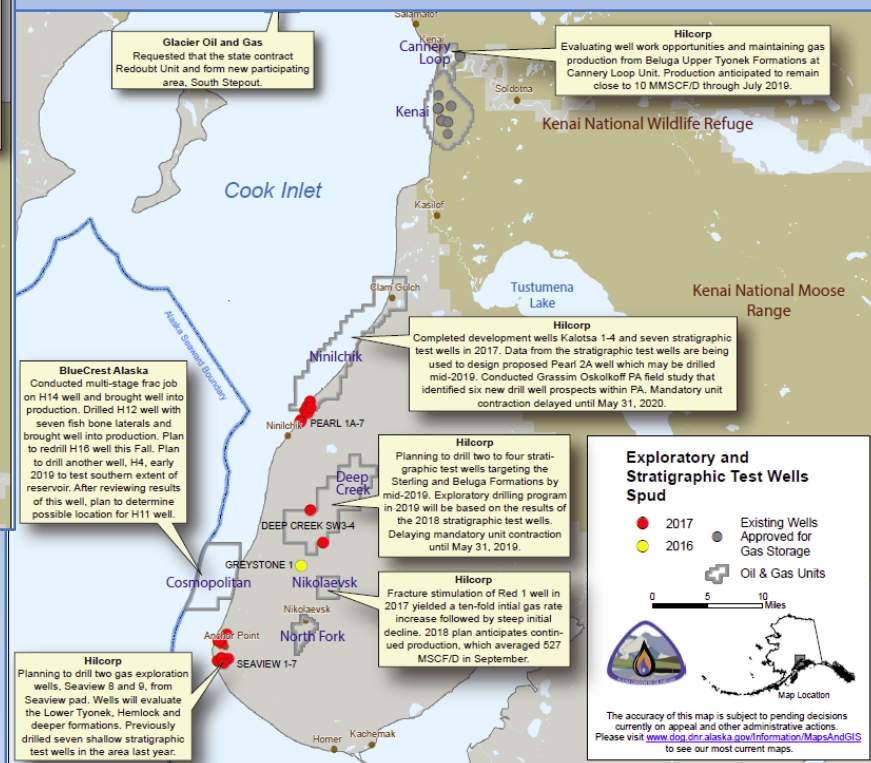
Glacier Oil and Gas
Requested that the state contract Redoubt Unit and form new participating area, South Stepout.

Doyon-CIRI
Totchaket 1 drilled this summer; encountered several gas shows but did not find commercial quantities of oil or gas.

Division of Oil and Gas
Approved exploration license application in Houston-Willow area to Samuel Cade and Daniel Donkel.

Furie
Completed KLU A-1 development well in Corsair block, with initial gas production from lower and middle Sterling zones. Drilled the KLU A-4 development well into Tyonek to evaluate identified 3D amplitude targets. Added perforations to KLU 3 at the Beluga interval. Contracted new technical team to evaluate previously acquired 3D seismic data and propose exploratory drilling targets over next several years. May drill one new development well in 2019 to stratigraphic equivalent of Sterling flow tested zones and add perforations to KLU A-2A and 3.

Hilcorp
Evaluating well work opportunities and maintaining gas production from Beluga Upper Tyonek Formations at Cannery Loop Unit. Production anticipated to remain close to 10 MMSCF/D through July 2019.



Alaska Department of Natural Resources: Permitting Status

STATE OF ALASKA

-ANATOMY OF A LARGE SCALE DEVELOPMENT PROJECT-

- Statewide or regional impact - infrastructure development, economic growth opportunities
- Generally require long term ***leases*** or dedicated legal access such as ***easements*** in order to obtain project financing
- Lease/Unit ***Plan of Operations*** or ***Plan of Development***
- Shorter term **land use permits** are necessary for construction
- ***Material sales*** for development
- ***Water Authorizations*** for development and operations

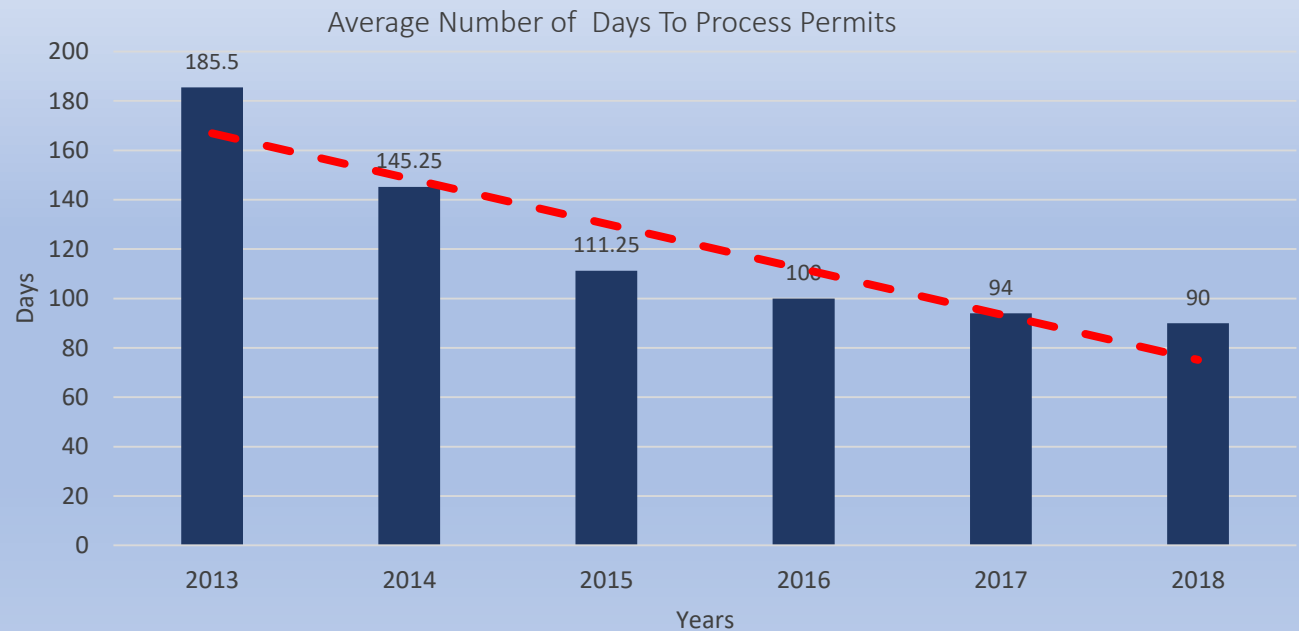


OPERATING EFFICIENCIES

- DIVISION OF OIL & GAS -

Division of Oil & Gas

- Now includes the State Pipeline Section
- Average oil & gas permit timeline is 3 month
- **Currently no permit backlog**



Automation

- Electronic applications
- Continuous feedback loop with applicants
- Updated guidance documents available online

OIL & GAS RESOURCE POTENTIAL FROM FEDERALLY MANAGED LANDS

Tax Act – Coastal Plain Activity

- BLM to administer an oil and gas leasing program in the Coastal Plain of ANWR
- Section 200001 PL 115-97 requires at least 2 lease sales to be held by 2024
- Each sale must offer 400,000 acres of highest hydrocarbon potential, up to 2,000 surfaces acres of Federal land to support production and support facilities
- SOA Royalty 50%

SOA authorizes water withdrawal, fish habitat permits for activities on federal lands

SOA consultation, shares expertise on tundra travel, air quality, reclamation, etc.

NPR-A Activity

- Oil and Gas Leasing
- CPAI continued progress
 - CD-5 production
 - GMT-1 began production October 2018
 - GMT-2 & Willow Development
 - SOA Royalty 50% through NPR-A Impact Mitigation Grant Program

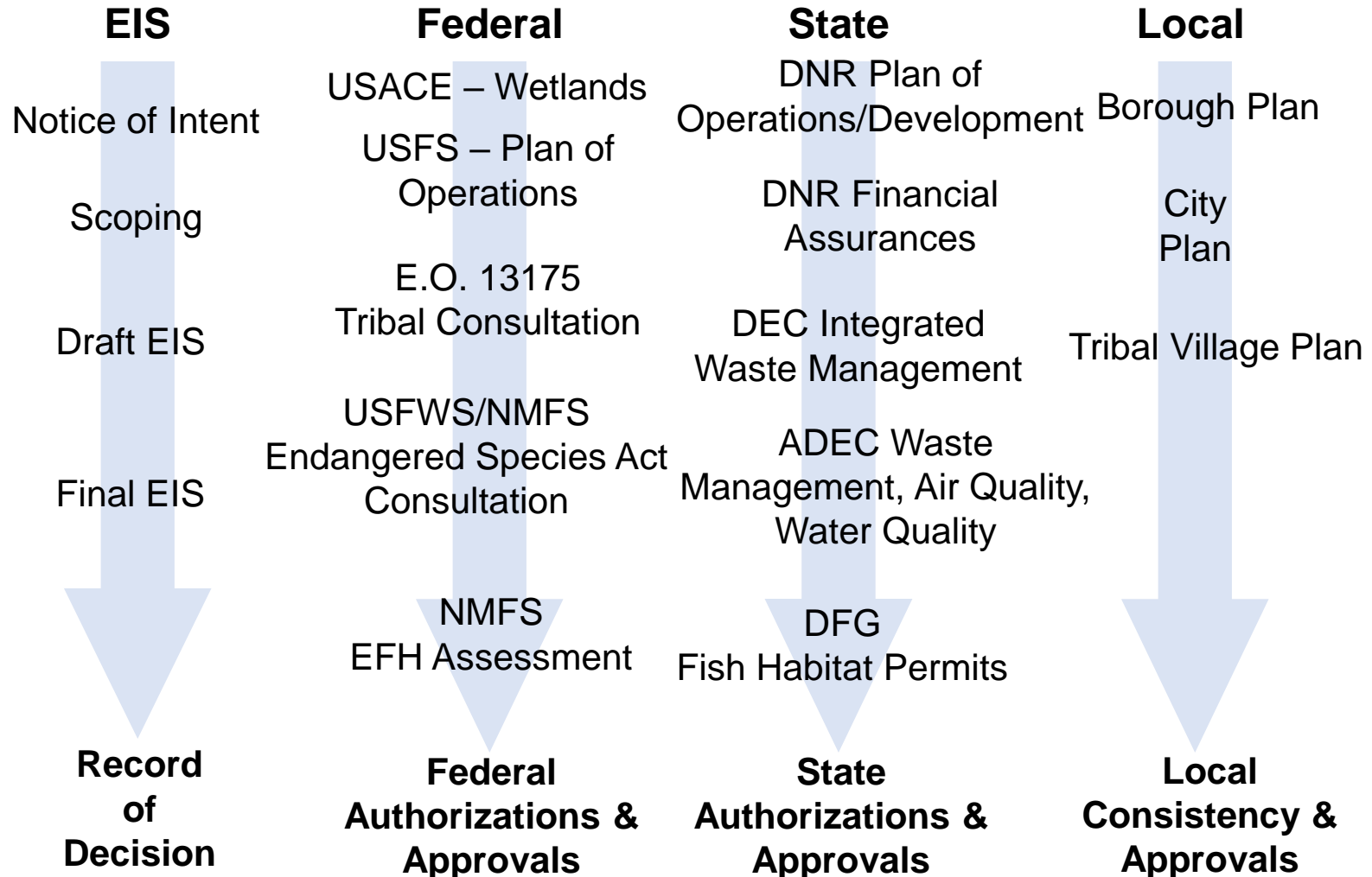


Sources: DOI BLM

FEDERAL PROCESSES CAN DRIVE TIMELINES

- NEPA -

MULTIPLE PERMITTING/APPROVAL PROCESSES RUN IN PARALLEL



STATE/FEDERAL COORDINATION IS KEY

- OFFICE OF PROJECT MANAGEMENT & PERMITTING -

OPMP coordinates permitting of natural resource development projects in accordance with AS 38.05.020(b)(9):

The commissioner may lead and coordinate all matters relating to the state's review and authorization of resource development projects.

- OPMP is located in the DNR Commissioner's Office
- OPMP coordination is voluntary, reimbursable services



OFFICE OF PROJECT MANAGEMENT & PERMITTING

- STATE AGENCY COORDINATION -

- Department of Environmental Conservation
- Department of Fish & Game
- Department of Natural Resources
- Department of Health & Social Services
- Department of Transportation and Public Facilities
- Department of Law
- Department of Commerce, Community & Economic Development
- Department of Labor & Workforce Development
- Department of Public Safety
- Department of Revenue
- Alaska Railroad
- Regulatory Commission of Alaska
- Alaska Oil & Gas Conservation Commission

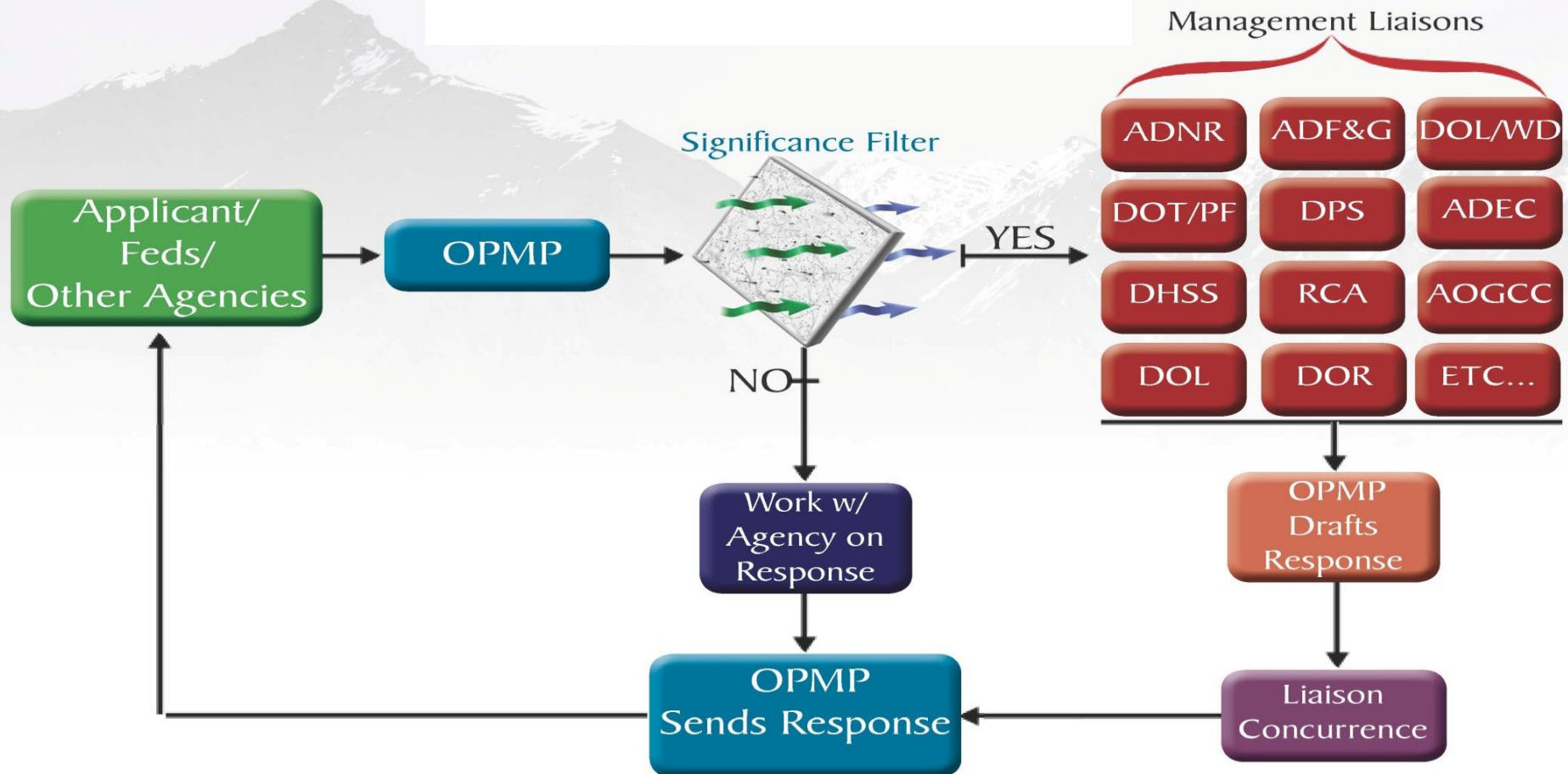
OFFICE OF PROJECT MANAGEMENT & PERMITTING

- FEDERAL AGENCY COORDINATION -

- Army Corps of Engineers
- Environmental Protection Agency
- Bureau of Land Management
- Bureau of Ocean Energy Management
- Bureau of Safety and Environmental Enforcement
- DOT Pipeline and Hazardous Materials Safety Administration
- National Park Service
- U.S. Forest Service
- U.S. Fish & Wildlife Service
- National Marine Fisheries Service
- Federal Aviation Administration
- Occupational Safety & Health Administration
- U.S. Coast Guard

COMMUNICATION PROTOCOL

- STATE AGENCY COORDINATION -



THANK YOU!

On behalf of the DNR Oil & Gas Permit Teams

Chantal Walsh, Director, Division of Oil & Gas

Marty Parsons, Director, Division of Mining, Land & Water

Faith Martineau, Executive Director, Office of Project
Management & Permitting



STATE OF ALASKA

- NEAR TERM IMPACTS OF NPR-A DEVELOPMENT ON SOA REVENUES -

