# PRELIMINARY REPORT ON FISCAL DESIGNS FOR THE DEVELOPMENT OF ALASKA NATURAL GAS

BY
DAVID WOOD
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David Wood & Associates
www.dwasolutions.com

## Section 3.2

## Status of Alaska's natural gas reserves and yet-to-find resources

# Part 3: Evolution of Alaska's Fiscal Design and Gas Reserves

## 3.2 Status of Alaska's natural gas reserves and yet-to-find resources

**Existing natural gas reserves and yet-to-find resource issues**

The role of future lease sales under a non-expansion of capacity scenario for a 4.5 bcf/d proposed gas pipeline suggests that such a pipeline might need 50 tcf or more of gas over its lifetime. In such a scenario some 35 tcf of gas could be expected to come from Prudhoe Bay and Point Thomson (on state land), and the rest would probably be split between land already leased by the state and federal government, and land yet to be leased by the state and federal government. In that case, production from fields discovered on leases issued in new rounds of state leasing would probably cover a small percentage of the yet-to-find reserves required for the pipeline capacity. However, an expansion-driven scenario where some 70 plus tcf is shipped over 50 years places much more emphasis on new lease rounds. This suggests that both gas in current leases and gas from land (state and other) yet to be leased will be important in long-term planning for sourcing gas to supply the gas pipeline.

Recent reports on yet-to-find gas reserves in northern Alaska lead to the conclusion that substantial leasing and exploration will be necessary on non-state lands in order to prove up sufficient reserves to sustain gas production to fill capacity in a gas pipeline much beyond 2035. The recent reports from which these conclusions are drawn are: the full and summary federal Alaska North Slope reserves reports (DOE/NETL, August, 2007); a state-sponsored report based upon the 2007 federal reports (Nebesky, DNR, May , 2008); and an article in Offshore (Kliewer, May 2008). These reports outline where future gas and oil reserves are likely to be located regionally onshore and offshore Alaska, with the major conclusions including:

- The estimated gas reserves in the Prudhoe Bay and Point Thomson fields will provide 35 trillion cubic feet of the 57.5 trillion cubic feet of natural gas required to support a gas pipeline project at 4.5 billion cubic feet per day for a 35-year life.
- The future for Alaska North Slope oil and gas ranges from very promising to limited, depending on how many of the following assumptions apply (see Figure 3.2.1 for regional locations):
    1. The 1002 Area of ANWR is opened for exploration and development.
    2. Further exploration is allowed in the most prospective areas of NPR-A, in addition to those areas already opened to leasing.
    3. The Beaufort Sea OCS and Chukchi Sea OCS are available for exploration and development without major restrictions on area or timing.
    4. An Alaska North Slope natural gas pipeline is operational by 2018 at the earliest.
    5. Oil and gas prices remain near the current high values.

6. State of Alaska and federal fiscal policies remain stable and supportive of the huge investments that will be required.

- Future prospects become progressively less promising as these assumptions fail to materialize.
- For the complete study interval from 2005 to 2050, the forecasts of economically recoverable oil and gas additions, including reserves growth in known fields, is 35 billion to 36 billion barrels of oil and 137 trillion cubic feet of gas. These optimistic estimates assume continued high oil and gas prices, stable fiscal policies, and all areas open for exploration and development.

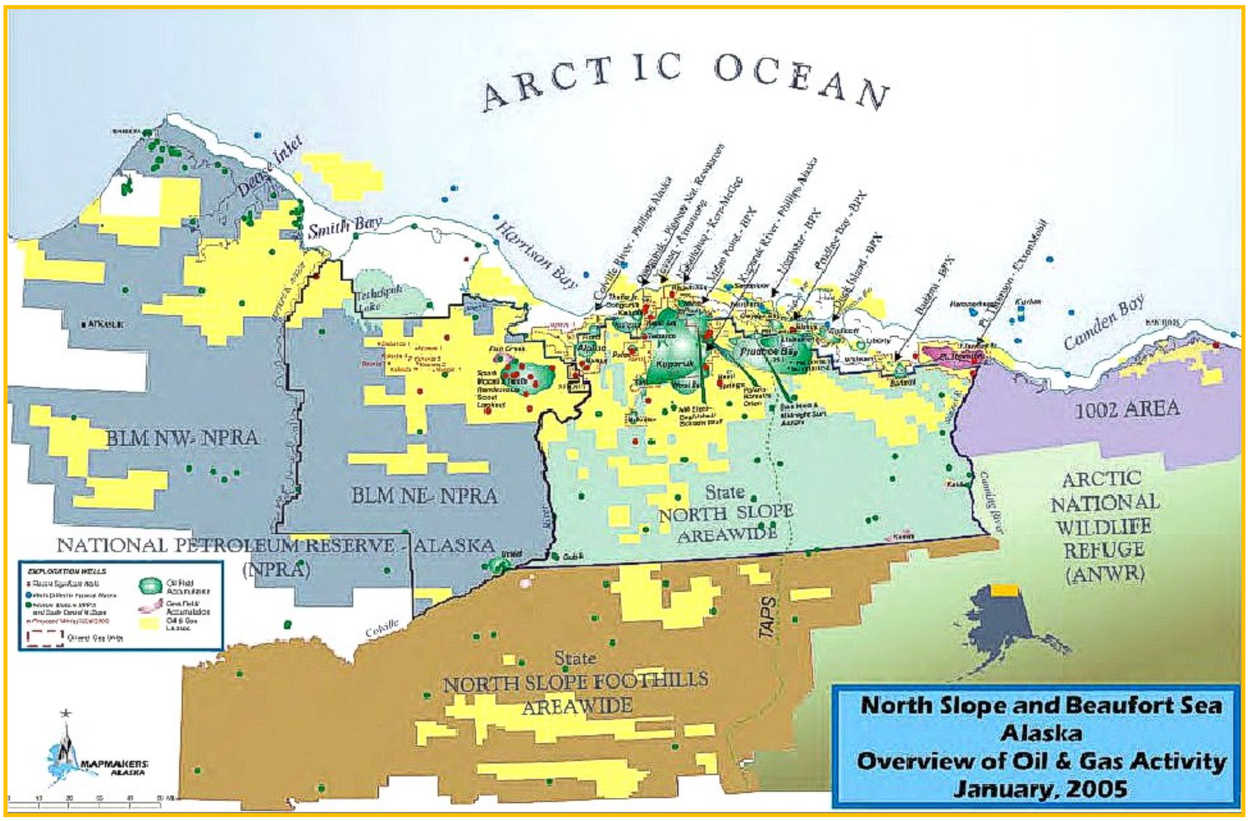


***Figure 3.2.1 North Slope Oil and Gas Activity and Discoveries January 2005 with main onshore regions identified. Source: DOE/NETL-2007/1279 Alaska North Slope Oil and Gas: A Promising Future or an Area in Decline? August 2007.***

The Nebesky (2008) report includes a table which summarizes where near-term and long-term future gas additions are likely to come from (Figure 3.2.2), with state lands dominating the short-term additions necessary to keep a 50 tcf project full and federal lands dominating the gas that if found will drive future expansions:

| Exploration Province | Near Term 2005 to 2015 | Long Term 2015 to 2050 | Total 2005 to 2050 |
|---|---|---|---|
| Colville-Canning & State Beaufort Sea | 10.0 TCF | 23.3 TCF | 33.3 TCF |
| Beaufort Sea OCS | 1.0 TCF | 20.0 TCF | 21.0 TCF |
| Chukchi Sea OCS | 0 | 50.0 TCF | 50.0 TCF |
| NPRA | 1.0 TCF | 30.0 TCF | 31.0 TCF |
| ANWR 1002 Area | 0 | 2.0 TCF | 2.0 TCF |
| **TOTAL ARCTIC ALASKA** | **12.0 TCF** | **125.3 TCF** | **137.3 TCF** |

**Source: NETL, 2007.**

***Figure 3.2.2 Summary of probable, economically developable ANS gas additions yet to find (Table 1 from Nebesky (DNR), 2008; based on information from NETL, 2007).***

The DNR/NETL reports suggest that near-term gas development are most likely to be associated with oil, especially in the northern Colville-Canning area (including Beaufort Sea state submerged lands within 3 miles), the National Petroleum Reserve-Alaska (NPR-A), and the Beaufort Sea OCS (with ANWR being mainly oil-prone with little gas potential). NETL estimates approximately 2.85 billion barrels of oil (BBO) of near-term discovery and development in the Colville-Canning area with the following breakdown:

- 1.1 BBO – Brooks Range Foothills
- 1.1 BBO – NPR-A
- 0.65 BBO – Beaufort OCS

The NETL study characterizes the North Slope as an under-explored hydrocarbon province in which new discoveries and development of oil and gas fields are expected as older fields continue to decline. The DNR (2008) report appears more optimistic than the NETL 2007 report, from which it draws much of its content about short-term, yet-to-find gas reserves on state lands rather than federal lands. Even with the DNR forecast of the potential for some 33.3 tcf of yet-to-find reserves proved up on state lands by 2050 (provided appropriate exploration investments are made), there is a strong case for extensive new leasing to boost exploration for gas in federal NPR-A and OCS areas.

### State and Federal Sharing of Fiscal Revenues from Land not Held by the State

Where the yet-to-find reserves are located will have a significant bearing on future fiscal revenues for the State of Alaska. The state can tax production from land within the state, and in state waters out to three miles, whether it is owned by the federal government, the state government or a third party. The royalties will be paid to the owner, whether it is the federal government (which has chosen to share those royalties with the state), the state government, or a third party. Production from land outside of the state – that is leeward of the three mile boundary – cannot be taxed by the state.

**National Petroleum Reserve - Alaska (NPR-A)**

The state receives 50% of all revenue from federal NPR-A lease sales, rentals, bonuses, and royalties. Alaska state statute requires that these revenues must first go toward meeting the needs of the impacted communities, through a state-administered grant program. Then 25% of the remainder goes to the Alaska Permanent Fund and 0.5% to the Public School Trust Fund. After that, any remaining funds may be appropriated by the Legislature to the state's Power Cost Equalization and Rural Electric Capitalization funds (as per Alaska Statute 37.05.530(g)). Any revenues remaining would go to the state general fund. No NPR-A revenues have reached the state's general fund since litigation over the funds was settled more than 20 years ago. The state is entitled to collect production taxes on any oil and gas produced from NPR-A under the same general conditions and tax rates as are imposed on production from state lands.

**Federal offshore (OCS)**

Footnotes 4 and 6 from a report entitled Outer Continental Shelf: Debate over Oil and Gas Leasing & Revenue Sharing by Marc Humphries for the Congressional Research Service, 2005 describes a 3-nautical mile state-federal demarcation line and areas out to 6-nautical miles where federal and state jurisdictions overlap.

Footnote 4 of that report states:

*"…..acreage lying outside the 3-nautical mile state-federal demarcation line, typically extending to a total of 6 nautical miles offshore but which include a pool of oil common to both federal and state jurisdiction. The states' share of the revenue (27%) was established by the OCSLA amendments of 1985 (P.L. 99-272) and is paid directly to the state. Payments to the states had previously been placed in escrow, then were paid out between 1986 and 2001"*

Footnote 6 of that report states:

"*State jurisdiction is typically limited to 3 nautical miles seaward of the baseline from which the breadth of the territorial sea is measured. However, the state jurisdiction off the Gulf Coast of Florida and Texas extends 9 nautical miles and for Louisiana, 3 imperial nautical miles. Federal jurisdiction extends, typically, 200 nautical miles seaward of the baseline from which the breadth of the territorial sea is measured."*

The state receives 27% of the bonuses, rents and royalties from federal OCS leasing activity ***within three miles*** of state waters (i.e. the zone between 3 and 6 nautical miles from shore). The federal OCS - Beaufort Sea has a significant amount of prospective acreage within three miles of state waters. The federal OCS - Chukchi Sea has none. The state cannot levy a production tax on the sale proceeds from oil and gas produced from federal waters.

**Federal offshore (OCS seaward of three miles from state waters)**

The state receives no money from taxes or bonuses, rents or royalties from waters seaward of three miles from state waters. But the Energy Policy Act of 2005 appropriated $250 million per year for years 2007 through 2010 to six coastal states through the Coastal Impact Assistance Program. Alaska received the minimum 1% per year for the first two years of the program ($2.45 million/year in 2007 and 2008). During the next two years the State of Alaska and eight Alaska coastal municipalities will share approximately $29 million each year. The money will come from the U.S. Minerals Management Service, which earlier this year sold leases in the Chukchi Sea. The additional funding was approved after the MMS formally accepted Alaska's coastal assistance state plan.

Efforts by the Alaska congressional delegation continue in Congress to change federal law to give Alaska a share (or greater share) of federal OCS lease revenues (bonus bids and production royalties). In the wake of 2005 hurricane damage, Gulf of Mexico states set a precedent in negotiating a slice of federal offshore royalties (at least for a period) in new lease sales beginning in 2008. It will be a much harder task for Alaska to persuade the Congress of its case for receiving a share of federal OCS royalties. Opinion is divided as to whether this can be achieved.

**Arctic National Wildlife Refuge (ANWR) - 1002 Area**

If this land is opened to oil and gas development, the Alaska Statehood Act requires that bonus, lease and royalty revenues be split 90% to the state and 10% to the federal government. However, most federal legislation in recent years that would open the area to development would amend the split to 50/50 for ANWR. Opening ANWR to oil and gas development is an extremely controversial national issue and therefore production from ANWR is more uncertain than other areas considered above. Playing on the environmental sensitivities surrounding ANWR, some proponents for opening the area to oil and gas leasing have tried advocating use of the federal share of royalties to pay for alternative energy projects, in hopes of attracting more support to lift the congressional ban. ANWR appears to be of less importance for gas as its acreage is considered primarily oil-prone.

The potential impact on state fiscal policy and the state's economy from opening up NPR-A and ANWR (production from which the State of Alaska ***can*** tax) and OCS (production from which the State of Alaska ***cannot*** tax) to oil and gas exploration and eventual production is likely to be significant. It is not only about direct fiscal revenues, but also about boosting employment and direct and indirect services and broader boosts to the private-sector economy. With the TAPS oil pipeline operating at about one-third capacity in 2008, many Alaskans are keen to see any increase in upstream oil and gas activity to boost that volume and the state's general economy. Consequently the issue of whether it comes from state or federal lands is considered a secondary issue. However, as outlined above, where it comes from is likely to have a significant impact on the future fiscal revenues of the state. It is therefore important to consider strategies for how the state can optimize its revenues in such circumstances. Competitive bidding strategies are relevant to this wider issue (see Section 2.6).