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Impact of Expanded North Slope of Alaska Crude Oil Production on Crude Oil Flows in the Contiguous United States

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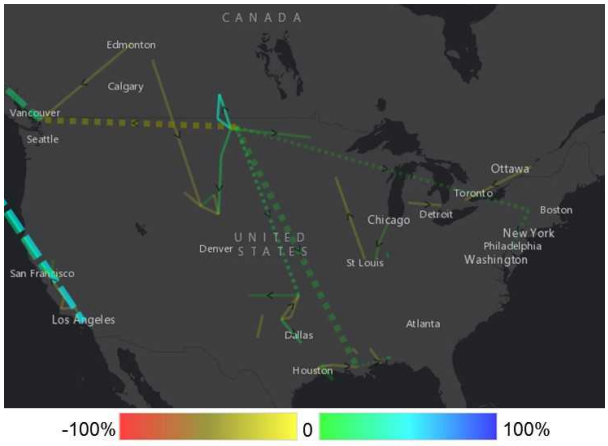
Crude oil produced on the North Slope of Alaska (NSA) is primarily transported on the Trans-Alaska Pipeline System (TAPS) to in-state refineries and the Valdez Marine Terminal in southern Alaska. From the Terminal, crude oil is loaded onto tankers and is transported to export markets or to three major locations along the U.S. West Coast: Anacortes-Ferndale area (Washington), San Francisco Bay area, and Los Angeles area. North Slope of Alaska production has decreased about 75% since the 1980s, which has reduced utilization of TAPS.

There is continued interest in expanding NSA production, but this requires access to markets from Valdez, which is dependent on both demand levels and shipping/transport costs. The 2013 U.S. crude oil and refined product infrastructure was modeled using the National Transportation Fuels Model to test the potential for shipments from Alaska to increase to the West Coast, using hypothetical production in Smith Bay on NSA as a potential source of supply. Smith Bay production is purely hypothetical and does not represent actual development potential. Development of NSA fields such as Smith Bay can take a decade or more to complete. This analysis was designed only to represent modeling tools to aid in the development process and does not reflect the possibility of additional NSA production, which depends on a wide extent of other factors that must be taken into account as decisions about development are made.

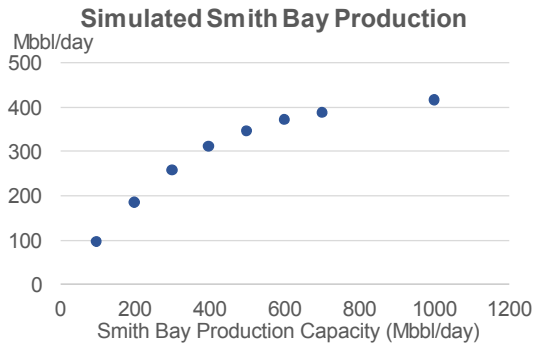
Figure 1. Percent change in crude oil flows on the 2013 National Transportation Fuels Model from before and after 200 Mbbl/day of hypothetical North Slope of Alaska production is added; dashed lines represent rail/waterway links and solid lines represent pipeline links



The impacts of a hypothetical increase in NSA production are seen throughout the U.S. The primary effect is an increase in shipments from Alaska to Washington and California with local consumption. Because of the increase in supply from Alaska, both California and Washington reduce imports and Washington reduces rail shipments from the Bakken area. Therefore, distribution of Bakken crude changes slightly (**Error! Reference source not found.**), which allows for crude oil storage inventories to increase throughout the country.

There appears to be a maximum amount of NSA oil that can be absorbed by California and Washington that is unrelated to port capacity, but is dependent on contiguous U.S. supply, demand, and storage patterns. As *capacity* of additional NSA production is exogenously increased in various scenarios, the *actual* amount of production does not increase linearly, as shown in **Error! Reference source not found.**. This simulation does not factor in export market potential as a driver for actual magnitude of production.

Figure 2. Simulated Smith Bay production on North Slope of Alaska as a function of production capacity using the 2013 National Transportation Fuels Model



The analysis shows that expansion of NSA crude oil production must be considered in the context of interactions with the rest of the U.S. market. There are many factors when considering new development on NSA, but part of the decision-making process should include an understanding of the impact of

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additional production on crude oil and refined product flows throughout the U.S.

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