# USGS economic analysis updated for the National Petroleum Reserve in Alaska

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The U.S. Geological Survey assessment on the economic recoverability of undiscovered, conventional oil and gas resources within the National Petroleum Reserve in Alaska (NPRA) and adjacent state waters is now available.

This economic analysis is based on a 2010 USGS resource assessment (http://pubs.usgs.gov/fs/2010/3102/) that determined how much undiscovered, conventional oil and gas in the NPRA is technically recoverable. These reports provide updates from the USGS 2003 economic analysis (http://pubs.usgs.gov/of/2003/of03-044/) and 2002 resource assessment (http://pubs.usgs.gov/fs/2002/fs045-02/) of the NPRA.

"The USGS conducts assessment updates to re-evaluate petroleum potential as new data and information become available," said USGS Energy Resources Program Coordinator Brenda Pierce. "Understanding how much undiscovered, technically recoverable resource might be present serves as a basis for calculating how much might be economically developed."

Technically recoverable resources are those that could be potentially produced using current technology and industry practices. Economically recoverable resources are those that can be sold at a price that covers the costs of discovery, development, production and transportation to the market.

The new economic analysis estimates that approximately 273 million barrels of undiscovered oil are economically recoverable at an oil price of $72 per barrel (comparable to $8 per thousand cubic feet of gas). About 500 million barrels of undiscovered oil are economically recoverable at $90 per barrel (comparable to $10 per thousand cubic feet of gas). These estimates do not include the discovered oil accumulations in northeastern NPRA that have not yet been developed.

The economically recoverable oil estimates above are dependent upon gas exploration in the NPRA, meaning that it is assumed the oil would be found in the process of looking primarily for gas.

The USGS assessment also found that about 18 trillion cubic feet of undiscovered gas are economically recoverable when the market price is $8 or more per thousand cubic feet, and 32 trillion cubic feet of undiscovered gas would be economic when the market price is $10 or more per thousand cubic feet.

There currently is no pipeline in place to transport gas from the North Slope of Alaska, so this assessment assumes that there is a 10- or 20-year delay between discovery and production in the NPRA. This analysis shows that if a pipeline is constructed, there is a significant amount of gas that is economically recoverable from the NPRA when prices are above $8 per thousand cubic feet of gas.

The different market prices quoted above for the same resource are because some resource accumulations are relatively easy to find and produce while others are not and therefore cost more.

"USGS estimates are based on 2010 costs and technology, and these results could change over time as they are dependent on multiple factors," said USGS scientist Emil Attanasi, who was the lead author for this assessment. "For example, USGS economic recoverability estimates

could vary in the future depending on the timeframe and costs to construct a gas pipeline to the NPRA, technological advances that make resource extraction and development easier and less expensive, and fluctuating market prices for oil and gas."

The amount of oil that could be economically developed is significantly less than what the 2003 analysis concluded. One reason for the reduction is reduced volumes of technically recoverable oil based on recent NPRA exploration drilling which found gas rather than oil.

All of the cited resource estimates are based on the mean undiscovered resources.

Provided by United States Geological Survey