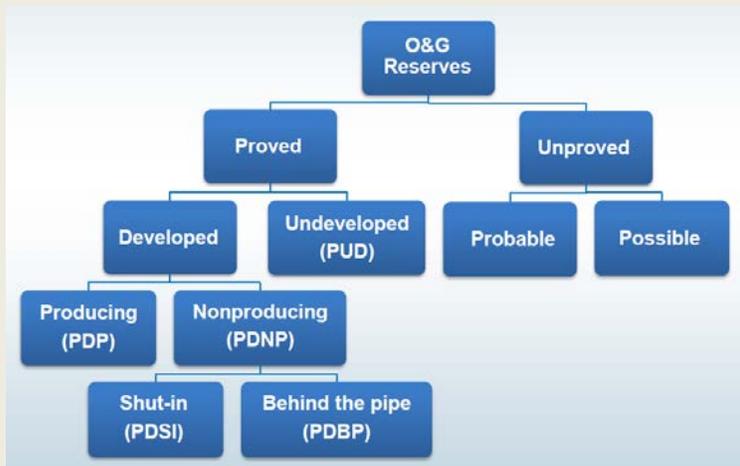
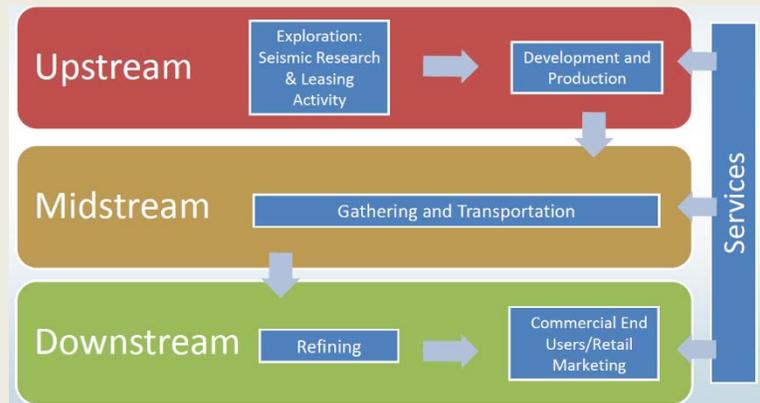


## Background

Prior to 2010, oil and natural gas in the ground were not considered bankable assets until extracted or produced. In January 2010, the Securities and Exchange Commission issued Rule 4.10, Modernization of Oil and Gas Reporting, redefining proved developed nonproducing (PDNP) reserves and proved undeveloped (PUD) reserves as “proved reserves,” allowing them to be considered bankable assets. The definitional change of “proved reserves” transformed energy lending practice from production-based to reserve-based. New energy lending guidance was needed to update financial institutions (FIs) and supervisory staff of changes and risk associated with this altered type of lending.



Oil and gas businesses are usually broken into three segments: upstream, midstream, and downstream. Upstream companies are commonly called exploration and production (E&P) businesses and are the primary focus of this bulletin; midstream refers to transportation and storage of the oil and/or natural gas; and downstream businesses refine the product for use in the market. Each market segment presents a different level of risk to investors and lenders.



## Market Issues and Risk Ramifications

Reserve-based energy lending is subject to market volatility, as the value of the underlying collateral, oil, and natural gas reserves is subject to fluctuations in commodity prices and uncertainty in production levels and costs. Reserve-based loans use the oil and gas that are in the ground as collateral and rely on engineering reports to value such collateral. An engineering report should include a complete analysis of the wells and production requirements from current production over the life of a well. A borrowing base is then determined based on proved developed producing (PDP) reserves. An FI should have a written policy regarding the advance limits for the borrowing base, which includes PDP, PDNP, and PUD. PDP is the oil and gas that the borrower is actually producing from its operations and provides cash flow to the borrower. In periods of extended low oil prices, collateral values and cash flows often decline and impede loan repayment ability.

## Supervisory Expectations for Credit Risk Management and Underwriting Practices

The Federal Reserve Board issued Supervision and Regulation (SR) letter 16-17, “[Supervisory Expectations for Risk Management of Reserve-Based Energy Lending Risk](#),” in December 2016. The purpose of the SR letter was to enhance the existing energy lending guidance on production loans and to confirm key risks and risk management factors for reserve-based lending activities. Supervisory expectations for an FI’s board of directors and senior management include a robust risk management program that addresses, at a minimum, monitoring the individual reserve-based lending credits and the reserve-based lending portfolio.

*FedLinks is intended to highlight the purpose of supervisory policy and guidance for community banking organizations. FedLinks does not replace, modify, or establish new supervisory policy or guidance.*

## Individual Credit Relationship Considerations

Individual reserve-based credit monitoring should include an assessment of a borrower's creditworthiness, cash flow, and reliable collateral evaluations. An FI's underwriting standards and credit administration practices should promote appropriate loan structure, strong risk rating of credits, and at least an annual collateral impairment test. Reserve-based lending portfolio monitoring includes a review of underwriting standards to ensure timely measurement and management of the portfolio to mitigate concentration risk as well as to ensure that an FI has appropriate policies in place to control troubled credits.

Reviewing a reserve-based borrower's creditworthiness is not significantly different from reviewing any other borrower's creditworthiness. FIs must review the projected income and expenses of the borrower and compare those to the actual results, review working capital and capital expenses, and complete an analysis of cash flow. In analyzing a reserve-based loan, an FI will also need to perform a price sensitivity analysis that assesses whether an FI is susceptible to additional risk or loss if oil and gas prices decrease. An FI must ensure that a borrower's collateral and cash support the loan when oil and gas prices decline outside the normal band.

Assessing a reserve-based borrower's cash flow is also similar to assessing other borrowers' cash flow. For energy borrowers, an FI should assess the reasonableness of the borrower's assumptions and projections for production, pricing, and expenses. In order to determine a potential risk rating for the credit, an FI should use data from the engineering report to calculate projected cash flow and economic life and half-life estimates for when the senior and total debt would be repaid. When analyzing a sampled reserve-based borrower's cash flow during an examination, an examiner will conduct a similar analysis to confirm an FI's cash flow analysis and risk rating.

Collateral evaluations are extremely important to reserve-based lending, as they help to determine a collateral value and the cash flow. A typical reserve-based credit requires the borrower to provide an FI an updated engineering report twice a year. A FI should have a policy that includes the minimum required frequency for a borrower to provide an engineering report. Additionally, depending on the size and level of complexity of an FI's reserve-based portfolio, an independent

staff engineer or contract engineer could be utilized to assess the reserve valuation.

An FI should ensure that reserve-based credits have a proper loan structure depending on the type of business. A typical reserve-based credit requires only interest payments, with principal due at maturity, typically with a maximum of five years. The primary source of repayment is cash flow from operations, and collateral consists of a blanket lien on all of the borrower's assets. An FI should determine the borrowing base semiannually, with over advances being cured within six months, and document evidence of lien perfection in the loan file. Examiners expect an FI to develop its own metrics for covenant ratios. The Federal Reserve has no "bright line" but does expect FI boards and management to approve and track borrower compliance with loan covenants.

## Portfolio Risk Management Considerations

An FI is also responsible for reviewing and evaluating its reserve-based lending portfolio as a whole. A FI's underwriting standards and policies should be reviewed periodically to ensure that they are not outdated, ineffective, or in excess of the board's risk tolerance. When lending against a volatile commodity, a FI should update its lending policies frequently in an attempt to mitigate exposure to commodity value decreases. Frequency of policy review is determined by the level and complexity of an FI's reserve-based lending.

Another key to monitoring an FI's reserve-based lending is the establishment of internal concentration limits. FI's should have in place risk limits for reserve-based lending that are consistent with the board's risk tolerance. Generally, reserve-based lending is expressed as a percentage of total capital to determine an FI's concentration risk. Additionally, an FI should monitor its portfolio for regional or single-well risk concentration. An FI should ensure that its portfolio is not excessively exposed if a specific play (that is, an active field or prospect) or region becomes too expensive to continue drilling, especially in times when oil and gas prices suffer a prolonged decline.

Because of potential commodity volatility, an FI should frequently (at least quarterly) refresh its approved price deck for individual loans and the aggregate portfolio to safeguard against price declines. The price deck is an FI's assessment of expected prices for both oil and gas. Supervisors expect this to be conservative and supported by an FI's analysis, usually referencing market indices such as NYMEX strip pricing.

Finally, for an FI to have strong reserve-based lending portfolio monitoring, an FI should have sufficient credit administration and controls in place. Credit administration and controls should help an FI to identify borrowers that are unable to generate adequate cash flow for debt service and to identify the reasons for those weaknesses.

Based on this information, an FI can continue to monitor the credit and work with the borrower to improve the credit. This process is really no different than for nonenergy credits, but with the intricate nature of reserve-based lending, as discussed earlier, credit administration and controls need to be timely and responsive in order to reduce potential losses.

### Energy Service Companies

Energy service companies provide support to E&P companies, including geological surveying, drilling, maintenance, transportation, wastewater disposal, and other services. These services mostly involve midstream and downstream activities, but they may also support upstream activities. Typically, a service company's balance sheet will have high amounts of accounts receivable and inventory relative to other assets. Cash is critical to these types of businesses. Lending to these types of businesses is similar to other commercial and industrial loans. However, because there is a high correlation between the performance of oil and gas companies and the rise and fall of energy prices, loans to energy service companies will warrant extra attention during downturns in the energy cycle. Energy service companies are often the first segment to be affected when there is a decline in oil prices as E&P companies attempt to lower operating expenses. Therefore, concentration risk management practices described above should account for any additional exposure to energy service companies.

### Supervisory Guidance

Examination and supervisory expectations for FIs with reserve-based energy lending exposure are outlined in SR letter 16-17. This SR letter can be accessed through the Federal Reserve Board's website. Additional guidance can be found in section 2150.1 (Energy Lending — Production Loans) of the Federal Reserve's *Commercial Bank Examination Manual*.

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