NATURAL GAS
Natural gas has historically been an underutilized energy source due to the difficulty of accessing its reserves, which are stored within the earth's layers. Hydraulic fracturing, more commonly known as “fracking,” is the process of creating fractures in rock formations through high-pressured injections of fluid, which forces the rock to expand, allowing crude oil and natural gas to flow freely. In 2008, as fracking gained popularity, the industry saw a leap in the production and consumption of natural gas.

Fracking relies on properly developed wells to produce the natural gas. The wells require a special type of sand that can only be found in remote locations across the United States, leading the industry to be dependent on railcars to transport and deliver sand. The sand used in fracking must be fully protected from the elements, requiring a specific type of railcar to transport it. Small-cube covered hopper railcars are ideal for transporting frack sand as they are fully enclosed and offer the necessary protection from the elements. It's expected that covered hopper railcar demand will remain steady as natural gas is more widely used and accessible.

COVERED HOPPER CARS | BACKGROUND AND TRENDS
Approximately 60 covered hopper railcars are needed to properly prepare each well for fracking, causing the demand of covered hopper cars, especially small-cubic-capacity covered hopper railcars, to increase in recent years. However, current demand is not as high as it was between 2011 and 2013 when frack sand was first used as a source in developing wells. Covered hopper railcars were previously used to carry cement for the construction trades and saw a decline in demand between 2007 and 2010 when the construction market experienced a slowdown.

In the past, there wasn't great demand for small-cube covered hopper cars because the demand for cement tended to be localized resulting in a smaller population of covered hopper cars. Frack sand demand is not as localized as the demand for cement, which resulted in the need for additional cars. That initial demand was met by converting the cement car fleet to sand cars and by the production and introduction of new cars. Today, the demand for small-cube cars is slowly increasing with growing fracking activity in the Bakken Oil Fields. Over one-third of the 70,000 small-cube hopper railcars in use today have been delivered to the end user in the past five years. The natural gas industry is expected to continue to increase the demand for covered hopper cars due to infrastructure rebuilding and additional drilling.

About the Author:
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CRUDE OIL
In 2011, the United States relied on imports for nearly 45 percent of the petroleum (crude oil and petroleum products) consumed, more than half of which came from the Western Hemisphere. That number is trending downward by approximately 5 to 10 percent per year—the United States saw a low in 2013 with only 35 percent of oil being imported. In 2008, as advancements continued to be made in fracking, investors and companies alike were able to gain access to the subsurface of the Bakken Oil Fields. The Bakken Oil Fields are located across 200,000 square miles of North Dakota and Montana, and serve as one of the largest sources of domestic oil. The advancements in fracking, specifically in the Bakken Oil Fields, allowed for domestic oil production to increase significantly in recent years—resulting in a major decline in U.S. dependence on foreign petroleum. North Dakota alone produced more than 1 million barrels per day in both April and May of 2014, up from only 170,000 barrels per day in April of 2007.

TANK CARS | BACKGROUND AND TRENDS
Tank cars are used to transport a wide range of liquids, and in recent years, have found their way to the transportation of crude oil. The demand for crude-by-rail (CBR) began in late 2009, and due to the lack of a pipeline infrastructure, remains the most popular way to transport crude oil. Each tank car can be lined to protect the interior, leading to a longer and more sustainable asset life—making them ideal for the transportation of many types of liquids. The tank car fleet is one of the youngest in the industry and is expected to grow as the needs of the chemical and petroleum industries continue to increase.

Due to the cost and time commitment in pipeline development, there have been very few long-run pipelines built to deliver crude oil to oil refineries. Industry experts believe using resources to construct pipelines would hinder the current rate of oil production. The limited availability of pipelines makes the accessibility of tank cars crucial to the oil delivery process. Rail depots are being built surrounding the Bakken Oil Fields, allowing tank cars to be loaded with crude oil at the well site, and then delivered to existing pipelines or routed directly to the refinery. The volume of crude oil delivered by rail rose 17.2 percent between December 2012 and December 2013. Statistics from United States and Canadian railways show that in 2009 there were approximately 9,000 average weekly carloads of petroleum products shipped, and a large portion of the shipments were crude oil. In 2013, the number of crude oil carloads jumped to over 20,000 carloads per week.

Tank car orders have increased in recent years. In 2012, of the 58,500 railcars ordered, 30 percent were tank cars. 47,000 railcars were ordered in 2013 with 43 percent of those being tank cars. For 2014, it is expected that 57 percent of the 61,500 railcars ordered will be tank cars. The recent increased demand for tank cars can be primarily attributed to greater movement of crude oil from Bakken Oil Field to refineries. The industry initially experienced an 18-month backlog in orders, which has since decreased to a six-month delivery period. Tank railcar demand saw a leveling since initial oil discoveries in the Bakken Oil Fields—however, tank railcars will likely continue to lead the parade in future car orders. Additionally, demand is expected to continue growing for box and grain cars, small-cube covered hoppers and mill gondolas.

A series of recent incidents have brought scrutiny to the design of standard tank cars. Standard tank cars, with a DOT designation of 111, were designed to carry relatively benign cargoes. As tank cars have transitioned to carrying Bakken oil, a more gaseous and volatile oil, they have experienced safety issues. The extremely gaseous nature of Bakken crude oil creates high pressure inside tank cars, which may be released when a tank car is compromised by an accident or other incident.

The Federal Railway Agency (FRA) and the American Association of Railroads (AAR) have questioned the design and materials used to manufacture the standard tank. In April of 2014, Canadian regulators also demanded that stricter regulations be implemented no later than 2017 for all cars carrying crude oil and traveling on Canadian railways. The Railway Supply Institute (RSI) agrees with the majority of the design changes proposed, with the exception of the recommendation that all cars carrying Bakken crude oil have thermal protection and be jacketed with an outer steel shell. RSI also requested a 10-year grace period to roll out the recommended changes. A final decision has not been made on required design changes for standard tank cars or when they will be put in place. However, many manufacturers have made changes on their own, which affect current cost and material for these cars. The ultimate decision regarding the design of the standard tank car will be a collaboration of the builders, the FRA and the AAR.
WORKING WITH THE CEF TEAM
The Chase Equipment Finance team has the resources and expertise to help you find the best financing solution for your company.

When considering financing rail equipment, below is some of the information the CEF team requires:
• Railcar and/or locomotives type and specifications
  — Make and model details for new and used cars
• Type of cargo that they are proposed to carry
• Annual mileage
• Any requested predetermined interchange location in the event of return
• Any intention to sublease equipment
• Current or pending FRA rule changes

STANDARD TRANSACTION CHARACTERISTICS
• Five to 15-year term
• 180-day pre-termination notification
• While in use, the equipment will be maintained according to AAR and FRA standards
• Any damages or atypical wear will be repaired at Lessee's/Borrower's expense

CEF RAIL EXPERTISE
Chase Equipment Finance has been financing rail equipment for more than 30 years and has acquired extensive experience in the rail industry during this time. The rail specialty group within CEF has knowledge of current market changes and other factors affecting the rail industry on both a short- and a long-term basis. CEF and the specialty group maintain strong relationships with rail evaluation companies to aid in market prediction and valuations for rail transactions.

CEF’s experience, expertise and access to external sources allows a greater success rate in pricing rail transactions and predicting the long-term asset values needed to guard against loss.

CONCLUSION
It's expected that the railcar industry will continue to be heavily tied to the production and demand of oil and gas. Both resources are currently produced through the fracking process which requires the use of high-pressured sand injections to fracture the rock which carries the oil or gas. Crude oil is transported primarily by tank car, and gas is carried to market or to processing facilities primarily by pipeline. Recently, demand for small-cube covered hopper railcars used for sand transportation has leveled off, but it's predicted to increase with the discovery of new sand deposits which are used in oil and gas fracking activities. Tank car orders have fallen recently, but remain fairly active. The time between order and delivery is currently at approximately six to 12 months. The demand for these railcar types will remain as long as our energy requirements are met through oil and gas developed through fracking.