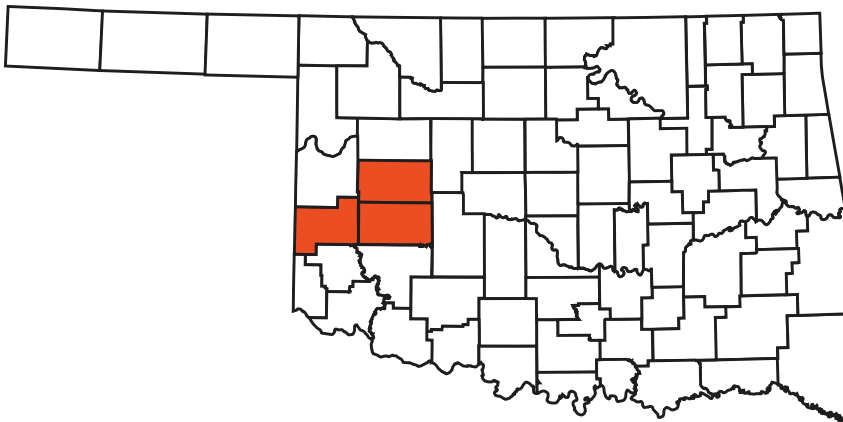


2011 TRANSPORTATION INVESTMENT  
GENERATING ECONOMIC RECOVERY (TIGER) III  
DISCRETIONARY GRANT APPLICATION

# OKLAHOMA



October 31, 2011



**TIGER**



Name of Applicant: Oklahoma Department of Transportation  
Address: 200 NE 21st Street, Oklahoma City, OK 73105

Primary Point of Contact  
Name: Secretary Gary Ridley  
Telephone Number: (405) 522-1800  
Email Address: GRridley@ODOT.org

**PROJECT TYPE:**  
Freight Rail

**CFDA # 20.933**  
FY2011 National Infrastructure  
Investments

**LOCATION:**  
Beckham, Custer and Washita  
Counties, Oklahoma

Oklahoma Congressional District 3  
(U.S. Rep. Frank Lucas)

**AREA:** Rural

**REQUESTED AMOUNT:**  
\$6,756,580 (80% of total project)

**TOTAL PROJECT COST:**  
\$8,456,580

**DUNS NUMBER:**  
824700074

**CENTRAL CONTRACT  
REGISTRATION NUMBER:**  
339V2

**PROJECT WEB ADDRESS:**  
[http://www.okladot.state.ok.us/tiger/tiger\\_2011\\_sayre/index.htm](http://www.okladot.state.ok.us/tiger/tiger_2011_sayre/index.htm)



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## EXECUTIVE SUMMARY

As part of its State-Owned Rail Program established to prevent a massive abandonment and removal of railroad track during deregulation in the 1980s, the State of Oklahoma purchased track in western Oklahoma, from Clinton to Sayre, which is currently leased and operated by Farmrail Corporation. However, a portion of this track is rated as Excepted Track and can only support limited movement (5-car limit on hazardous commodities) at low speeds (less than 10mph) and less than optimal weights. While this type of rail service is sufficient to meet modest shipping needs of existing agricultural customers, it hampers any opportunity to bring new large-scale business to the area. Recent developments in the oil and gas exploration business in western Oklahoma have thrown a spotlight on this fact because the existing rail service is incapable of meeting the coming demands forecasted by numerous private businesses and the Oklahoma Department of Energy.

The Anadarko Basin, which lies under western Oklahoma and parts of Texas, was recently flooded with oil and gas extraction operations as a result of the introduction of “unconventional extraction techniques,” known as horizontal drilling and hydraulic fracturing, that are now beginning to produce economically recoverable volumes of crude oil. The Oklahoma Energy Department believes production in the area will rise to yield an average of 200,000 barrels of oil a day by 2015, and the current rail service is inadequate for meeting such demand safely, efficiently and economically. No pipeline exists as an alternative, and as will be shown, trucking is problematic.

As a result of the forecasting completed for western Oklahoma, the State of Oklahoma would like to upgrade the rail line it owns from Sayre, Oklahoma to Clinton, Oklahoma—this line runs directly into the Anadarko Basin, and Sayre serves as a logistics center for this rapidly expanding field.

The project described below has a tremendous return on its investment (B/C Ratio is 56.8 to 1 using a 7% discount rate), and will not only benefit the Oil and Gas sector, it will also result in the railroad being able to supply faster and cheaper shipping services for new agriculture and manufacturing businesses for decades to come. It will also result in greatly reduced truck traffic, and thus reduced emissions, lower maintenance costs to the highway system, and greatly improved safety overall. In addition to the transportation benefits it also results in numerous benefits to the surrounding communities and the State of Oklahoma through increased tax revenue, increased employment, and a rise in overall business activity as the market needs of incoming workers are met. Overall, the energy sector is a growth leader in the Oklahoma economy, comprising nearly 8% of the state’s GDP.

As part of its lease with the State of Oklahoma, Farmrail is required to pay a percentage of its revenues back to the State, so an increase of volume by Farmrail leads directly to more income for the State of Oklahoma which reinvests the money made on its rail leases on other state-owned rail segments. As such, the State of Oklahoma is highly supportive of any opportunity to expand Farmrail’s business. This serves as a positive example of how rail banking by a state is highly beneficial to its citizens since it takes infrastructure that would have been removed and returns it to

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**“This is the kind of economic stimulus sorely needed by rural communities that have difficulty diversifying their sources of employment and income.”**

—Guy Hylton, Sayre City Manager

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profitable use without the need of building entirely new transportation systems. Also, Farmrail is currently a subsidized rail line drawing capital from its sister company, Grainbelt, to cover its shortfalls. The proposed project will turn Farmrail into the black, thus allowing for business growth and greater capital spending in Oklahoma.

### Project Overview

Upgrade 49 miles of state-owned freight rail line to meet the needs of multiple shippers

### Amount Requested

\$6,756,580

### Project Match

\$1,700,000

### Support Website

[http://www.okladot.state.ok.us/tiger/tiger\\_2011\\_sayre/index.htm](http://www.okladot.state.ok.us/tiger/tiger_2011_sayre/index.htm)

## I. PROJECT DESCRIPTION

Recent technological advances in the extraction of oil and gas have created a unique challenge for many American companies—how to move vast quantities of crude oil without pipelines in place to handle the volume, and without generating an endless stream of heavy truck traffic clogging and degrading local, often rural roadways. Fortunately, America’s renowned freight rail system has been able to fill the void. By tapping in to the extensive network of existing rail lines in America, companies have a safe, efficient, and cost-effective way to move their product to market—a “rolling pipeline”.

The use of rail mitigates the endless flow of truck traffic on highways that would otherwise be necessary, thus reducing highway maintenance costs, vehicle emissions, and improving overall safety. As highlighted at the annual Surface Transportation Board RETAC (Rail Energy Transportation Advisory Committee) meeting in September of this year, moving crude oil by rail has become an almost overnight phenomenon to help meet the needs of the petroleum energy sector to move rapidly escalating production volumes. It is generating jobs, reducing foreign oil dependency,

and making efficient use of an existing transportation resource rather than forcing companies to use expensive truck transportation or to await the construction of costly underground infrastructure that normally faces environmental challenges.

While the Bakken Shale formation in North Dakota and Montana is the most prominent example of the dilemma cited above, new technologies such as horizontal drilling and hydraulic fracturing are being utilized in many other locations in the United States. Areas that were previously “played out” and devoid of infrastructure are being brought back into production with sharply rising daily production and no capacity to handle it. Western Oklahoma is starting to experience this situation in the Anadarko Basin, shown in **Exhibit 1**.

Until the advent of hydraulic fracturing (see our support website for a document explaining the process or visit <http://www.hydraulicfracturing.com/Pages/information.aspx>), western Oklahoma oil and gas production was in decline, bottoming out in 2009. This decline was part of a national trend, promoting the spread of the “peak oil” theory, which feared that domestic

energy needs would permanently outpace energy availability by 2015. However, new drilling technology “changed the game” virtually overnight, and many revitalized fields are now achieving record output. The Anadarko Basin, for instance, is forecast to produce 200,000 barrels of crude oil per day from western Oklahoma and the Texas panhandle by 2015<sup>1</sup>. As analyzed by the United States Geological Survey, the Anadarko Basin is believed to hold most of its undiscovered unconventional (extraction by horizontal drilling and hydraulic fracturing) resources within “the deep part of the Anadarko Basin in Oklahoma and Texas,” which is currently the focus for drilling and production activities in western Oklahoma. Sayre is located at the center of this area (**Exhibit 1**).

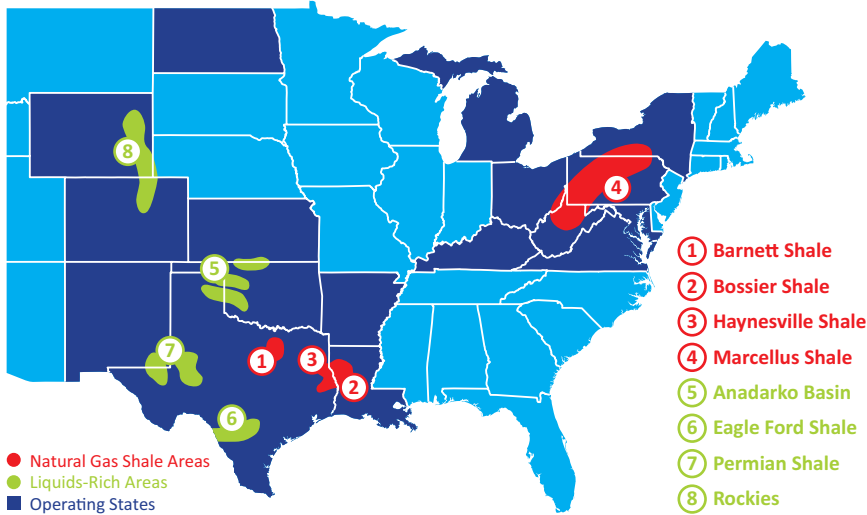
The project presented in this TIGER application seeks to offer a transportation infrastructure solution to support this vast new production. The USGS estimates that 79% of the Basin’s oil remains undiscovered (see USGS Report on support website).

1 Source: Oklahoma Department of Energy and Chesapeake Energy

**Exhibit 1:** Map Depicting Anadarko Basin and Oklahoma



Exhibit 2: Centers of Production by Use of Hydraulic Fracturing



Source: <http://www.hydraulicfracturing.com/Pages/information.aspx>

**PROJECT PURPOSE**

A solution to moving this vast production out of western Oklahoma in a cost effective and timely fashion which allows for continuous production without delays for pipeline construction is to establish strategic locations for transloading of locally gathered crude oil from truck to rail, thereby removing large volumes

of a toxic commodity from the highway infrastructure and reducing emissions, congestion and roadway maintenance needs. One railroad tanker car can hold 30,000 gallons of crude oil (compared to an average of 7,800 gallons for a tanker truck), and a typical train can move as many as 100 railcars at a time, up to 3 million gallons of crude oil in a single trip. The

other benefit of moving the oil out of western Oklahoma by rail is that the oil can go directly to refineries without the need to use trucks on both ends of the product movement. Even where pipeline capacity is in place, pipeline delivery requires additional trucking activity to complete the full transfer from well to refinery. Farmrail Corporation (FMRC), which operates rail throughout western Oklahoma, has already established the rail system connections needed with adjoining rail lines for direct delivery of crude oil to refineries throughout the country.

While the Anadarko Basin production may justify future construction of pipelines, upgrading existing rail facilities can be permitted, designed and built in 6 to 12 months, with minimal environmental impact, and relatively inexpensively. Constructing a new pipeline is expensive, and typically involves lengthy environmental reviews requiring remediation during construction. Once completed, the pipeline can only carry one product, crude oil. But our proposed rail line

Exhibit 3: Oklahoma Rail System with Rolling Pipeline Project Highlighted

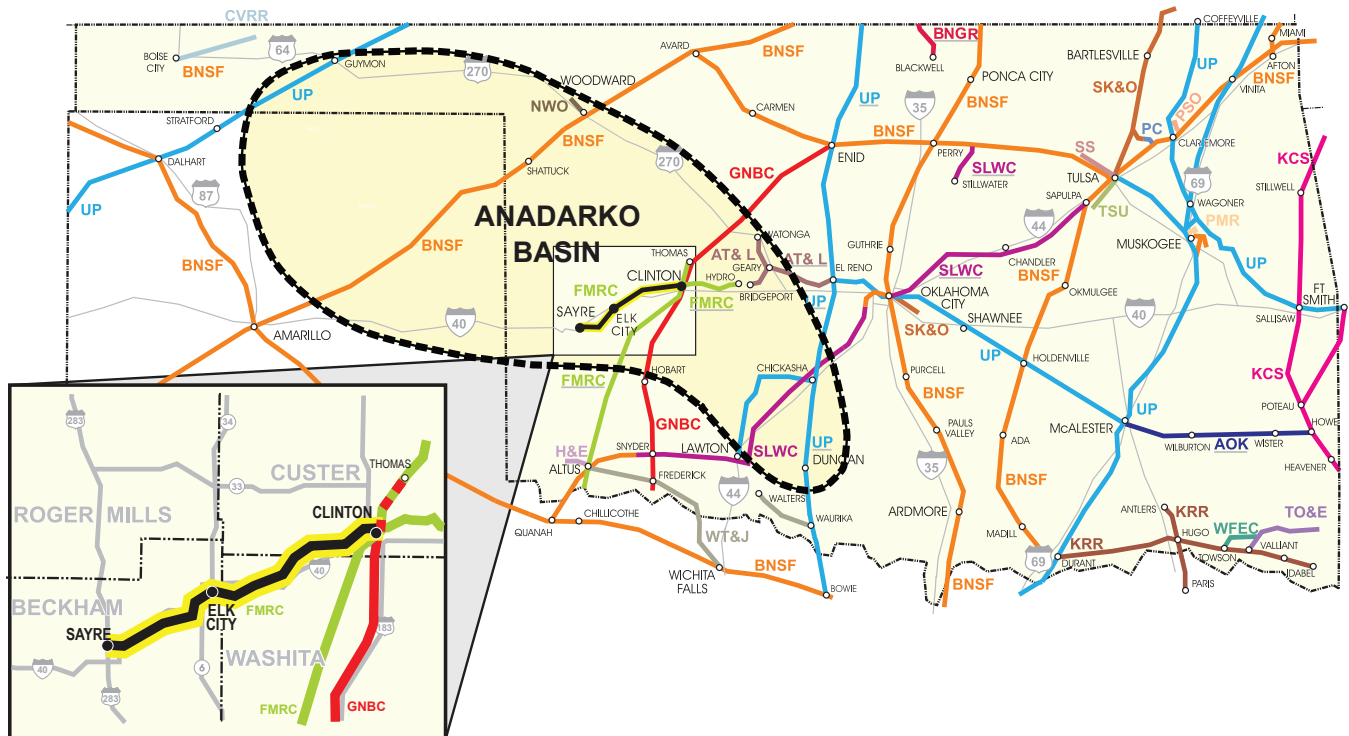
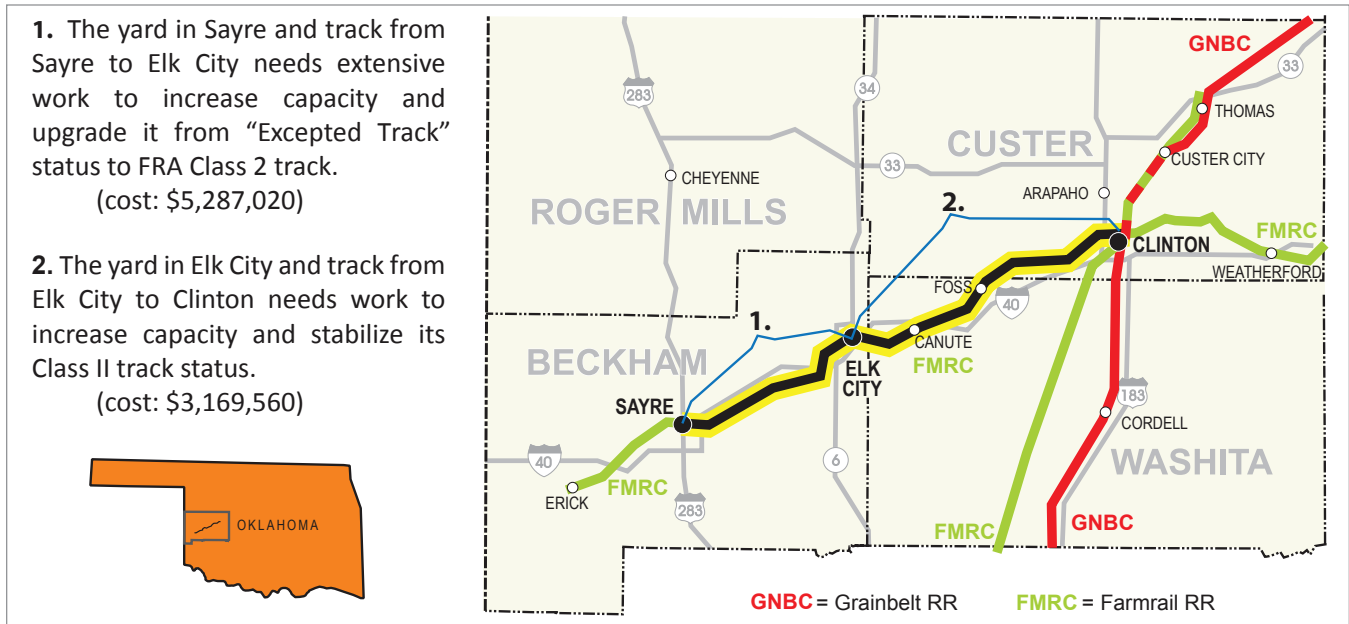


Exhibit 4: Project Overview



improvement project will be able to not only transport oil to refineries, but also transport inbound oilfield materials as well as outbound agricultural products and natural resources for decades to come.

The State of Oklahoma is fortunate to own 161 miles of rail line that terminates within the Anadarko Basin. It is currently leased to FMRC in a relationship dating from 1981. FMRC is a subsidiary of Grainbelt Corporation (GNBC). GNBC also owns and operates a contiguous 176-mile railroad, providing an extensive rail network throughout the region (**Exhibit 4**).

Farmrail proposes to upgrade 49 miles of state-owned track, running from Sayre to Clinton, Oklahoma. Sayre is a small town (population 4,100) experiencing revitalization as an oil industry logistics headquarters for many companies working the Anadarko Basin.

Farmrail has engineered a package of track upgrades and yard expansions between Sayre and Clinton that will allow customers to move large volumes more quickly and less

expensively by rail. The rail line will also then be capable of meeting new or expanding business needs such as agriculture and manufacturing. Currently, the 17-mile section of track from Elk City to Sayre is rated as Excepted Track which greatly limits traffic movement, and the track from Elk City to Clinton needs additional work to stabilize its Class 2 Track status.

**Current Conditions**

The project includes improvements to two segments of track, the western segment between Sayre and Elk City, and the eastern segment between Elk City and Clinton (**Exhibit 4**). The tracks at Clinton connect with GNBC tracks which connect with two Class I railroad carriers, BNSF and UP in Enid, OK.

The eastern segment is currently at Marginal Class 2 Track status, and requires additional maintenance work to safely and reliably handle the expected train volumes that are expected over the coming decades. The western segment, as noted earlier, is Excepted Track, in very poor condition. Regulations limit travel on this single-track rail line to 10 miles an

hour, and railcars carrying hazardous materials, such as crude oil, are limited to five cars per train.

Currently crude oil shipments, which have increased from zero in 2010 to 50 per week currently, are moved at a rate of 15 cars per day. Trains have a four-hour cycle time, bringing railcars to Elk City in two hours and then returning to Sayre to pick up additional railcars of oil. Only three round trips are possible, as Farmrail avoids night time service in this rural area with many unprotected at-grade crossings.

In Elk City, these railcars are gradually assembled into 30- to 50-car trains (a process that can take a few days), and are then shipped at 25 miles per hour, and with much lower labor costs, through Clinton to BNSF tracks, which take the oil to refineries in Lake Charles, Louisiana and occasionally to refineries in other states.

With the project in place, a single train would be able to carry 40 cars of crude oil at a time from Sayre, with a cycle time of two hours, vastly increasing that daily carrying capacity of the railroad. This also reduces per-carload



labor costs and fuel use for Farmrail. In addition, railcars would not need to wait at Elk City to be formed into larger trains, a benefit that reduces rail car rental costs for shippers. (Rail tank cars currently cost around \$33 per day to rent).

Farmrail intends to reduce the price charged to its customers by \$50 per carload to reflect their operational savings once the entire line is upgraded to Class 2 Track status and rail traffic increases.

### Project Readiness

This project is truly “ready to go”, as no new right-of-way will need to be acquired for the long-established rail

line. Since the project construction falls within an existing state-owned corridor, is consistent with existing zoning, and no significant noise impacts will occur, an automatic Categorical Exclusion can be issued for the environmental documentation as written in CFR 23, Subchapter H, Parts 771.117 (c)18 and (d)11. The track and yard upgrades have already been calculated and engineered. Lastly, the proposed work can be achieved with “off the shelf” materials and supplies, and contracted track gangs can be mobilized quickly. While the project schedule shows a start-date of July 1, 2012, this date was chosen simply based on the assumption that July 1 will be the date when USDOT commits TIGER funds to selected projects.

Should TIGER III move forward at an expedited pace, so too can the project be expedited to start immediately following project commitment.

The project has also been scoped in a manner that allows for flexibility in funding options should such a need arise. While the project would generate the highest benefit through completion of the entire scope, it is feasible to address the infrastructure improvement as two distinct elements as shown in **Exhibits 5 and 6**.

### Legislative and Planning Issues

No legislative action is necessary to proceed with this freight rail project in western Oklahoma. The project

**Exhibit 5:** Project Cost Estimate: Elk City (MP 612.0) to Sayre (MP 629.0) Rehabilitation to FRA Class 2

	Material		Labor		Total (\$)
	Unit (\$)	Total (\$)	Unit (\$)	Total (\$)	
Install 25,000 ties	35.00	875,000	25.00	625,000	<b>1,500,000</b>
Lay 35,000 tons of ballast	12.00	420,000	1.00	35,000	<b>455,000</b>
Surface 17 miles of track			2.00	179,520	<b>179,520</b>
Renew 16 road crossings	10,000.00	160,000	10,000.00	160,000	<b>320,000</b>
Upgrade bridge 619.8		60,000		40,000	<b>100,000</b>
Relay 12,000 feet of yard track	125.00	1,350,000	25.00	450,000	<b>1,800,000</b>
Signalize Broadway Avenue		75,000		25,000	<b>100,000</b>
Replace 3 switches in yard		112,500		47,500	<b>160,000</b>
Improve drainage				200,000	<b>200,000</b>
Extend yard track 2,700 feet	150.00	405,000	25.00	67,500	<b>472,500</b>
<b>Total</b>		<b>3,457,500</b>		<b>1,829,520</b>	<b>5,287,020</b>

**Exhibit 6:** Project Cost Estimate: Clinton (MP 580.0) to Elk City (MP 612.0) Rehabilitation to Sound FRA Class 2

	Material		Labor		Total (\$)
	Unit (\$)	Total (\$)	Unit (\$)	Total (\$)	
Install 25,600 ties	35.00	896,000	25.00	640,000	<b>1,536,000</b>
Lay 32,000 tons of ballast	12.00	384,000	1.00	35,000	<b>419,000</b>
Surface 32 miles of track			1.00	168,960	<b>168,960</b>
Upgrade 7 switches		262,500		87,500	<b>350,000</b>
Relay 5,280 feet of track (200 tons)	1,200.00	240,000	20.00	105,600	<b>345,600</b>
Signalize 2 RR Crossings	2.00	250,000		100,000	<b>350,000</b>
<b>Total</b>		<b>2,032,500</b>		<b>1,137,060</b>	<b>3,169,560</b>

Exhibit 7: Example of Excepted Track near Sayre, OK in Need of Repair



is consistent with the 2035 Long Range Transportation Plan, and with the forthcoming federally-required Oklahoma State Rail Plan which will be submitted to the Federal Railroad Administration early in 2012. The project is in the current Statewide Transportation Improvement Program as well.

## II. PROJECT PARTIES

The grant recipient would be the State of Oklahoma, administered through the Oklahoma Department of Transportation (ODOT), with a significant contribution from Farmrail Corporation, the company that leases and operates the rail line from the State of Oklahoma through its State-Owned Rail Program. The two principal cities involved, Sayre and Elk City, have also agreed to support the project with an estimated \$10,000 from each city.

Numerous entities and businesses are participating with non-monetary community and business support to assure the success of this project. These parties are discussed below in Section IV D, "Partnership."

## III. GRANT FUNDS AND SOURCES/USES OF PROJECT FUNDS

The total project cost amounts to \$8,456,580. Of this amount, a 20% match totaling \$1,700,000 is being made by the following:

ODOT: \$840,000; Farmrail: \$840,000; City of Sayre, \$10,000; City of Elk City, \$10,000. **AMOUNT REQUESTED FROM TIGER FUND: \$6,756,580, or 80% of the project total.**

## IV. SELECTION CRITERIA

### A. LONG-TERM OUTCOMES

#### i. State of Good Repair

The limitations on the rail line between Elk City and Sayre result in expensive and inefficient shipping, and also make it impossible to move the volumes necessary for it to be of service to the expected crude oil production or to entice new businesses to the area. The proposed project will upgrade this rail facility to Class 2 which will allow for unit train movements (up to 100 railcar shipments) at much faster speeds up to 25mph. This upgrade will not only allow for much larger volumes to be moved per train, but will also alter operating economics so that switching charges to customers can be lowered. The new investment would maximize the utility of the existing rail infrastructure as an energy-efficient transportation alternative to truck transportation.

Perhaps most importantly, increased rail carloadings on the line will enable the carrier to lower freight charges to customers. FMRC should be able to operate at financial break-even at the level of 140 additional weekly loads. Above that level, Farmrail would realize a profit from this line, which will enable it to reduce prices and invest in the rail infrastructure that it maintains in this rural, low-income region.

The project will also greatly improve the life-cycle costs of surrounding roadway systems by removing an estimated 36.2 million miles of heavy and long-haul truck travel from the highway system.

#### ii. Economic Competitiveness

Sayre is located in Beckham County, in southwest Oklahoma close to the Texas border. For decades, Sayre has been an Economically Distressed Area, with low incomes and high poverty. In 1989, the Census recorded Beckham County's per capita income as being 72% of the US average, dropping to 67% in 1999, with a fifth of the population (20%) living in poverty. Sayre's statistics are even worse, with per capita income at 48% of the national average and nearly a quarter of the population living in poverty when last measured by the Census (1999).

The picture is changing today thanks to the high price of oil, as well as advancements in extraction technology that have led to a rapidly increasing volume of oil coming out of the Anadarko Basin. While the oil-related growth is welcome, as production expands, the existing crude oil transportation system will be impossible to maintain – rail capacity will soon be reached if improvements are not made, oil pipeline capacity is currently reaching its limit, and truck shipments are expensive, and damaging to the region's pavement, quality of life, and environment.

Beckham County's economic base also includes farming. The county is home to over 1,000 farms and ranches, tending 53,000 head of cattle and 50,000 acres of wheat fields. These farms produced \$38 million in products according to the 2007 Census of Agriculture.

Both oil extraction and agriculture require a strong freight transportation system. Major freight movements into, out of, and within Beckham County include:

- Outflow of oil
- Inflow of materials needed to maintain oilflow at wells
- Inflow of equipment for drilling new wells

- Inflow of feed and fertilizer for ranches and farms
- Outflow of agricultural products (grain)

The existing transportation system in Sayre is under great strain, as most of these flows are being handled by truck, a reliable but expensive mode of transportation. Despite its poor condition and low speed, interest in the Sayre Farmrail service has increased, with traffic having grown from 14 carloads per year to 50 carloads per week due to the demand for crude oil shipments.

### Why Invest in Rail Facilities at Sayre?

The Anadarko Basin covers a large area, and there are two other railroads that terminate near this relatively remote part of the country. Investment in Sayre as a prime center for oil shipment has two justifications. First, the Basin is large, and is projected to be producing 200,000 barrels per day by 2015. This equates to 307 railcars of oil or nearly 1,200 truckloads daily. Put in perspective, the region needs as many transportation options as possible. Even if the two other rail lines are investing in similar projects to transport oil out of the Anadarko Basin, there will still be high demand for oil to be shipped through the centrally-located Sayre.

Second, Sayre has already been identified by the private sector as a good location for bringing the oil to the national rail system. Six companies have already built or rented yard space or transloading facilities at Sayre, and nine companies are planning on building new capacity there.

Sayre has room for development (unlike the rail facilities in Elk City, which have no room left available at the industrial park adjacent to the rail line). Furthermore, the development of a rail transloading center, which has already begun, is supported by state

and local government as well as the private shipping companies.

One of the reasons for the demand for Sayre rail service is not just the cheaper cost compared to trucking the oil to regional termini and refineries, but also the fact that there are limitations on the growth of truck and pipeline shipments.

**Truck:** There is a local and national labor shortage for long-distance truck drivers. As oil is produced at the rigs, trucks are needed to bring it to market – either to the rail head at Sayre, or to pipeline intake locations which are located 200 miles to the east. Currently new drivers cannot be trained fast enough to meet demand, increasing truck shipment costs. Shipping one tanker truck of oil from the rig to the pipeline and storage facilities in Cushing, and then back for more oil is an entire day’s labor for a truck driver. In comparison, a truck traveling from a rig to Sayre’s rail transshipment facilities might be able to make three or four round trips in a day, enabling each individual driver to bring 3–4 times as much oil to market each day.

**Pipeline:** Currently the nearest pipeline heads are located in Cushing and Stroud, both of which are 200 miles east of Sayre. Cushing is a major pipeline and oil storage area, but recently has seen inventories rise to record levels due to a lack of pipeline capacity necessary to ship the oil to the Gulf Coast refineries (Source: Reuters, October 6, 2011). Stroud is close to Cushing, and unlike Cushing, is accessible by rail. Unfortunately for Anadarko oil producers, the pipeline head at Stroud has been reserved for oil coming by rail from the Bakken shale formation in North Dakota. No capacity is available at Stroud to accept Anadarko oil.

Pipeline is the cheapest way to move oil to refineries along the Gulf Coast in Texas and Louisiana. While there

are preliminary plans for expanding pipeline capacity out of Stroud and Cushing, there will still be a need to get oil from the rigs to the pipeline head, and at Stroud, rail would be a cheaper and safer option than truck.

Further, it has been estimated that in order to cover construction costs, new or expanded pipelines would charge \$3 a barrel to move oil, compared to \$1–\$2 per barrel today. Currently shipping Anadarko oil by truck to Cushing is about \$8 a barrel. From Cushing another \$1 or so is added per barrel to get the oil to refineries. At \$3 a barrel, and with truck costs projected to increase, \$11 or \$12 per barrel might be prohibitively expensive compared to shipment by rail, which is currently \$6.51 a barrel, and with the project would be \$6.35 a barrel.

### Local/Regional Benefits

There are a number of benefits to the local and regional economy beyond the cost savings to oil shippers. These include three benefits of the project that are derived from a shift to rail that will remove an estimated 36.2 million truck miles from the region’s highways:

- **Improved safety:** rail has a much lower accident rate than trucks for hazardous materials shipments
- **Reduced vehicle emissions:** rail is more fuel efficient and is less polluting than truck travel on a per ton-mile basis
- **Reduced pavement damage:** heavy trucks such as those used to ship oil in from Beckham County to Cushing, are estimated to cause 16.7 cents of damage to interstate roadways for every mile traveled.
- **Congestion Reduction:** Reducing truck travel will reduce traffic growth in the more congested parts of I-40 near Oklahoma City as crude oil trucks move between Sayre and Cushing. Furthermore, lower rail shipment costs and improved track strength may reduce the need

for oversize loads blocking roads in the county. Currently a large number of oversize truck loads block rural roads delivering oil drilling equipment, as well as wind turbine components, which are also popular in this energy-rich area.

The expansion of capacity and the lowering of freight shipping costs will have spillover benefits throughout the economy, improving the competitiveness of local businesses and possibly attracting new businesses, helping to diversify the local economy over the long term. Diversification of the local economy will also be helped by providing an alternative to truck shipping, which has become very expensive in this part of the country due to the high demand for truck drivers.

In addition to these environmental and livability benefits, one of the main economic needs for the project is to facilitate the flow of oil out of the Anadarko so as not to have the limitations of the existing local transportation system acting as a brake on growth.

Right now, new oil wells are being drilled, maintained and monitored across the Anadarko. This has increased employment, which has led to a tight housing market, and new residential construction in Elk City and Sayre, as well as smaller towns in Beckham County. This residential growth has in turn lead to new commercial development – expanded grocery stores, new restaurants, etc. Towns and cities that a few years ago were struggling to meet the basic needs of their citizens can now spend money on improving local infrastructure and services. This effect will continue and expand as long as there is a workable system for getting oil to refineries. Without the project, growth in Anadarko oil production may slow down or stop prematurely as producers find moving oil out of

the area too expensive or logistically difficult compared to oil in other regions or outside the U.S.

The job and income growth resulting directly and indirectly from the construction of the project is covered in more detail in the Job Creation section, but what must be understood is the economic impact of *not* building the project. Failure to expand rail capacity at Sayre in the next one or two years will significantly hamper opportunities for economic development and job/income growth throughout Beckham County.

#### **National/Interstate Benefits**

The project will have a number of national benefits similar to the local benefits.

- The project will lower transportation costs for products moving from other states into southwestern Oklahoma, including fracking sands, rig drilling equipment, fertilizer and grain for ranchers. For any business trying to bring their products to this part of the country, the faster, cheaper rail freight network will enhance their competitiveness, while lowering the cost of business locally.
- The project will allow for flexibility in the transportation system, which is currently running into difficulties throughout the Midwestern states related to shipping large volumes of crude oil to refineries located in coastal states. Oil pipelines only go to a limited number of locations. The pipelines out of Oklahoma, which are already straining their capacity, end at Gulf Coast refineries in Texas and Louisiana. With rail, the entire nation is open, and Anadarko oil could reach refineries in California or New Jersey if Gulf Coast refineries start to hit capacity restraints from all the new oil coming from Canada and the Dakotas, or simply

in anticipation of a severe hurricane that may limit operations.

- Any project that shifts large volumes of freight traffic from truck to rail will help to provide some relief to the trucking labor shortage problem. The shortage is expected to get worse as new hours-of-service limitations go into effect, increasing truck shipping costs which have already been growing over the past few years as a result of fuel prices. It is currently difficult to find truck drivers nationwide, particularly for long-haul trips. By shifting nearly 200 daily truck trips in southwestern Oklahoma from a single oil rig-to-Cushing trip to three or four short trips from oil rig-to-Sayre (made with far fewer drivers), the available long-haul truck labor can be reserved for trips that are not so easily shifted to other modes.
- The project will help to strengthen the national rail system by maximizing the utility of existing rail infrastructure. While incremental, any growth in rail shipments on existing tracks, whether owned by ODOT, BNSF, or another carrier, allows for the rail owner to reduce per-carload costs while increasing revenue. This cost savings can be shared with customers and/or used to expand maintenance or capital improvement programs. Either way, this project will strengthen this important and energy efficient transportation option that is vital to our nation's economy.

#### **iii. Livability**

The counties and major cities located in the zone of influence for this project have large populations of Hispanic Americans: Beckham County (12% Hispanic), Washita County (8% Hispanic), Custer County (10% Hispanic), and especially the City of Sayre (24% Hispanic) and the City of Clinton (28% Hispanic). In rural America, these populations are generally under-

**Exhibit 8:** Although Trucks are Still Needed Locally as Part of the Overall Delivery Process of Crude Oil, Their Highway and Long-haul Use can be Reduced Tremendously by Utilizing Freight Rail



served and often strongly benefit from service industry and market-driven employment opportunities such as those expected to rise should needed infrastructure improvements allow the energy production in western Oklahoma to escalate as projected.

Additionally, changes in land use and transportation distribution patterns are expected due to a rise in local businesses needed to meet such service and market demands typically driven by large industrial growth such as that possible should western Oklahoma’s energy production flourish in the coming years. In turn this will allow local citizenry to stay close to home and avoid long drives as their needs begin to be met locally—indeed, the local substate planning district, SWODA (Southwest Oklahoma Development Authority), stated that growth in local business enterprises, including restaurants and new hotels, is already emerging as a result of the growing energy production beginning to drive employment.

SWODA also mentioned a recent shift in public life as increased tax revenues have enabled Sayre to begin a sidewalk and lighting installation program and address much-needed city-wide repairs.

#### iv. Sustainability

The transportation capacity made possible by moving crude oil by train

is staggering when compared to truck hauls. The individual railcars are three to four times more efficient than tanker trucks, capable of carrying 30,000 gallons compared to an average of 7,800 gallons for a truck. When multiplied by the number of railcars possible in a single rail delivery (up to 100 railcars) the numbers are huge. A single train can transport as much oil as 382 trucks.

Using estimates of the truck miles saved annually with the project in place, emissions reductions will be in the neighborhood of 30,000 tons annually, most of which is carbon dioxide (CO<sub>2</sub>). This will make our air easier to breathe while reducing the impact of greenhouse gas emissions on climate.

#### v. Safety

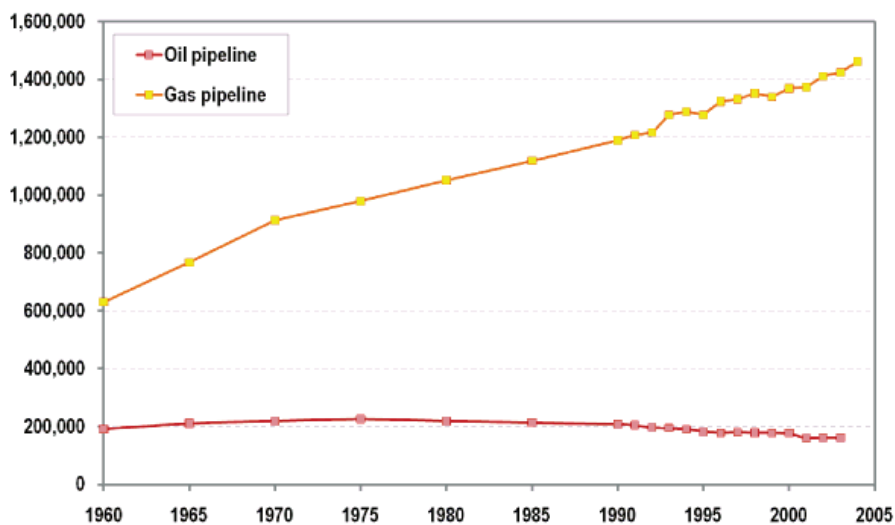
**“Improved rail infrastructure will help diminish the number of heavy trucks carrying hazardous materials traveling on our highways.”**

—Senator Mike Schulz

Although long-term solutions to the movement of crude oil typically involves the installation of pipelines, as previously discussed, this solution will take a great deal of time and money, and often involves significant issues with gaining environmental clearances. Additionally, oil pipeline construction has recently been in a phase of decline (Exhibit 9). The recent increased need for its use caught the market by surprise, forcing near-term dependence on truck or rail “rolling pipelines” where available.

Even if pipeline capacity is expanded at current pipeline heads in Stroud and Cushing in central Oklahoma, it will be both safer and cheaper to get the oil from Sayre to Stroud by rail instead of by truck.

Exhibit 9: New Oil and Gas Pipeline Construction



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**Railroads are the safest way to transport hazardous materials. Railroads and trucks carry roughly equal hazmat ton-mileage, but trucks have nearly 16 times more hazmat releases than railroads.**

—*nationalatlas.gov*

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When compared side by side, rail makes a compelling case over trucking in the area of safety. In every category measured by the United States government, rail is significantly safer than trucking (see “The Case for Rail Transportation of Hazardous Materials” on the application support website). Whether it is worker safety, reportable Haz Mat calls, or accident rates, rail is hands down safer and more reliable than trucking. Since 1980, rail crossing accident rates have declined each and every year.

Although trucks will still form a vital part of the crude oil production cycle locally, bringing oil from rigs to railheads or pipelines, the advent of a railhead for shipping crude oil will remove the need to get the oil from western Oklahoma to central Oklahoma and beyond, thus reducing truck-miles significantly as shown in the Benefit Cost Analysis.

In regards to this specific project, Farmrail has only had two accidents on its entire system in the past five years, and both were property damage only. Taking into account the increased rail traffic and speeds expected as a result of this project, Farmrail has analyzed the track involved, and it has identified and addressed any issues that may arise to hinder the overall safety of its operation from Sayre to Clinton. As shown in the project Cost Estimate, it has identified 16 railroad crossing surfaces to be improved, and

it has identified three passive crossings (AARDOT#’s 602013P, 597454Y, and 597467A) to which signalization will be added to assure continued safety to the rail corridor.

**B. JOB-CREATION AND NEAR-TERM ECONOMIC ACTIVITY**

**Influence on Economically Distressed Areas**

Beckham County qualifies as an Economically Distressed Area (EDA) as defined by the Public Works and Economic Development Act of 1965. While the local oil boom has reduced unemployment rates over the past year, the most recent Census data indicates that per capita income in the County is \$21,101, only 78% of the national average. The most recent Census recorded the poverty rate at 16.2%, compared to 13.5% in the US as a whole. Beckham County is 11.8% Hispanic and 2.8% Native American.

Jobs in Beckham County draw employees from surrounding counties in Oklahoma and Texas. Of the eight counties surrounding Beckham, six are also considered EDAs due to their low income levels. The project, which calls for improvements along 49 miles of track between Sayre and Clinton, OK, passes through three counties, Beckham, Washita and Custer, all of which are EDAs.

For the Beckham County economy, one of the major benefits of this project is that it will enable Sayre to serve as more than just a pass-through location for oil moving from drilling rigs to refineries in other states. Limited transloading operations are already underway in Sayre, with some companies making plans to expand shipping volumes and allow for multiple oil tanker railcars to be filled simultaneously. If rail capacity can be increased as a result of this project, then expected oil production increases should drive the construction of

additional transloading facilities in the next 1–4 years. Nine companies have already approached Farmrail with proposals to expand transloading operations at Sayre in anticipation of improved rail capacity.

It is important to understand that the job and income figures detailed below only estimate the impact of constructing the proposed project. The numbers do not capture the local employment that will result from increased Farmrail operations, as well as from the construction, maintenance and operation of associated transloading facilities. These local jobs will provide great opportunities for a positive near-term and long-term impact on Beckham County and surrounding economically-distressed counties.

The ability of this project to bring the portion of the Anadarko Basin surrounding Sayre into high-volume production by providing the necessary transportation infrastructure will not only produce the effects just mentioned, it will also aid job creation by producing demand for services and goods related to the employees needed to meet the labor required by a rapidly-growing oilfield. While this impact is not accounted for in the tables and bar charts that follow, it would nonetheless be a real impact of the project.

There are technical schools in the area that train local residents in construction and related trades, including diesel truck repair, welding and metal fabrication. The Western Technology Center has locations in Sayre and nearby Burns Flat, and provides training for students as well as for employees of local businesses. This resource will be valuable in preparing local residents for jobs related to the project and the transloading facilities.

### Calculation of Construction-Induced Economic Impacts for the Sayre Project

The Farmrail project is expected to create near-term economic benefits for the Beckham County area, the state of Oklahoma, and the nearby state of Texas. The calculated benefits presented in this section are based on an \$8.5 million increase in construction spending in the region. These project expenditures would generate a short term increase in demand for engineering and technical services, as well as construction-related labor and materials.

To quantify the near-term economic benefits of this project, an analysis was conducted utilizing an input-output modeling framework based on multipliers from MIG Inc., the developers of IMPLAN<sup>2</sup>. For this analysis, national level data was chosen. The multipliers estimate two types of impacts:

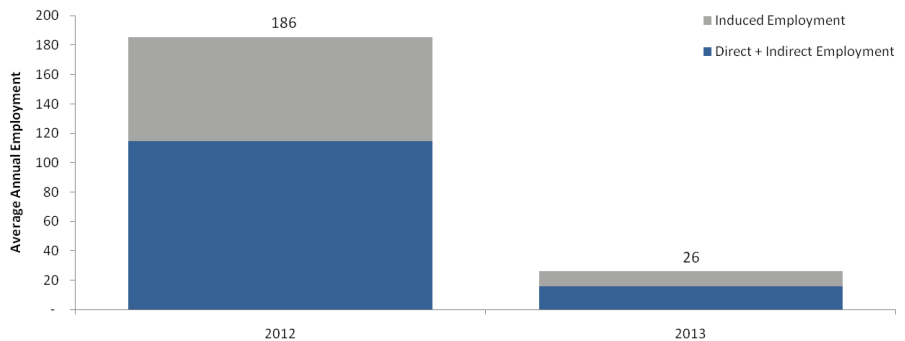
- Direct/Indirect Impacts:** Direct impacts represent new spending, hiring, and production by civil engineering construction companies to accommodate the demand for resources in order to complete the project. Indirect impacts result from the quantity of inter-industry purchases necessary to support the increase in production from the construction industry experiencing new demand for its goods and services. All industries that produce goods and services consumed by the construction industry (e.g., rail ties) will also increase production and, if necessary, hire new workers to meet the additional demand.
- Induced Impacts:** Induced impacts stem from the re-spending of wages earned by workers benefitting from the direct and indirect activity generated by the project. For example, if an increase in demand

2 [implan.com/V4/Index.php](http://implan.com/V4/Index.php)

**Exhibit 10:** Summary of Near-term Economic Impacts Resulting From the Project  
**Direct and Indirect Impacts**

Employment (annual average)	65
Earnings (2011 \$)	\$6,495,839
Output (2011 \$)	\$15,454,103
<b>Induced Impacts</b>	
Employment (annual average)	41
Earnings (2011 \$)	\$4,033,894
Output (2011 \$)	\$9,596,946
<b>Total Impacts</b>	
Employment (annual average)	106
Earnings (2011 \$)	\$10,529,733
Output (2011 \$)	\$25,051,049

**Exhibit 11:** Annual Employment per Year During Construction



**Exhibit 12:** Direct and Indirect Jobs by Quarter

	2012		2013
	Q3	Q4	Q1
	71	43	16

leads to new employment and earnings in a set of industries, workers in these industries will spend some proportion of their increased earnings at local retail shops, restaurants, and other places of commerce, which would further stimulate economic activity.

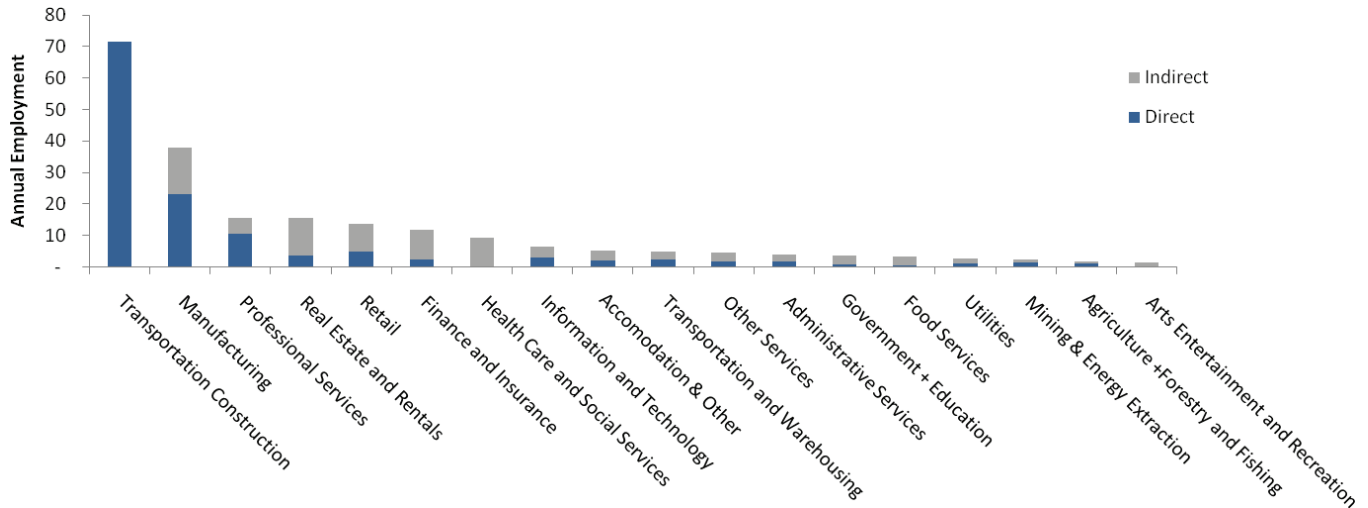
The results of the short term economic impacts are shown in **Exhibit 10**.

Assuming the grant is awarded, the Farmrail project is expected to generate economic benefits for the region beginning in 2012. An estimated average of 101 jobs will

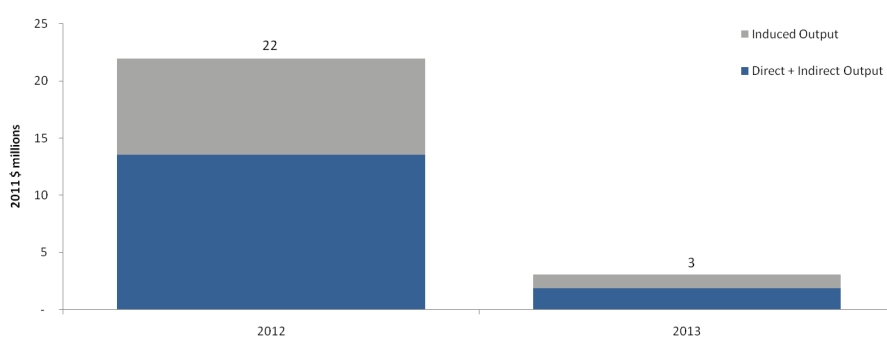
be created annually by the project, including an average of 63 direct and indirect jobs per year. **Exhibit 11** shows the profile of forecast annual employment generated by the project’s expenditures. Note that because award announcements will not be made until a few months into 2012, only the latter half of that year is counted in the exhibits below.

In total, the project is projected to create 203 person years of employment, including 125 direct and indirect job years. **Exhibit 12** shows the number of persons directly and indirectly employed by the project per quarter.

**Exhibit 13: Breakdown of Job Creation by Industry and Type of Impact**



**Exhibit 14: Economic Output per Year During Construction**



**Exhibit 15: Companies are Establishing New Businesses in Western Oklahoma as Part of Expanding Anadarko Basin Operations**



**Exhibit 13** shows the breakdown of jobs created by industry and type of impact. As expected, the civil engineering construction industry is estimated to receive the largest increase in jobs from the project (71 person years), almost all of which are direct jobs created. The other industries that will see the largest number of jobs created include manufacturing (23 person years) professional services (16 person years), and real estate and rentals (15 person years).

It is also important to consider the quality of the jobs that would be created by the project, which can be measured by the average level of compensation. The average job generated by this project would receive compensation around \$49,750/year, which is above the 2009 average

US per capita income of \$27,041 (2009 \$) and well above the county's 2009 per capita income of \$21,101 (2009 \$)<sup>3</sup>. This indicates that the project will help stimulate the regional economy.

The amount of short-term economic activity generated by the project is shown in **Exhibit 14**. In total, the project would generate \$25 million in real economic output (measured in 2011 dollars), with 22 million dollars of economic output generated in 2012 and the remaining \$3 million output generated in 2013.

### C. INNOVATION

While oil by rail is not a new enterprise, the scale of oil being moved in this fashion is a new phenomenon and has resulted in improvements and innovations to the rail infrastructure features utilized for the endeavor—they are becoming safer and more efficient, capable of handling up to 100-car unit trains. Additionally, the large volume of oil being produced now is directly due to innovations in oil and gas production via horizontal drilling and hydraulic fracturing. These two areas combined are generating new production systems capable of

<sup>3</sup> [quickfacts.census.gov/qfd/states/40000.html](http://quickfacts.census.gov/qfd/states/40000.html), [quickfacts.census.gov/qfd/states/40131.html](http://quickfacts.census.gov/qfd/states/40131.html)



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**“New oil takeaway capacity opportunities increase the incentive to produce domestic crude oil supplies, thereby encouraging a reduced reliance on imports from unstable regions of the world.”**

—C. Michael Ming,  
*Oklahoma Secretary of Energy*

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more efficiently exploiting existing energy fields and getting products to market faster than ever and at more reasonable rates when rail line densities are raised. Our specific project is not expected to result in any technological innovation, but it will result in the means to move the vast new crude oil production out of the production fields in more efficient methods. Due to the beneficial location of the proposed yard improvements, they can also be expanded over time as the production ramps up.

#### **D. PARTNERSHIPS AND DISCIPLINARY INTEGRATION**

One of the greatest strengths of this project is that it brings together both the public and private sectors in numerous ways to create a positive result for both the State of Oklahoma and its citizenry. Oklahoma has a long and rich history when it comes to energy production, and we are now at the forefront of yet another new era for the energy sector.

The Governor’s Office, the Oklahoma Energy Department, ODOT, SWODA (Southwest Oklahoma Developmental Authority), Beckham County, the City of Sayre, the City of Elk City, and the City of Clinton are all participating in the proposed project as financial contributors and/or providers of in-kind support and information to assure the success of this endeavor.

One issue that makes this project unique is the fact that the State of Oklahoma and Farmrail Corporation have been discussing this project not only with the surrounding communities and political entities, but we have also spoken with the state Energy Department and many of the businesses operating in the area to assure an accurate forecast of the expected market which has need of the infrastructure. These commitments serve to assure all parties that there is a true and serious need for the expansion and improvement of the transportation infrastructure in question. These communications have served to strengthen our understanding of the problem being addressed, and they have worked to guarantee a realistic solution that will address the needs both locally and regionally.

Mercuria Energy, Deeprock, Hampel Oil, Marquis Energy, Pacer Energy, Gaviolon, Peninsula, and Chesapeake Energy are all either expanding existing facilities or stating firm commitment to establish brand-new operations in and around Sayre due to the expected rise in Anadarko Basin production. These operations all seek to utilize rail to move products directly to refining facilities in Texas, Louisiana, and California, thus providing finished petroleum products to the United States marketplace and reducing our need for foreign oil.

Even the inbound market stands to expand, as shown by sand distributor Frac Tech which recently spent \$800,000 to construct two spur tracks with capacity for 70 railcars on a 60-acre trackside parcel it purchased in Elk City. The entire multi-million-dollar facility, which began operations in 2011, was specifically designed for rail-to-truck transloading and includes silos for temporary storage of different grades of sand.

ODOT has also compiled an impressive list of support letters which can be viewed on our website, affirming the broad-based and statewide push to secure this project funding. These support letters come from the City of Sayre, City of Elk City, SWODA, Hampel Oil, Representative Wright, Senator Ivester, Gaviolon, Senator Schultz, Representative Walker, Mercuria, Marquis, Pacer, Oklahoma Energy Secretary Ming, and Oklahoma Transportation Secretary Ridley.

#### **E. RESULTS OF BENEFIT-COST ANALYSIS**

A formal benefit-cost analysis (BCA) was conducted for this project using best practices for BCA in transportation planning, and reflecting all TIGER III grant application guidelines. It is important to note that a formal BCA is not a comprehensive measure of a project’s total economic impact, as many benefits cannot be readily quantified or occur under conditions of uncertainty.

However, to the maximum extent possible given available data, the formal BCA prepared in connection with this TIGER grant application reflects quantifiable economic benefits. It covers four of the five primary long-term impact areas identified in the TIGER III grant application guidelines:

- **State of Good Repair:** The majority of the project funds will be spent on rehabilitating the state-owned Sayre Yard, Elk City Yard, and 49 miles of track. The track between Sayre and Elk City is currently in poor condition (Excepted Track), which greatly restricts the speed and carrying capacity of this stretch of railroad. The Elk City to Clinton line is in better condition, but will need major maintenance work to safely handle the projected increase in crude oil-related shipments. In addition, the project is expected to result in

the removal of 36.2 million miles of heavy truck travel from Oklahoma highways each year, which should greatly reduce maintenance costs on roads such as I-40.

- Economic Competitiveness:** This project will have an impressive impact on local, regional and national economic competitiveness by reducing rail shipping costs for oil shippers, farmers and industry, allowing them to improve their logistics practices and expand markets for both domestic and international shipments. This will improve the competitive position of local agricultural and business enterprises, while reducing our nation's dependence on foreign oil sources.
- Environmental Sustainability:** the project will result in a major shift of freight movements to and from the Beckham County area, from trucks to rail. Rail is much more fuel efficient, and produces anywhere from 30% to as little as 8% of the emissions of trucks per ton-mile carried.
- Safety:** By shifting freight movements of crude oil, a hazardous material, from rail to truck, this project will reduce the number of vehicle accidents and spills. Trucks transporting hazardous materials have nearly 16 times more hazmat releases than railroads<sup>4</sup>. Further, despite the increase in rail freight tons carried, improvements to track safety and crossing protection are expected to reduce rail accidents compared to the accident potential expected if the project is not built.

Given the caveats, the computed benefit-cost ratio for the Farmrail project is 56.8 using a seven percent discount rate. The BCA compares the capital construction costs to the quantifiable benefits of the project for 25 years following construction. After

25 years, the railroad will need to again be rehabilitated, so no residual project value was assumed past 2037.

The quantified project benefits are:

1. Rail maintenance cost savings
2. Reduced cost of oil shipments
3. Reduced pavement damage to highways
4. Emissions reductions
5. Safety benefits (reduced crashes)

### Discount Rates

Federal TIGER guidance recommends that applicants discount future benefits and costs to 2011 present values using a real discount rate of seven percent to represent the opportunity cost of money in the private sector. TIGER guidance also allows for present value analysis using a three percent discount rate when the funds currently dedicated to the project would be other public expenditures. This is largely the case for this project, which is 9.5% privately funded. The BCA ratio at 3% is 87.3 to 1.0.

The project benefits are presented below using the more conservative seven percent discount rate to demonstrate that the project's long term benefits clearly outweigh the project's costs.

Exhibit 16: Benefit Cost Analysis Summary (in Thousands of 2011 \$)

Category	Present Value at 7%
<b>Construction Cost</b>	<b>\$7,840</b>
<b>Evaluated Benefits</b>	
Rail Maintenance Cost Savings	\$220
Reduced Cost of Oil Shipments	\$310,858
Reduced Damage to Roadway	\$60,279
Emissions Savings	\$27,447
Net Safety Benefits	\$46,664
<b>Total Evaluated Benefits</b>	<b>\$445,248</b>
<b>Net Present Value</b>	<b>\$437,409</b>
<b>BENEFIT/COST RATIO</b>	<b>56.79</b>

### Cost Benefit Results

Exhibit 16 summarizes the cost and the quantifiable benefits of the project in terms of Present Value. Detailed analysis of costs and benefits, including data sources and methodology descriptions, are available on the project's support website ([http://www.okladot.state.ok.us/tiger/tiger\\_2011\\_sayre/index.htm](http://www.okladot.state.ok.us/tiger/tiger_2011_sayre/index.htm)) in the BCA Technical Memo.

As shown in the table, the present value of the project's capital cost is valued at \$7.8 million. The benefits have an estimated present value of \$445.2 million over the 25-year period, yielding the 56.8 BCA ratio.

### Benefit Calculation Assumptions

The benefits of the project are derived by comparing Build conditions to No Build conditions. Under the No Build, rail traffic between Sayre and Clinton is limited due to poor track conditions. It is estimated that at most 105 carloads of oil per week could be shipped by Farmrail without the project. This is built on the assumption that five cars at a time take four hours to move from Sayre to Elk City (two hours at 10mph from Sayre to Elk City, and then another two hours for the locomotives to return to get more carloads of oil).

<sup>4</sup> [nationalatlas.gov/articles/transportation/a\\_freightrr.html](http://nationalatlas.gov/articles/transportation/a_freightrr.html)

At the end of a 12-hour workday, only 15 railcars of oil will have been moved.

With the project, the capacity is much greater. Farmrail estimates that practical capacity is a maximum of 560 railcars per week.

To ensure that the analysis did not project that more oil would be shipped by train than was actually being produced, the 200,000 barrel per day estimate from the State Energy Department for 2015 was broken down into carloads. Railcars hold 30,000 gallons or about 700 barrels of oil. Daily production of 200,000 barrels would fill 285 railcars per day, or about 2,000 per week. The Anadarko field is large, and Sayre is centrally located within it, so it was estimated that only 30% of the oil would go to Sayre, with the remainder headed north to railheads in Kansas or south to railheads in the Texas panhandle. Thirty percent of 2,000 carloads is 600, indicating that there will be demand from producers to use all of Farmrail’s 560 railcar/week capacity.

The 200,000 barrels per day production level will not be reached until 2015, so a gradual increase from today’s 50 rail cars per week was assumed (**Exhibit 17**). To calculate the benefits of the project, the additional amount of oil that could be shipped with the project vs. without the project was calculated. This additional amount is assumed to move by truck to pipeline heads in central Oklahoma (Cushing) as it does today.

The benefits described in detail below were all derived from comparing the cost and impacts of moving the additional amount of oil (in the right-hand column of **Exhibit 17**) by truck and pipeline, to the costs and impacts of moving it by rail from Sayre to refineries on the Gulf Coast.

**Exhibit 17:** Weekly Crude Oil Railcars Shipped With and Without the Project

Year	No Build (without project)	Build (with project)	Difference*
2013 (2nd half)	105 cars	320 cars	215 cars (154,000 bbl)
2014	105 cars	410 cars	305 cars (218,000 bbl)
2015–2037	105 cars	560 cars	455 cars (325,000 bbl)

\* While theoretical capacity of a rail tank car is 30,000 gallons, practical capacity is 27,300 gallons, to allow room for product expansion.

**Rail Maintenance**

One of the smaller project benefits is the reduction in maintenance costs over the life of the project (2013–2037), particularly for the Elk City to Clinton part of the project, which is due for major maintenance to maintain its current status.

Maintenance costs for the Sayre to Elk City (western) part of the project would have to increase with the project, to offset the damage from carrying an estimated 455 additional heavy railcar loads every week.

Overall, using a discount rate of 7%, the project results in a rather minimal maintenance savings of \$220,000 over the life of the project.

**Reduced Cost of Oil Shipments**

Reduced costs of shipping oil from Sayre to the refineries is a result of a number of factors:

1. Reduced costs to Farmrail of shipping the oil (reflected in a price reduction of \$50 per carload)
2. Reduced cost of tank car rental due to faster railcar turnaround times
3. The cost differential between truck-plus-pipeline shipping costs and rail shipping costs

The project, as described previously, will reduce Farmrail labor and fuel costs per carload. It will also enable the operation to become profitable, as annual operating and maintenance costs will be divided by hundreds of cars per week instead of dozens. The

exact benefit is difficult to calculate, so it was assumed that reduced costs to Farmrail would be reflected in a \$50 reduction in the current price to move a railcar from Sayre to Clinton.

Tank cars cost \$1,000 a month to rent. One of the benefits of longer train lengths and faster train speeds is that the amount of time it takes a rail car to get from Sayre to a refinery (today, Farmrail’s oil railcars get shipped to Lake Charles, Louisiana), will be reduced from an average of 22 days (\$733) to 20 days (\$667), a savings of \$67 for each railcar shipped.

Using current truck and pipeline pricing, the cost is \$9 per barrel from the Sayre area to the refineries on the Gulf Coast. Using current BNSF and Farmrail pricing the total trip cost of shipping by rail (from Sayre to Lake Charles, LA) is \$6.51 per barrel without the project and would be \$6.35 per barrel with the project.

The total annual cost savings for shippers would be \$30.2 million beginning in 2015. Present value for the 2013–2037 period is \$310.9 million.

**Reduced Pavement Damage to Highways**

Between Sayre and the pipeline heads in Cushing is a 200-mile trip, largely along I-40. Crude oil tank trucks need to be driven back empty, leading to high costs, as a trucker’s day consists of one 400-mile round trip to carry about 7,800 gallons of oil. With 3.8 trucks per railcar, this rail project is estimated to take over 36.2 million

truck miles off of Oklahoma highways every year starting in 2015.

According to the “Addendum to the 1997 Federal Highway Cost Allocation Study Final Report” FHWA, May 2000, it is estimated that heavy trucks do \$0.167 dollars of damage (in 2011\$) for every mile traveled on a rural interstate highway. Annual benefits beginning in 2015 are thus \$6.1 million, yielding a present value over the life of the project of \$60.3 million.

### Emissions Reductions

The 36.2 million truck miles removed from the road each year would remove a substantial volume of pollutants from the air as well, an estimated 47,000 tons of CO, CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>x</sub>, volatile organic chemicals and particulate matter (PM<sub>10</sub>). Over the 25-year life of the project, total truck pollutant reductions are an estimated 1.1 million tons.

Project emissions impacts also have to account for increased rail emissions. While rail produces a fraction of the emissions per ton-mile as truck travel, the 200-mile Sayre-to-Cushing truck trip used in this analysis must be compared to a much longer 600-mile rail trip between Sayre and Lake Charles, LA. It is assumed that pipeline travel (the other part of the truck trip) produces a negligible level of emissions.

Rail miles traveled add up to 63.5 million railcar-miles per year, with a conservatively-estimated 22,000 tons of pollutants added to the environment.

The net emissions reduction is thus in the range of 25,000 tons per year. Using TIGER guidance to evaluate emissions reductions, the present value of the net emissions reductions over the life of the project is \$27.4 million.

### Safety Benefits

As with emissions, safety benefits were evaluated separately for rail and truck travel. The reduced truck miles traveled will have a direct impact on reducing highway crashes. Using state crash data from 2010, along with accident cost values provided in the TIGER guidance, the cost of crashes per million miles traveled is \$129,540 in 2011 dollars.

Using the truck VMT removed from the roadway, the present value of the truck related safety benefits is \$46.7 million.

True accident costs might be larger, as these trucks are filled with hazardous crude oil. This cost effect was not estimated for the BCA, except to the extent it is included in the insurance component of the truck shipping costs.

An attempt was made to calculate increased rail accidents expected from the substantial growth in rail freight expected to result from the project. Currently, the accident rate for Farmrail in this part of Oklahoma is very low – two accidents in the past six years, during which over 31,000 carloads were shipped, most on 25mph track. Both of these accidents were property damage only (no injuries or deaths) and fault was placed on automobile drivers.

Interestingly, though, while carload traffic is set to grow by leaps and bounds, train traffic will not grow much. Even in 2015, with an additional 455 rail cars shipped each week, at 40 cars per train the growth is just twelve additional trains per week—not even two trains per day. Once the railcars are added to BNSF or other Class I trains, which are often 100 railcars long, the increase is less than one additional train per day.

Further, because of the 5-car train limitation in the No Build, the number of trains on the Sayre to Elk City

section of track would actually be 50% higher under the No Build. There is a speed differential that might increase the potential severity of accidents in the Build, but with the improved safety equipment at three of the grade crossings, as well as the substantial reduction in the number of trains per day on the Sayre to Elk City track, it was assumed that there would be no increase in rail accident costs resulting from the project.

### Other Non-Quantifiable Costs and Benefits

There are a number of other project benefits as well as costs that could not be reasonably quantified for the benefit-cost analysis. Among these are:

- Benefits to other shippers. While the benefits of reduced Farmrail costs for crude oil shippers is accounted for in the BCA, the impact of this cost reduction for other shippers, such as the county’s 1,000+ farms and other businesses was not. Freight transportation cost savings would improve the cost efficiency of all existing and future businesses, allowing them to be more competitive and make their products cheaper for a wider domestic or international market. Rail is already being used to ship oil extraction supplies into Beckham County, and could be used to ship oil drilling equipment and possibly wind turbine components, which are difficult to ship by truck.
- As noted above, the project is critical in making it possible to fully exploit the region’s resources and maximize economic development potential for the region. The dampening effect of limiting rail traffic to 105 carloads per week, while the truck driver labor shortage and the limitations on pipeline capacity make non-rail transportation more difficult, could greatly reduce the potential number of jobs and other benefits that

would be possible if the project was in place. These benefits are not just the jobs of those drilling and monitoring the wells, but jobs at restaurants and grocery stores that will serve these new employees, the teachers that educate their children, the builders who construct their homes, etc.

- As noted above, the true operating cost savings to Farmrail resulting from the project was difficult to calculate, as the Sayre to Clinton line is part of an integrated regional rail network. A rough cost estimate shows per-railcar cost savings of as much as \$112 per carload shipped based on more efficient operations and higher traffic densities on their rail lines. In the BCA, \$50 of this savings is included in the benefit calculations, but other savings were not included. Once the Sayre to Elk City line goes from a net loss to profitable, Farmrail is committed to reducing their prices. Any remaining cost savings will be used to upgrade and otherwise support their other Farmrail routes, or possibly reduce prices further.

### Public Benefits

While much of the value of this project will accrue to businesses involved in the oil extraction industries (shipping, drilling, fracking chemical suppliers) it should be stressed that the purely public benefits of this project greatly exceed the project costs on their own. As shown in **Exhibit 18**, the benefits of reduced pavement damage to public infrastructure, reduced emissions, and avoided accidents and chemical spills *each* exceed the project cost within four years of project completion. Taken together, the Present Value of these three benefit categories on their own provide a benefit cost ratio of 17.1 to 1.0 at a seven percent discount rate.

**Exhibit 18:** Year by Which the Value of Each Benefit Category Exceeds Total Project Construction Costs of \$8.2 Million

Benefit Category	Year in which Benefit Exceeds Project Cost
Reduced Damage to Roadway	2015
Emissions Savings	2017
Net Safety Benefits	2015

**Exhibit 19:** Project Construction Schedule: Clinton (MP 580.0) to Sayre (MP 629.0)

Task	Dates	Cost (\$)
<b>1st Quarter: July 1 – September 30, 2012</b>		
Order and distribute material	July 1 – September 30	-
Improve drainage	July 1 – September 1	200,000
Perform dirt work for yard track extension	July 1 – September 1	-
Install 35,000 ties	August 1 – September 30	2,100,000
Install 3ea yard switches	August 1 – August 30th	160,000
Rehab 12,000 feet of yard track	August 1 – September 30	1,800,000
Lay 22,300 tons of ballast	August 15 – September 30	289,900
Surface 10 miles of track	September 1 – September 30	52,800
<b>Subtotal</b>		<b>4,602,700</b>
<b>2nd Quarter: October 1 – December 31, 2012</b>		
Install 15,600 ties	October 1 – December 31	936,000
Relocate switch and complete yard track extension	October 1 – November 15	472,500
Lay 22,300 tons of ballast	October 1 – December 31	289,900
Upgrade 5280 feet of rail	October 1 – November 1	345,600
Surface 30 miles of track	October 1 – December 31	200,640
Upgrade Bridge 619.8	November 1 – December 1	100,000
Upgrade 3ea switches	November 1 – December 1	150,000
Rehab 16ea crossings	November 15 – December 31	320,000
<b>Subtotal</b>		<b>2,814,640</b>
<b>3rd Quarter: January 1 – March 31, 2013</b>		
Signalize three crossings	January 1 – January 31	450,000
Upgrade 4ea switches	January 1 – February 15	200,000
Lay 22,300 tons of ballast	January 1 – February 28	294,200
Surface 9 miles of track	January 1 – February 28	95,040
Miscellaneous clean up	January 1 – March 31	0
<b>Subtotal</b>		<b>1,039,240</b>
<b>TOTAL</b>		<b>8,456,580</b>

## V. PROJECT READINESS AND NEPA

As discussed above, this project does not require additional environmental analysis, design, or permitting/approval. As shown in **Exhibit 19**, it offers a very quick completion schedule, nine months from ground-breaking to full build.

## VI. FEDERAL WAGE RATE CERTIFICATION



As required in the Notice of Funding Availability for the Department of Transportation's National Infrastructure Investments (TIGER III) Under the Full-Year Continuing Appropriations, 2011, as printed in the Federal Register, Vol. 76, No. 156, Friday, August 12, 2011, The **Oklahoma Department of Transportation** states and assures that it will comply with the requirements of subchapter IV of chapter 31 of title 40, United States Code, the Federal wage rate requirements.

  
Oklahoma Secretary of Transportation

9-15-11  
Date

## VII. MATERIAL CHANGES FROM PRE-APPLICATION

ODOT would like to point out (as we did earlier in the application) that we used the date of 7/2/2012 for a project readiness date based on an assumption that TIGER III grants would likely not be obligated until July of 2012. If TIGER III obligations occur prior to this date, our project will be ready for bidding at the earlier date.

**IN OTHER WORDS, THE PROJECT HAS NO ISSUES THAT WILL SLOW ITS ADVANCEMENT.** Our project has been engineered, we expect an automatic CE to be issued by the end of this year, and there are no unusual needs or procurement issues that would cause any need for extra time once obligations have been completed.

The only change in the project itself relates to an overall increase in price of \$350,000 following a more thorough and complete safety evaluation to assure that the rail line would not face any additional likelihood of accidents as a result of the increase in rail traffic. This formal review turned up two additional crossings that we felt needed to have active safety devices added, as discussed in the application above and cited in the revised project budget (**Exhibit 19**).



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