

# Calculation of Construction-Induced Economic Impacts for the Oklahoma High Speed Rail Project

## Executive Summary

The Oklahoma High Speed Rail project is expected to create significant near-term economic benefits for the Federally designated South Central High Speed Rail Corridor. Oklahoma's economic benefits from the project would be driven by an increase in construction spending in the region. These project expenditures would generate a short term increase in demand for construction-related labor and material as well as engineering and technical services.

To quantify the near-term economic benefits of this project an analysis was conducted utilizing Bureau of Economic Analysis (BEA) Regional Input-Output Modeling System (RIMS II) multipliers. RIMS II multipliers classify each capital cost category according to industrial sectors, using North American Industry Classification System (NAICS) industry codes, and can vary widely depending on the geographic region being analyzed. This particular analysis utilizes RIMS II data for the State of Oklahoma and Oklahoma County.<sup>1</sup> The multipliers were used to determine the quantity and industry composition of benefits generated by the project resulting in estimations of short-term job creation, earnings, and economic output as a result of the project. The multipliers estimate two types of impacts:

- **Direct 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/Induced Impacts:** 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 will also increase production and help preserve or create new jobs to meet the additional demand. The level of inter-industry trade within the area will determine the size of the indirect impact. Induced impacts stem from the re-spending of wages earned by workers benefitting from the direct and indirect activity within area. For example, if an increase in demand 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, further stimulating economic activity.

In total, the project is projected to create 26,084 person years of employment, including 12,807 direct job person years, in addition to generating approximately \$3 billion in real economic output (measured in 2009 dollars), with over \$396 million dollars of economic output generated in 2010. An estimated average of 4,173 jobs will be created annually by the project, including an average of 2,049 direct jobs per year. The economic benefits from this project will create new jobs and business opportunities for populations living in Economically Distressed Areas, as the Oklahoma portion of the South Central High Speed Rail Corridor traverses the following Economically Distressed Counties: Tulsa, Creek, Lincoln, Oklahoma, Cleveland, McClain, Garvin, Murray, Carter, and Love. The results of the short term economic impacts are shown below in Exhibit 1:

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<sup>1</sup> Oklahoma County was assumed to be representative of the counties along the Oklahoma portions of the South Central High Speed Rail Corridor; as such, only Oklahoma County and Oklahoma State RIMS II multipliers were utilized in this analysis. RIMS II industry codes 7 (*Construction*), 16 (*Other Transportation Equipment Manufacture*) and 47 (*Professional, Scientific, and Technical Services*) were utilized in this analysis.

**Exhibit 1: Summary of near-term economic impacts resulting from the project.**

<b>Direct Impacts</b>	
Employment (Average Annual FTE Employment)	2,049
Earnings (2009 \$)	\$480,171,000
Output (2009 \$)	\$882,779,000
<b>Indirect/Induced Impacts</b>	
Employment (Average Annual FTE Employment)	2,124
Earnings (2009 \$)	\$480,946,000
Output (2009 \$)	\$2,174,835,000
<b>Total Impacts</b>	
Employment (Average Annual FTE Employment)	4,173
Earnings (2009 \$)	\$961,117,000
Output (2009 \$)	\$3,057,613,000

The project is expected to generate a high number of direct jobs during its construction phase. Exhibit 2, below, shows the approximate number of persons directly employed on the project per quarter throughout the project's construction period.

**Exhibit 3: Direct (On-Project) Jobs by Quarter**

2010			2011				2012	
Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
2,220	2,220	2,220	2,220	2,296	2,296	2,296	2,271	2,271
2012		2013				2014		
Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
2,263	2,125	2,125	1,962	1,962	1,886	1,886	1,886	1,886
2014		2015			2016			
Q4	Q1	Q2	Q3	Q4	Q1	Q2		
1,860	1,860	1,860	1,860	1,860	1,860	1,780		

As expected, the civil engineering construction industry is estimated to receive the largest increase in jobs from the project (10,381 person years), almost all of which are direct jobs created. However, spending from the project will also result in indirect and induced jobs for other industries. The industries that will see a significant number of jobs created include health care (2,455 person years), professional services (2,425 person years), retail trade (2,335 person years), manufacturing (1,844 person years), food services (1,174 person years), administration and waste management (962 person years), and other services (818 person years). The majority of jobs generated by the project would receive compensation above \$20,000/year, indicating that the project would generate average paying jobs that would help stimulate the regional economy.



## **Detailed Write-Up**

The Oklahoma High Speed Rail project is expected to create significant near-term economic benefits for the Federally designated South Central High Speed Rail Corridor. Oklahoma's economic benefits from the project would be driven by an increase in construction spending in the region. These project expenditures would generate a short term increase in demand for construction-related labor and material as well as engineering and technical services.

To quantify the near-term economic benefits of this project an analysis was conducted utilizing Bureau of Economic Analysis (BEA) Regional Input-Output Modeling System (RIMS II) multipliers. RIMS II multipliers classify each capital cost category according to industrial sectors, using North American Industry Classification System (NAICS) industry codes, and can vary widely depending on the geographic region being analyzed. This particular analysis utilizes RIMS II data for the State of Oklahoma and Oklahoma County.<sup>1</sup> The multipliers were used to determine the quantity and industry composition of benefits generated by the project resulting in estimations of short-term job creation, earnings, and economic output as a result of the project. The multipliers estimate two types of impacts:

- **Direct 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.
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In addition to measuring the effects of the project on the corridor's economy, the economic impacts of the project that will be realized in other areas and were also quantified. These impacts, referred to as "spillover" benefits, reflect the inter-county trade that occurs with supply industries.

The degree of these "spillover" benefits depend on the size and composition of the local economy for a given county. Counties that have large, diverse workforces and a broad industry base often rely less on inter-county trade to support local production than smaller, less diverse county economies.

The economic benefits from this project will create new jobs and business opportunities for populations living in Economically Distressed Areas, as the Oklahoma portion of the South Central High Speed Rail Corridor traverses the following Economically Distressed Counties: Tulsa, Creek,

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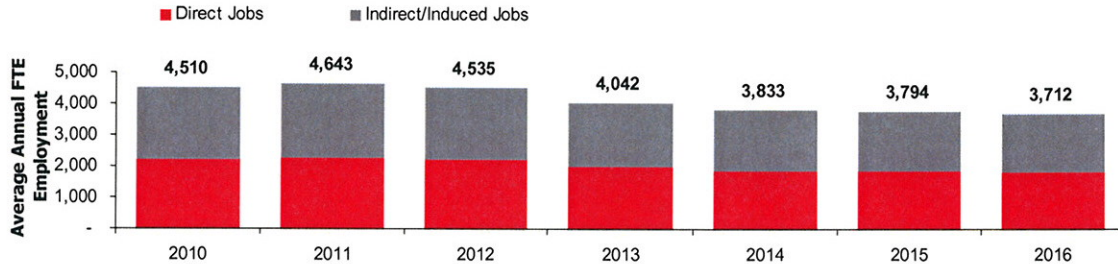
Lincoln, Oklahoma, Cleveland, McClain, Garvin, Murray, Carter, and Love. The results of the short term economic impacts are shown below in Exhibit 1:

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Employment (Average Annual FTE Employment)	4,173
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Beginning in 2010, the Oklahoma High Speed Rail project is expected to generate significant economic benefits for the region. An estimated average of 4,173 jobs will be created annually by the project, including an average of 2,049 direct jobs per year. Exhibit 2 shows the profile of average annual full-time equivalent (FTE) employment generated annually by the project's expenditures. At the peak of spending, in the second quarter of 2011, approximately 4,687 FTE persons are employed as a result of the project, including 2,296 direct jobs.

**Exhibit 2: Average Annual Employment per Year During Construction**



Source: Regional Input-Output Model

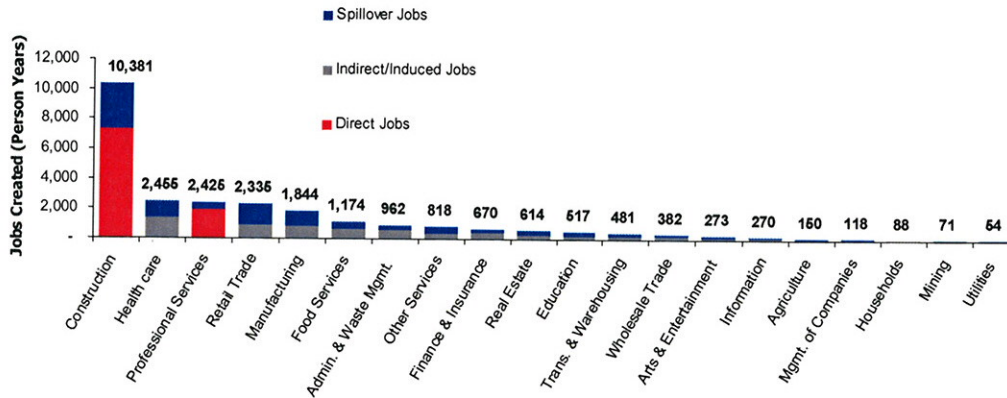
In total, the project is projected to create 26,084 person years of employment, including 12,807 direct job person years. Exhibit 3, below, shows the number of persons employed on the project per quarter.

**Exhibit 3: Direct (On-Project) Jobs by Quarter**

2010			2011				2012	
Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
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1,860	1,860	1,860	1,860	1,860	1,860	1,780		

Exhibit 4 shows the breakdown of jobs created by industry and type of impact. As expected, the civil engineering construction (10,381 person years) industry is estimated to receive the largest increase in jobs from the project, almost all of which are direct jobs created. The industries that will see a significant number of jobs created include health care (2,455 person years), professional services (2,425 person years), retail trade (2,335 person years), manufacturing (1,844 person years), food services (1,174 person years), administration and waste management (962 person years), and other services (818 person years).

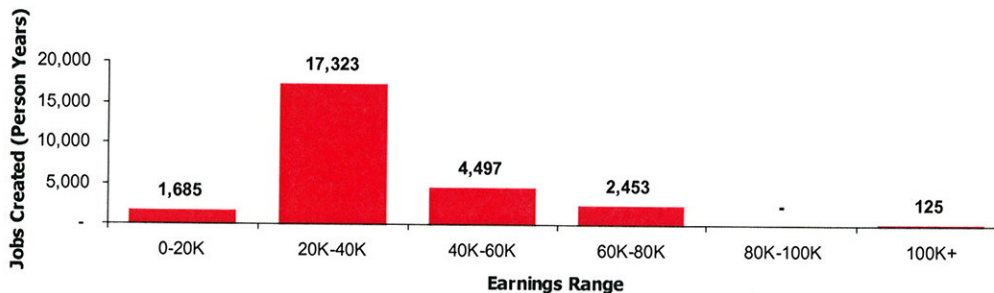
**Exhibit 4: Breakdown of Job Creation by Industry and Type of Impact**



Source: Regional Input-Output Model

It is also important to consider the quality of the jobs that would be created by the project, which can be most easily measured by the number of jobs created at various levels of compensation. Exhibit 5 shows that the majority of jobs generated by the project would receive compensation above \$20,000/year, indicating that the project would generate average paying jobs that would help stimulate the regional economy.

**Exhibit 5: Breakdown of Job Creation by Earnings Range**



Source: Regional Input-Output Model

The amount of short-term economic activity generated by the project is shown in Exhibit 6. In total, the project would generate \$3 billion in real economic output (measured in 2009 dollars), with over \$396 million dollars of economic output generated in 2010. Consistent with job creation, the majority of economic activity would be generated in 2011.