**Benefit Cost Analysis Summary**

Benefits:
We were able to quantify the below aspects of the Project Benefits using Department of Transportation / Caltrans and other statistics through the below analysis. According to the California State Rail Plan, inter-regionally the demand for shipping goods will grow in the Tulare / Fresno Area by 56%, the demand for rail will grow by 140%, Tulare Counties, outbound fright will increase by 176%. This represents an increase of 303,627 tons.

1. *Utilization*
   - ***a. Improved Rail Utilization***
     *A large semi can carry 26 tons, while a rail car can carry 100 tons, a 100 car train can carry 10,000 tons. According to the Bureau of Transportation Statistics, the cost per ton mile for rail verses truck is .03 to .37, given 50 miles at 300,0000 tons this represents 1.5 verses 18.5 ton/mile and $450,000 verses $5,500,000. The benefit in reduced costs is $5 million dollars.*
2. *Safety / Jobs*
   *a. Nationally trucks have nearly 10,000 fatalities per year, while railroads are near 570 including grade crossing accidents. The likelihood of a train accident is 17 to 1. The benefit is the cost of one fatality, which Caltrans suggests averages $4.5 million per highway incident. The benefit would be the reduction in the likelihood of it occurring multiplied by an incident, or $4.25 million. With 33 FTE at $55,000 (see page 22) there will be a 1.5 million benefit in wages*
3. *Air Quality*
   - *a.* ***Green House Gas Emissions***
     *In general per, the Air District stated there will be a 75% reduction in using trains verses trucks. According to the DOT, GHG Emissions by truck / mile are .1693 kg of CO2 / ton mile, while trains produce .1048 per ton mile. So for over 50 miles there would be 11,538 truck trips verses 30 train trips or 1953 kg of CO2 verses 3.144 kg of CO2 emission per miles. In valuing CO2 credits for 300,000 tons, the World Bank values a kg of CO2 at $4.00, the trucks are costing $46,152 in kg over 50 miles and multiplied by 300,000 tons equal ($13,845,600), while the cost of trains would be $7,812 ($2,343,600). Benefit is $11.5 Million.*
   - ***b. Air Quality Improvements***
     *According to the California Air Resource Board, the table (Table 5.5) on page 28 shows a difference in the mean percent in PM of all mobile sources of 4.7% and 27.9% between trains and trucks. This result in a $4 to $28, mean $16, ($5 for goods movement improvements) of health benefit for every dollar spent on control cost. The goods movement here will be 300,000 tons at a cost of $450,000 x 5, so the health benefit from PM reduction will be $2.25 million*

*Total Benefits:* ***$24,500,000*** *(including Utilization, Safety/Income, and Air Quality)*
*Total Cost:* ***$17,593,147***
*The Benefit to Cost Ratio is* ***1.4***