

IH30 ML Project

In the build and no-build analysis for this project, Vehicle Hours of Travel (VHT), Average Loaded Speed, Congested Delay, and Traffic Delay were analyzed as a performance measure. Fuel Consumption and Carbon Dioxide (CO₂) emissions were estimated from the Vehicle Hours of Travel reduction from the Build and No Build scenario.

Methodology:

- Fuel Consumption: 0.685 gallons/hour factor was utilized to calculate the Fuel Consumption from Vehicle Hours of Travel.¹
- CO₂ Emission: 8788grams/gallon of gasoline emission factor was used to calculate the CO₂ Emissions from Fuel Consumption.²
- Project Life: 40 years is used as project life for all highway projects.
- Global CO₂ Emission Benefits: \$33/Metric Tons of CO₂ emission was used to calculate the Global CO₂ Emission Benefits.³

Performance Analysis:

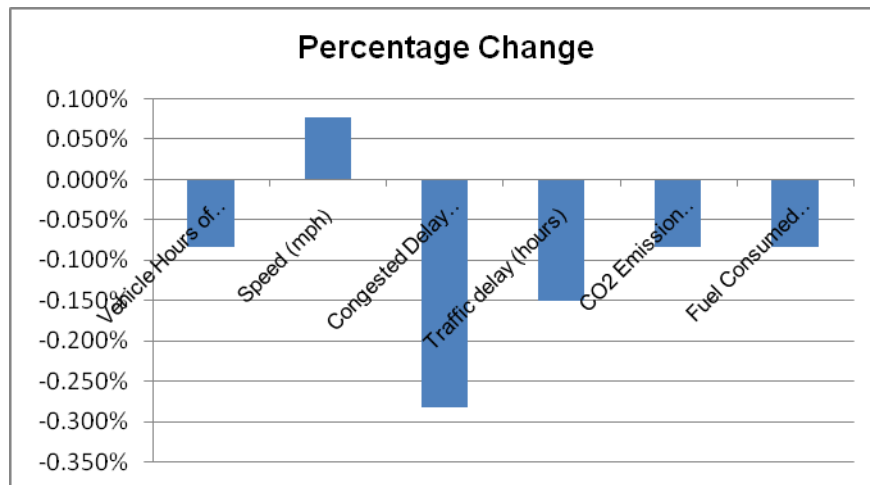
Exhibit 1 shows the net reduction and percent change from Build case to No Build case.

Exhibit 1:

Parameter	Build - No Build	Percentage Change
Vehicle Hours of Travel (hours)	-5,298.12	-0.084%
Speed (mph)	0.03	0.078%
Congested Delay (hours)	-3,028.75	-0.283%
Traffic delay (hours)	-906.00	-0.151%
CO ₂ Emission (tons/day)	-35.16	-0.084%
Fuel Consumed (gallons/day)	-3629.21	-0.084%

Exhibit 2 graphically represents the percent changes on all the analysis parameters.

Exhibit 2:



Summary:

At the regional analysis, this project reduces travel time by 55 million hours, CO2 emissions by 0.4 million tons and fuel usage by 38 million gallon, with a CO2 Global Benefit of 11 million dollars over the project life. Summary of the benefits are shown in Exhibit 3.

Exhibit 3:

Parameters	Benefits/day	Benefits/Project-life
Vehicle Hours of Travel (hours)	5298.12	55,100,448.00
CO2 Emission (tons)	35.16	365,622.33
Fuel Consumed (gallons)	3629.21	37,743,806.88
Cost Benefit (dollars)	1052.25	10,943,441.86

Fuel consumption and travel time reduction suggests that other criteria pollutants, such as Carbon Monoxides (CO), Volatile Organic Compounds (VOC), Nitrogen Oxides (NOx), Particle Matters (PM), will also be reduced.

Sources:

1. "2009 URBAN MOBILITY REPORT" July 2009, report published by Texas Transportation Institute.
2. EPA, "Emission Facts: Greenhouse Gas Emissions from a Typical Passenger Vehicle" < <http://www.epa.gov/otaq/climate/420f05004.htm>>, September 3, 2009.
3. Tiger Grant Application requirements.