### Benefits

When compared to the status quo, replacing the Broadway Street Bridge and adding a second track will yield significant economic benefits for the railroads, the Port, and the greater Houston region. Reductions in railroad delay will lower the cost of transportation and reduce pollutants that harm local air quality. Moreover, by increasing the capacity of the rail alignment, shippers will be able to ship more freight via train, which is a cleaner form of transportation compared with trucks. Table 8 provides an overview of the benefits of the investment.

Table 8: Benefit Summary

|  |  |
| --- | --- |
| **Benefit** | **30-Year Present Value** |
| **7%** | **3%** |
| 1 | Reduction in transportation costs due to reduced train delay | $20.55 million | $32.50 million |
| 2 | Reduction in diesel locomotive emissions due to reduced train delay | $0.09 million | $0.14 million |
| 3 | Reduction in truck emissions due to increased train capacity | $15.45 million | $30.34 million |
| **Total** | **$36.09 million** | **$62.98 million** |

Source: PTRA Data and PHA estimates

#### Reduction in Train Delay

The construction of the new bridge and second track, which will accommodate up to 40 trains per day, will eliminate delay on the Broadway Street Bridge. If construction begins in 2015, then the alignment will become operational in 2016 and the cost of delay described in the baseline will be reduced to zero. This cost savings, which will provide significant value to stakeholders of the Port, is shown in Table 9.

Table 9: Savings from Reduction in Train Delay

|  |  |  |
| --- | --- | --- |
|  | **30-Year Delay** | **30-Year Present Value Cost of Delay** |
|  | **7%** | **3%** |
| **Baseline Scenario** | 50,370 Hours | $21.5 million | $33.4 million |
| **Investment Scenario** | 913 Hours | $0.9 million | $0.9 million |
| **Benefit (Savings)** | **49,458 Hours** | **$20.6 million** | **$32.5 million** |

Source: PTRA data and PHA estimates

When compared to the baseline, delays with the bridge and second track investment are reduced dramatically, reducing transportation costs for rail operators on the alignment.

#### Reduction in Diesel Locomotive Emissions

Reductions in delay on the track will lead to reductions in emissions as trains consume less fuel. As trains spend less time idling due to the addition of the second track, locomotives will emit less particulate matter, volatile organic compounds, nitrogen oxides, sulfur dioxide, and carbon dioxide. These pollutants impose a cost on society. To monetize the value of reducing these emissions, the PHA relied on research conducted by the National Highway Traffic Safety Administration (NHTSA). Table 10 compares emission on the alignment from diesel locomotives under the baseline and investment scenario.

Table 10: Savings from Reduction in Diesel Locomotive Emissions

|  |  |
| --- | --- |
|  | **30-Year Present Value Cost of Emissions** |
|  | **7%** | **3%** |
| **Baseline Scenario** | $0.1 million | $0.1 million |
| **Investment Scenario** | $0.0 million | $0.0 million |
| **Benefit (Savings)** | **$0.1 million** | **$0.1 million** |

Source: PTRA data and PHA estimates

#### Reduction in Emissions from Substitution of Train Shipments for Truck Shipments

The new double track will also allow shippers that utilize the POH to send more freight via rail. The substitution of rail transportation for truck transportation, in particular, will generate additional reductions in emissions as trains are more energy efficient than trucks on average. Based on PTRA data, the PHA estimates that 24 percent of the new freight train traffic enabled by the new alignment could have been shipped via truck without the investment. Moving that freight volume from trucks to trains will reduce emissions in the Houston area and improve local air quality.

Figure 3: Savings from Reduced Emissions from Substitution of Train for Truck Traffic

|  |  |
| --- | --- |
|  | **30-Year Present Value Cost of Emissions** |
|  | **7%** | **3%** |
| **Benefit (Savings)** | $15.5 million | $30.3 million |

#### Total Benefits

Combining the three types of benefits described above results in total benefits between $36.1 and $63.0 million over 30 years. Table 11 displays total monetized benefits over the period of analysis.

Table 11: Total Benefits

| **Benefit** | **30-Year Present Value** |
| --- | --- |
| **7%** | **3%** |
| 1 | Reduction in transportation costs due to reduced train delay | $20.55 million | $32.50 million |
| 2 | Reduction in diesel locomotive emissions due to reduced train delay | $0.09 million | $0.14 million |
| 3 | Reduction in truck emissions due to increased train capacity | $15.45 million | $30.34 million |
| **Total** | **$36.09 million** | **$62.98 million** |

In addition to the monetized benefits displayed in Table 11, the project will produce ancillary benefits important to the economy of the region.

First and foremost, by expanding capacity and increasing the competitiveness of the POH, the Broadway Second Main Track Project is expected to generate jobs. As noted elsewhere in the report, the existing alignment accommodates over 1,000 rail cars per day; the cars include plastic pellet hoppers, tank cars, intermodal cars, coal hoppers, and others. Adding a second main line is projected to add capacity sufficient to handle the anticipated increase rail traffic throughput of 50 percent over the next 30 years. This yields an increase of 246,375 cars per year, which is expected to increase manufacturing and transportation jobs.

Additionally, construction of the project will generate jobs. In 2011, the Council of Economic Advisors estimated that every $76,923 in transportation infrastructure spending would equate to one job a year. The project, therefore, should yield significant employment benefits during construction.