Attachment A

SCA

STV/CSI/AKRF

A JOINT VENTURE

Questions for the July 15, 2004

CROSS HARBOR PROJECT TEAM PRESENTATION

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Cross Harbor Project Team Presentation

1. What will be the impact of the South Brooklyn Port on the DEIS tunnel volumes?
Answered by: Marc (CSI)

None. The market demand forecast is based strictly on domestic, continental North American (including Canada and Mexico) demand. The project makes no assumption about the existence or non-existence of a Brooklyn port. A DEIS cannot assume the existence of an uncommitted project. The tunnel was deliberately designed so as not to preclude service to a Brooklyn port. This service would be provided by having trains travel from the tunnel onto the Bay Ridge Branch, move port-bound trains to sidings, and then push them back into the port area during operating windows. This mode of operation assumes that port traffic is by definition less time-sensitive than most domestic traffic, particularly intermodal.

The single tunnel system is capacity constrained and could not accommodate any port traffic unless it did not handle some of the assumed domestic traffic. The most likely scenario would be that for some reason the tunnel fails to attract the forecast level of intermodal traffic, or the tunnel operators chose not to pursue the intermodal market, and this space is assumed by port traffic. The double tunnel system is capable of handling additional traffic beyond that forecast, and four "miscellaneous" trains were assumed to represent this unused capacity. These trains could provide service to the port.

2. What will be the impact of adding the MSW trains to the DEIS tunnel volumes?
Answered by: Marc (CSI)

This answer is similar to the answer to Q1. The DEIS is based on the assumption that the tunnel will not handle MSW trains. Unlike in the case of the port, however, no plans or arrangements in the tunnel design or operation have been made to accommodate MSW trains. The single tunnel system is capacity constrained and could not handle MSW trains unless some part of the forecast market demand fails to materialize, or the operators chose not to service some market segment. The double tunnel system, as noted above, is theoretically able to handle additional traffic.

3. What is the capacity of the tunnel?
Answered by: Gerry (KKO)

The single track tunnel is at capacity with 28 daily trains (14 in each direction). This is discussed in section 4.1.1.2.1 on pages 104 and 105 of the Transportation Appendix.

The double track tunnel has a capacity of 62 daily trains (31 in each direction) Thus, it could handle the 54 identified line-haul trains (27 in each direction) and still has the capacity for the addition of the four Port trains. This is discussed in Section 3.3.1 on page 73 of the Transportation Appendix.

To a large degree, capacity depends how much "fleeting" (running a series of trains in the same direction without frequent changes in the direction of tunnel traffic) can be scheduled. In turn, the ability to fleet trains is constrained by the schedules of line-haul trains west-of-Hudson.

The capacity of the two-track tunnel is greater than twice the capacity of the single-track tunnel because there are fewer times during the day when the (time-consuming) reversing of direction of a track is needed.

The capacity of the tunnel is not restricted by the rail system in New Jersey or in Fresh Pond or of the east-of-Hudson tracks between the tunnel and Fresh Pond. The Fresh Pond capacity is discussed in detail in section 3.4 on pages 87 through 102 of the Transportation Appendix of the DEIS.

Capacity of the rail system in New Jersey to handle tunnel trains required a series of projects (such as the Waverly Loop and other signal and track projects) from among those listed by NS and CSX in a document entitled *North Jersey CSAO and Vicinity – Proposed Commuter Projects and Proposed Capacity Projects* dated June 21, 2002. The New Jersey projects identified by the study team as necessary for tunnel operations are all in a list of first phase projects that were identified by NJDOT as definitely going to take place.

Projects included in the no-build alternative included Improvements on the Hudson line and elsewhere that were already funded and/or underway. A discussion of these projects begins on page 2-4 of the DEIS.

East of Hudson, this included the recently-completed TOFC clearance project on the Hudson line to Harlem River Yard, and the already-funded extension of TOFC clearances from Harlem River to Oak Point. Also east-of-Hudson is construction of a new rail freight yard at the former Pilgrim State Psychiatric Hospital site in Islip, NY, and associated improvements along the Long Island Rail Road (LIRR) Main Line.

In New Jersey, this included (per direction from NJDOT) the projects contained in a list of first phase projects that were identified by NJDOT as definitely going to take place.

These New Jersey projects included:

- Implementation of a number of rail infrastructure projects under the New Jersey State Rail Plan. Those most directly related to the project include a Port Jersey rail connection to the Global Marine Terminal and the Military Ocean Terminal at Bayonne (MOTBY), and improvements to Oak Island Yard as described under Oak Island Yard below. Project Sponsor: New Jersey Department of Transportation (NJDOT), PANYNJ, and private rail operators. EIS Analysis Year: 2010.

- Implementation of a number of rail infrastructure projects on New Jersey rail lines. Those most directly related to the project include construction of a second mainline track between North Bergen Yard and Kearny Yard; additional signals along the P&H Line; the Waverly Loop connecting the P&H Line to the Greenville Branch; a second bypass track south of Oak Island Yard; a second track and TCS along the Chemical Coast Line between Elizabeth port and Oak Island Yard; a connection between the Trenton Line and Port Reading Secondary; a second track (10.7 miles) along the Lehigh Mainline between Bound Brook and Potter; upgrading track, and adding sidings and TCS along the Port Reading Secondary; and adding a second track along the Chemical Coast Line between the Port Reading Secondary and Bayway Yard. It should be noted that while these projects are anticipated as part of the No Action Alternative, some may be required for the Tunnel Alternative. These projects are categorized into two phases; funding currently exists for the first phase only. Additional Project Sponsor: PANYNJ, NJDOT, Conrail Shared Assets Operations (CSAO), and private rail operators. EIS Analysis Year: 2010.

- More geographically distant projects included recently completed TOFC facilities in the Chicago area. Projects defined by CSX and NS in the ca. 1997 submittals to the Surface Transportation Board were only included if they were underway or if the individual railroad indicated that they were about to be funded.

Not included were projects that were proposed but not yet funded such as the proposed I-95 corridor projects south of Northern New Jersey or projects defined by CSX and NS in the ca. 1997 submittals to the Surface Transportation Board that are now apparently on hold.

Also not included were changes announced by NS and CP in mid-2004 to make minor track changes that will enable improved operations – such as giving NS access to NS's former Wabash tracks across southern Ontario as part of CP's Chicago – Detroit – Buffalo route.

Since the study team only included projects that were certain to be built the question regarding what will happen if the projects are not built becomes hypothetical.

4. **How will empty containers be handled?**
Answered by: Gerry (KKO)

A container management program will be in place so that empty containers and/or container cars will not be accumulated east-of-Hudson.

Containers that are unloaded east-of-Hudson will be placed on the first available outgoing (westbound) train returning to their point of origin on their railroad of origin. These westbound trains will travel west through the tunnel, stopping in New Jersey only long enough to pick up a block of cars originating in New Jersey.

Empty containers from east-of-Hudson will not be off-loaded in New Jersey. Rather, they will continue through New Jersey to the destination of the westbound train.

5. **Have you considered the ventilation of the tunnel?**
Answered by: Nick (STV)

Yes – tunnel ventilation has been fully analyzed for full schedule traffic, maximum length trains and emergency situations. The successful ventilation plan is based on the "one train in a tunnel concept".

6. **Is the capacity of the tunnel restricted by the rail system in NJ and NY? (Fresh Pond).**
Answered by: Gerry (KKO)

No. Further details are included in the answer to question 3 (above)

7. **What have you heard from the Long Island Railroad, New York & Atlantic, regarding the impacts on their system?**
Answered by: Nick (STV) / Gerry (KKO)

We interviewed both the NY&A and the LIRR during the study process, and we very carefully based our operations analysis of Fresh Pond and all of the LIRR tracks on all of the constraints (eg: length of train, blackout windows, etc.) that NY&A works under.

This is discussed at length in Section 3.4 on pages 87 through 102 of the Transportation Appendix.

Subsequent to distribution of the DEIS, additional conversations have taken place with LIRR. The project was well received and the LIRR is continuing their review of the DEIS. No major issues were identified by the LIRR or NY&A.

8. **Are there any areas in Jersey City and Bayonne where truck volumes increase? Will certain areas for example, Jersey City, not have access to the tunnel?**
Answered by: Marc (CSI)

The DEIS reported changes in truck volumes on major regional highways in Table 8-15 (volume II, p. 8-66). Volumes for US Routes 1&9, and for the New Jersey Turnpike between exits 15W-16W and Port Elizabeth, were reported. In each case, truck volumes would decrease with the tunnel. Although not reported in the DEIS, freight truck volumes were produced by our runs of the regional model for major arterials in Jersey City and Bayonne. The model runs show minor changes (both increases and decreases) in truck volumes on local roads in Bayonne and Jersey City. As shown in Attachment 1 43 individual roadway segments show a decrease in daily freight truck volumes by up to 30 trips per day. In contrast, only 10 roadway segments show an increase in volume of up to only 6 trips per day. Clearly, the tunnel will produce an overall decrease in freight truck volumes in Jersey City and Bayonne. There is no reason to expect truck traffic increases anywhere in New Jersey from the project. The tunnel eliminates long-haul truck trips crossing New Jersey going to East-of-Hudson destinations, and dray trips from NJ rail yards to EOH destinations. No new truck activity is generated anywhere in New Jersey (as compared to the new short-haul truck trips generated in the vicinity of Maspeth, Queens). Approximately half (50%) of the truck VMT reduction forecast for the 30-county region will be experienced in New Jersey.

Access to the tunnel will be through the existing Greenville Rail Yard in New Jersey via the Leigh Valley Main Line and National Docks secondary. The possibility of creating a direct rail connection to/from Jersey City is not precluded by the tunnel design and could be investigated further in the FEIS.

Local tunnel access to areas in and around Jersey City can be provided by accessing the National Docks Secondary. Inbound and outbound traffic could be accommodated but reversing train movements are required.

9. **Are the length of sidings and grade sufficient for trains traveling thru the tunnel? Show concept plans and engineering drawings to reflect the impacts in Jersey City, including any proposed track realignments in the Greenville area.**
Answered by: Nick (STV)

Yes, grades were designed to ensure the alignment matched operational criteria. (See engineering drawings)

10. **Clarify how this DEIS deals with redundancy?**
Answered by: Marc (CSI)

The exact meaning of this question is not completely clear. However, the tunnel itself provides major redundancy for the shipment of freight to EOH destinations. Currently, 1.7 percent of freight moves by rail to the EOH subregion. Two-thirds of all truck-bound freight moves across a single facility – the George Washington Bridge. Most of the rest moves across one other facility – the Verrazano Narrows Bridge. Tractor trailers, because of their size, are prohibited from using either the Lincoln or Holland Tunnels. The remainder is primarily petroleum products moved by tankers on maritime modes. The Cross-Harbor tunnel provides a second major mode for freight movement, and a third major crossing. A rail freight tunnel can be far more easily secured than can a bridge open to general public traffic. New rules being instituted by the Department of Homeland Security will improve the security of freight shipments, in particular containers. Access to the tunnel will likely be via a small number of yards in New Jersey and elsewhere, and on trains operated by a small number of railroads. Since the tunnel is primarily transporting goods to rather than from the EOH subregion, its absence in the event of an attack is not likely to have a major impact on New Jersey. Given the role of the tunnel itself in providing regional redundancy, providing redundancy for the tunnel would not seem to be the highest priority. However, the double tunnel system contains its own redundancy in that it is unlikely that the operation of two independent tubes could be simultaneously disrupted. The single tunnel system, obviously, does not have this advantage. The loss of the tunnel would result in EOH-bound freight traffic reverting to current patterns – truck dray, float, and Selkirk.

11. **Present the "operating plan summary (similar to Table 4.1 for the single track alternatives)", with string charts for all alternatives and make the plans available for review.**
Answered by: Bob(STV) / Gerry (KKO)

The operating plan summary is the primary document utilized for the creation of the string charts. The summary provides the "gate" arrival and or departure time and the route traversed by each train. Running times for each route segment were then deduced from the authorized speed (as shown in the CSAO Operating Timetable) and the size of the train. Dwell times at intermediate stopover yards were assumed based on the activity taking place, i.e. set-offs and pickups.

The attached operating plan summary is one of several versions that were prepared for the double tunnel system as the study progressed and changes became necessary. A thorough review of the files is being conducted to locate the final summary document that was used to develop the string charts in Chapter 3.0

12. **The string chart provided for the Lehigh Line is incomplete for the double track alternative, and is not included at all for the single-track alternative. Please provide this information.**
Answered by: Bob (STV)

The string chart for the Lehigh Line contained in Chapter 3.0 appears to be complete, although of poor reproduction quality. Charts for the Lehigh Line, Chemical Coast Line and National Docks Branch were inadvertently omitted from Chapter 4.0, although in some cases they are virtually identical to the charts in Chapter 3.0. (The presence of fewer tunnel trains in the single tunnel system results in fewer instances of congestion and/or conflict.)

There was insufficient time to assemble a complete set of the charts for this meeting; they will be forwarded to you and will be inserted in Appendix 2 early next week.

13. **What is the impact of the marketing analysis, and the results of the DEIS, since you did not update the survey?**
Answered by: Marc (CSI)

The events of 9/11 made it impossible to conduct a survey in the following months. Since all subsequent analyses would have been driven by the survey results, the project could have been delayed by years if we had decided to wait for an opportune time to re-

survey. We stand by the results of the original survey and believe that they (as with all travel demand forecasts) provide a realistic, macro-level guide to the likely tunnel demand over the long-term. The Cross Harbor tunnel project still has the most sophisticated freight mode choice model in the nation. The model was also used by NYSDOT on the Pilgrim Intermodal Yard Feasibility Study. While the survey was not updated, many other aspects of the analysis were updated – including the Reebie Associates TRANSEARCH database and forecasts, and certain technical elements of the mode choice model itself as described on p. 42 of the Transportation Appendix. These improvements include the separation of commodities into modal markets (intermodal, carload, transload, etc.) and estimating the cost variable as modal specific. Thus, although the underlying survey results were not altered, a more creative and accurate application of the MIS survey results was done.

14. What has changed to impact DEIS numbers? Discuss the impacts of 911, NS expansion in Eastern Pennsylvania, and the increase in rail volumes for the port area.

Answered by: Marc (CSI)

The primary reason why the DEIS tunnel volumes are higher than those forecast in the MIS is a significant increase in the estimate of current and future freight movement in the Reebie TRANSEARCH database from the 1995 dataset used in the MIS to the 2000 dataset used in the DEIS. The TRANSEARCH database is, as you know, the national standard used today to estimate freight demand. Its use in the Cross Harbor DEIS is consistent with overwhelming national practice. TRANSEARCH was used by NJDOT on the Portway study and is planned to be used on the NJ Statewide Freight Plan project. However, as Reebie Associates readily admits, TRANSEARCH remains a work in progress which is improved as to accuracy with every update. Specifically, and as described on p.5 of Appendix 2B "Commodity Flow Analysis", TRANSEARCH now includes direct reports on annual rail traffic volumes from the two major class I railroads serving the region (the result of which was a lowering of the estimated EOH rail mode share from 3% to 1.7%), and is much more accurate about capturing local distribution and warehousing truck trips (resulting in an increase in reported truck tonnage). The MIS reported 199 million tons of goods moving in the EOH subregion; the DEIS reported 315 million tons. This increase is due both to the improved technical reporting underlying TRANSEARCH, but also to the tremendous economic boom which occurred in the region in the late 1990s. In addition, the forecasted increase in EOH freight volume grew from 47 percent in the MIS (1995-2020) to 70 percent (2000-2025) in the DEIS. The latter figure is more in line with national freight forecasts (source: FHWA, Freight Analysis Framework). These forecasts were prepared by DRI-WEFA which works closely across the country with Reebie Associates in forecasting future freight flows

based on regional economic growth forecasts. The combination of the higher base and higher forecasted growth rate in freight flows results in almost all of the increase in the tunnel demand estimates between the MIS and DEIS. The percentage of diversion from truck to rail of the combined truck/rail market remained relatively constant at about 5 percent for the single tunnel and 8.5 percent for the double tunnel. Thus, the diversion model produced consistent results across the MIS and DEIS.

The impact of 9/11 was reflected in the DRI-WEFA (now Global Insight) forecasts of economic growth which took into account the recession of 2001 and subsequent reduced short-term EOH growth due to this event. However, the forecasts still anticipate that the region's underlying economic strengths will fuel a rebound from these events as they have in the past, and that over the 25-year forecast period the region will continue to experience robust economic growth with annual growth rates varying depending on short-term conditions.

The NS expansion into Pennsylvania only increases the need for the tunnel. Some goods which used to be delivered by rail across New Jersey to the rail yards of the metro region are now trucked across New Jersey. If this trend had been fully captured in the DEIS, it would likely have shown an increased diversion of truck traffic across New Jersey, and even greater benefits to New Jersey from the project. NS apparently moved to Pennsylvania because it was encountering delays and capacity problems in Northern New Jersey absent the implementation of the planned public investments in upgrading track and signals on the lines used by NS.

Since port traffic is not included in the demand estimate for the tunnel, an increase in this traffic would have no impact on the findings of the DEIS.

15. What are the projects (give us a list) included in the no build alternative including critical project outside of New Jersey.
Answered by: Nick (STV) / Gerry (KKO)

Only projects that were underway or which were funded and about to commence. Further details are included in the answer to question 3 (above)

16. What are the impacts if these projects are not built?
Answered by: Gerry (KKO) / Nick (STV)

None. We only included projects that we were certain would be built. Further details are included in the answer to question 3 (above)

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17. The study states a growth of 70% to 2025. What is the growth rate east of Hudson & west of Hudson?
Answered by: Marc (CSI)

The forecast rate of growth for the region as a whole is 68 percent. The forecast growth for the EOH is 70.2 percent (315 million tons to 536 million tons); for the WOH, the rate of growth is 64.6 percent (314 million tons to 517 million tons). The reason for the small differential between the two subregions is likely due to the forecast mix of commodities. The existing and forecast tonnage is broken done by subregion in Appendices B and E respectively of the Commodity Flow Appendix 2B.

Growth in trade
– Country imports e.

18. Explain the 2nd track on the Waverly Loop and the flow of trains thru the tunnel. Is a 2nd track on the loop feasible?
Answered by: Nick (STV)

The Waverly Loop will allow movement of trains from Croxton and Kearney yards directly to the tunnel without back-up moves.

The study team determined that the second track is necessary to prevent a bottleneck.

NJDOT has indicated that the second track is both planned and feasible.

19. Does the 10 minute headway consider the venting requirements?
Answered by: Nick (STV)

Yes, the potential for running 10 minute headways is created by using both tunnel bores in a single direction. The basic ventilation system has been developed with a target of 4 trains per hour per bore.

20. Does the DEIS volumes consider the MOTBY expansion?
Answered by: Marc (CSI)

Fusia says no prob with freight flu

No, since port traffic is not considered in the demand estimate.

21. Explain why the Lehigh Valley Drawbridge has service limits for Hudson County in the MIS, but the DEIS states that there will be no impact.
Answered by: Nick (STV) / Gerry (KKO) – consult with Alan Meyers if needed

The information in the DEIS is based on the most recent information on the openings and closings of the Drawbridge provided by the Coast Guard.

22. Explain other alternatives:
Answered by: Marc (CSI)

These alternatives are, of course, described in great detail in the DEIS. We have emphasized some particularly salient aspects relative to market demand and railroad operations below.

a. Mix use tunnel
We assume that this is referring to a rail/truck tunnel. This alternative was analyzed in detail in the MIS. It resulted in an *increase* in the truck mode share EOH. This increase in truck mode share would result in increased truck vehicle miles traveled and worsened air quality. Because of these effects and since an explicit goal of the Cross Harbor freight movement project is to *decrease* the truck mode share, this alternative was eliminated with the concurrence from the FHWA and the FRA.

b. TSM (short term) with the Float Service
The TSM alternative consists primarily of operational improvements to the Hudson Line to allow additional freight service to enter the region via the Selkirk crossing, and improvements to the Greenville float bridges consistent with the improvements already made at the 65th Street yard in Brooklyn by the NYCEDC. Based on the best information available at the time of alternative definition from the many agencies involved in improving Hudson Line freight service, we estimated that these improvements (as defined by the agencies themselves) would result in the addition of one midday freight train on the Hudson Line which would attract 69,000 tons annually of intermodal traffic.

c. Impact of subsidizing the Float Service
Impact of subsidizing the Float Service (see Q 23 below).

23. Why did the B/C ratio for the expanded float change from the MIS to the DEIS? What changed?
Answered by: Marc (CSI)

As is typically the case, the MIS represented a planning level of analysis. Many aspects of the project changed from the MIS to the DEIS as more detailed analysis was conducted (for example, see the evolution of the Maspeth yard). The float service described in the MIS represented a fairly idealized version of what could be theoretically possible in terms of a seamless landside rail/float interchange operation – in short, an operation which exists nowhere in the world today. The DEIS defines a float alternative which reflects the realities of known technologies and railroad operational constraints (as in all cases, a DEIS must define realistic alternatives, not alternatives which reflect wishful thinking based on drastic but unpredictable changes in technology, underlying circumstances, etc.). Thus, time, cost and reliable parameters were set to reflect the fact that landside trains and floats would not meet up in perfect coordination all the time on both sides of the harbor; that long trains arriving at the pier will need to be broken up into small blocks of cars so that they will fit on the relatively short tracks of the car float, and then reassembled into trains on the other side; that weather, tidal and traffic conditions in the harbor can affect float reliability; and that constraints exist in the transport of heavily laden marine vessels. Nevertheless, we did everything possible within these realistic parameters to design as attractive a float alternative as possible, including the provision of an operating subsidy which was not offered to users of the tunnel.

We designed and modeled a system with a goal of providing nearly continuous on-demand access to the floats. To do so, we assumed a system of three floats and one tug boat. A locomotive and crew was available at the piers on each side of the harbor. Thus, there was always a float docked at each side being loaded and unloaded while the third float was in motion. A round trip took one hour. We also added local trains between the float piers and the local yards at each side of the harbor. This addressed the issue of delays due to cars waiting to be moved to/from the float piers. Even with all of this, time and reliability were both substantially poorer than with tunnel options or continued truck dray across the harbor.

For the analysis of the car float alternative, we applied the diversion model to five different car float service/price scenarios based on different assumptions about subsidy levels and the costs of operation of the car float service. We could not find a price level and corresponding operating scenario that would allow the car float service to operate without significant subsidies.

24. **List and explain the utility variables, including cost, & surcharges used for the tunnel alternatives and the Expanded Float. Please include cost for double handling of containers and the cost for the use of the tunnel.**
Answered by: Marc (CSI) / Kevin (CSI) / Gerry (KKO)

The demand estimates were completed early in the project, as they had to be to drive all of the subsequent analysis. This work is documented in the Transportation Appendix 2 and summarized below. At that time, no fee was assessed in the model for the users of the tunnel (it should be noted again that in comparison, float users were actually subsidized in the model.) Later, after the demand estimates had been completed and the project designed and costed, financing work was undertaken. The DEIS assumed a $2/ton fee on the users of the tunnel for financial modeling purposes. This fee would cover the O&M costs of the tunnel and was consistent with fees charged to use other rail freight facilities such as the Alameda Corridor. This fee was tested in the model and was found to have a very small impact on the demand forecasts. Therefore, there was no practical reason to revise all of the analyses which had been undertaken, particularly since the float alternative – the major competitor to the tunnel – was still receiving an advantage in the form of a public operating subsidy. While a detailed financing section as provided in the DEIS is not required, we attempted to provide readers with an understanding of how the preferred alternative could be financed.

The results of a stated preference choice survey were used to estimate a disaggregate mode diversion model. For this project, a logit mode choice model was estimated and applied. In the logit model, it is assumed that each alternative provides the shipper with a utility and a decision maker is modeled as selecting the alternative with the highest utility among those available at the time the choice is made. However, the model recognizes that these utilities are random variables and therefore rather than predicting a specific choice, the model estimates the probability that each alternative is chosen.

In the logit model the utility of each mode is specified as a linear combination of the different observed independent variables (such as times and costs) multiplied by unknown parameters. The process of maximum likelihood model estimation is to find the values of the parameters that best describe the choices from the survey.

The estimated model coefficients are shown in the document's Transportation Appendix (Tables 1.8 and 1.9). The coefficients include:

- Cost coefficients for each modal option in the survey choice experiments;
- A Ltime*Val coefficient, which is a coefficient for a variable representing the natural log of shipping time multiplied by the value of the commodity;
- Frequency coefficients for different service levels;
- Reliability coefficient for different on-time performance levels;

- Delivery window coefficient for different required arrival windows;
- Several alternative specific constants and constant adjustments that seek to capture mode biases and other factors that affect choice that are not fully captured by the model variables.

To apply the model, the project team assembled level-of-service (time, cost, frequency, reliability) estimates for each of 22 exterior zones in the United States, Canada, and Mexico, combined with five destinations within the study area. Level-of-service was determined for three types of traffic:

- Manifest carload traffic destined for a consignee's facility or a nearby public siding;
- Bulk transload traffic consigned to a bulk transload facility with subsequent truck drayage to the ultimate user's facility; and
- Intermodal traffic – containers or trailers on railcars (COFC/TOFC) or "roadrailer" vehicles moved by rail to an intermodal facility and then moved by truck to the consignee.

For each type of traffic, levels of service data were determined for:

- Truck,
- Existing all-rail routes,
- Rail using a cross-harbor car float,
- Rail using a cross-harbor tunnel, and
- Rail to a northern New Jersey intermodal or transload facility and then via truck ("dray") to the East-of-Hudson destination (bulk transload and intermodal traffic only).

Service inbound to the region was the focus of the analysis as this represents the predominant directional flow of goods. Outgoing levels of service were not constructed from a detailed built-up analysis. Rather, after a review of railroad operating patterns it was concluded that outgoing levels of service were essentially the same as incoming levels of service for any origin-destination pair.

The rail level of service estimates were developed as follows:

- ***Trip time.*** Overall trip time indicated the actual time that a shipment would take to move from the shipper's facility to the eventual end user. This time was built up from a line-haul routing analysis and a local analysis. The routing analysis considered actual train schedules and interchanges between the point of origin and rail facilities in northern New Jersey, Oak Point Yard (Bronx), and Fresh Pond Yard (Queens). The local analysis considered actual train schedules and interchanges from the rail yards in northern New Jersey, Oak Point, or Fresh Pond to each of the five

destinations within the study area. These destinations reflected other potential yard locations such as 65th Street in Brooklyn and Pilgrim State Hospital in Islip, Long Island.

- ***Cost.*** Cost (to the shipper) indicated the actual total cost (per ton) that the shipper would experience in moving the product from the shipper's facility to the eventual end user. As with trip time, cost considered both a line-haul cost from the point of origin to rail facilities in northern New Jersey, Oak Point (Bronx), and Fresh Pond (Queens) plus a local cost of moving the product from that rail facility to the end user.

- ***Delivery window.*** The delivery window reflected the prevailing industry standards of what constitutes an on-time delivery.

- ***Reliability within the delivery window.*** Reliability was essentially built up in the same fashion as trip time. Both a line-haul routing and a local reliability were built up for each of the several thousand routings for each alternative. Factors considered in the reliability analysis included:

  - Basic reliability,
  - Distance,
  - Number of interchanges,
  - Impact of passenger trains,
  - Intermodal moves on non-intermodal freight trains,
  - Drayage,
  - Car float operations,
  - Movable bridge impacts,
  - Congestion at external gateways, and
  - Congestion within the West-of-Hudson northern New Jersey rail infrastructure.

- ***Frequency of Service.*** Frequency of service was based on both the actual frequency of line-haul service from an external zone into the study area and (in the case of carload service) the actual frequency of local trains within the study area.

Attachment 1 – Forecast Changes in Freight Truck Volumes for the Double Tunnel System – New Jersey Alignment – on Arterial Routes in Jersey City and Bayonne

Table 1: Freight Truck Volume Decrease

ID	Street name	No_Action	Two_Track	Diff_Freight Truck
56825	Central Ave	805	799	-6
56852	Central Ave	805	799	-6
56853	Central Ave	805	799	-6
57014	County Road	292	286	-5
57015	County Road	295	292	-4
56650	Doremus Ave	114	107	-7
56657	Doremus Ave	192	188	-5
57876	Fleet Street	321	313	-7
56767	Garfield Ave	1250	1244	-6
56533	JFK Blvd	507	477	-30
56538	JFK Blvd	507	477	-30
56541	JFK Blvd	507	477	-30
56547	JFK Blvd	540	511	-29
56724	JFK Blvd	442	413	-29
56732	JFK Blvd	455	426	-28
56744	JFK Blvd	409	384	-25
56826	Lincoln Hwy	2699	2675	-24
56748	Local Road	93	87	-6
57978	Paterson Plank Rd	43	39	-4
56855	Pensylvania Ave	132	124	-8
56673	Raymond Blvd	2699	2675	-24
57946	Secaucus Road	254	248	-5
57950	Secaucus Road	137	134	-4
56834	SR 440	627	604	-23
56848	SR 440	627	604	-23
56747	SR 440	531	509	-22
56824	SR 440	531	509	-22
56829	SR 440	564	542	-22
56966	SR 7	273	266	-8
56981	Tonnele Ave	393	388	-5
56827	US 1 Trk	1951	1933	-18
56965	US 1 Trk	1004	989	-15
56963	US 1 Trk	1078	1064	-14
56849	US 1 Trk	1171	1158	-13
56760	W 54th St.	380	374	-7
56745	W 59th St.	438	421	-16
56746	W 59th St.	438	421	-16
56535	W 7th St	241	236	-5
56968	Walls Ave	492	461	-30
56532	W 7th St	306	302	-4
57869	Palisade Ave	75	71	-4
56737	Broadway	341	338	-4

Table 2: Freight Truck Volume Increase

ID	Street name	No Action	Two Track	Diff Freight Truck
57879	ENTRANCE PLAZA	187	190	3
57013	JFK Blvd	191	194	2
57018	JFK Blvd	186	188	3
57939	JFK Blvd	115	118	4
57943	JFK Blvd	83	88	5
57952	JFK Blvd	83	88	5
56912	Duncan Ave	39	41	3
56904	Harrison Ave	152	156	3
56998	Hoboken Ave	91	96	4
57003	Local Road	84	89	4
56999	St. Pauls Ave	72	78	6