



Freight System Intermodal Terminal Truck Trip Generation

Chicago Region Freight System Snapshot

Updated November, 2011

Between 2009 and 2011, several counts of truck turning movements were taken near intermodal terminals in the Chicago region. The counts were in support of decisions regarding National Highway System intermodal terminal designations. Owing to the proximity to the terminals, the truck counts may be useful in determining the truck trip generation for the terminals. While very limited in scope, this information may be useful in estimating the impact of projected future intermodal growth on truck volumes in terminal areas. Table 1 shows the raw data that may be of use in analyzing terminal trip generation:

Table 1: Intermodal Rail Terminal Truck Count Data

Count Location	Terminal/ Gate	Count Date/ Time	Annual Terminal Lifts, 2009	Heavy Trucks	Light Trucks	Passenger Vehicles
15 th Street at Ashland Avenue, Chicago, West Approach	Union Pacific Railroad, Global I Terminal, Exit	Thursday, 8/25/11, 7:30 am – 3:30 pm, (Machine)	306,366	166	241	55
Terminal Gate at Western Avenue, East Approach	Union Pacific Railroad, Global I Terminal, Entrance	Monday-Tuesday, 10/3/11-10/4/11, 24-hours beginning at 2:15 p.m.	306,366	541	489	9
71 st Street at Sayre Ave, East Approach	CSX Transportation, Bedford Park, Entrance	Tuesday, 8/9/11, 7:30 am – 3:30 pm (Manual)	792,478	908	11	Not Available
73 rd Street at Narragansett Ave, Bedford Park, North Approach	CSX Transportation, Bedford Park, Exit	Wednesday, 8/10/11, 7:30 am – 3:30 pm (Manual)	792,478	721	161	Not Available
Baseline Rd at Walter Strawn Rd, Elwood, South Approach	BNSF Logistics Park Chicago, Exit	Tuesday, 6/30/09, 6:00 am – 6:00 pm (Manual)	707,277	725	1756	Not Available
Baseline Rd at Walter Strawn Rd, Elwood, West Approach	BNSF Logistics Park Chicago, Entrance	Tuesday, 6/30/09, 6:00 am – 6:00 pm (Manual)	707,277	518	1519	Not Available

Source: Traffic Count Data: CMAP; Terminal Lifts: Railroads

Analyzing the data to explain the variability in the counts, it was first determined that the distinction between heavy and light trucks was not consistently applied in the counts (even at a single location), so only total truck counts can be compared. Further, the counts were taken for varying lengths of time. To adjust for the varying lengths of time, the following arterial truck volume shares by time of day, collected from IDOT Hi-Star automatic traffic count data, were reviewed to adjust total truck counts to reflect a 24-hour period:

Table 2: Chicago Region Share of Multiple-Unit Truck Volumes on Arterial Roads by Time of Day, 2007 (Method A)

12:00 am: 0.8%	1:00 am: 0.7%	2:00 am: 0.7%	3:00 am: 0.8%	4:00 am: 1.3%	5:00 am: 2.7%
6:00 am: 5.6%	7:00 am: 7.4%	8:00 am: 7.2%	9:00 am: 6.1%	10:00 am: 5.9%	11:00 am: 6.1%
12:00 pm: 6.0%	1:00 pm: 6.1%	2:00 pm: 6.5%	3:00 pm: 7.0%	4:00 pm: 6.8%	5:00 pm: 6.6%
6:00 pm: 5.0%	7:00 pm: 3.3%	8:00 pm: 2.6%	9:00 pm: 2.1%	10:00 pm: 1.8%	11:00 pm: 1.1%

Source: CMAP analysis using IDOT unpublished data. Data shows hourly share for hour beginning at time shown.

In addition, the truck count at the entrance to the Union Pacific Global I terminal was collected for 24 hours, allowing for a comparison of intermodal and other truck trips. This count demonstrated that the time-of-day profile for intermodal terminal traffic is substantially different than the time-of-day profile for other trucks. For gate-bound trucks at this site, 62.1% of vehicles were counted from 6am to 6 pm, compared to 79.6% of other truck traffic. For the shorter period from 7:30 am to 3:30 pm, 42% of intermodal terminal-bound vehicles were counted, compared to 58.7% for other trucks. For all trucks, 73.7% of vehicles were counted from 6am to 6pm, while 53.1% of vehicles were counted from 7:30 am to 3:30 pm. For passenger vehicles, 72.8% of vehicles were counted from 6am to 6pm, while 46% of vehicles were counted from 7:30 am to 3:30 pm. (Method B)

In choosing the method to adjust counts to a uniform 24-hour basis, Method B was applied for the Union Pacific Global I terminal, from which data in support of that method was collected. Method A, above, was applied to the remainder of the terminals.

Adjusting total truck counts for the varying data collection hours, estimated 24-hour truck volumes are as follow in Table 3:

Table 3, Estimated 24-Hour Volume by Facility, with Ratio of Volume to Lifts

Terminal/ Gate	Count Date	Annual Lifts, 2009	Estimated 24-Hour Truck Volume	Estimated 24-Hour Truck Volume per Lift (Entrance or Exit)
Union Pacific Railroad, Global I Terminal, Exit	Thursday, 8/25/11	306,366	969 (Method B)	1.17
Union Pacific Railroad, Global I Terminal, Entrance	10/3/11 – 10/4/11	306,366	1030 (24-hour count)	1.24
CSX Transportation, Bedford Park, Entrance	Tuesday, 8/9/11	792,478	1803 (Method A)	0.83
CSX Transportation, Bedford Park, Exit	Wednesday, 8/10/11	792,478	1730 (Method A)	0.80
BNSF Logistics Park Chicago, Exit	Tuesday, 6/30/09	707,277	3214 (Method A)	1.66
BNSF Logistics Park Chicago, Entrance	Tuesday, 6/30/09	707,277	2639 (Method A)	1.36
Weighted Average				1.15

Source: Truck Volume Estimate: CMAP; Annual Lifts: Railroads

Lifts may result in different truck volumes for each facility. In addition to the effects of daily variation and seasonality, the ratio of truck volumes to lifts are a function of how empty containers, chassis, and bob-tails (tractors) are managed at the site. Increasingly, chassis are managed off-site for intermodal terminals, resulting in higher truck volumes for each lift. In addition, rail-to-rail lifts will result in lower truck volumes.

Regrettably, the very detailed operations profiles necessary to fully explain truck volumes associated with intermodal freight terminal facilities are not available. However using the average above may be a rough approximation of the effect of intermodal lifts on traffic volume. Thus, each lift may result in +/- 2.3 truck ADT on area roads (1.15 each for the exit and entrance).

Future refinements of the estimate above could come from three sources. First, additional gates can be sampled. Second, 24-hour machine-based counts can be collected at more locations to get better 24-hour data regarding terminal-oriented truck trip characteristics. Third, more recent facility lift tabulations could be more consistent with recently collected estimates.

Prepared by Tom Murtha, September 2011.

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