Region 2
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Feasibility of Freight Villages in the NYMTC Region

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16. Abstract

This report summarizes the work conducted to analyze the site impact of freight villages. The analysis included assessing traffic, logistics and economic impacts, which are then used to determine the extent to which freight village development has the potential to assist in NYMTC's regional objectives. The objectives are to mitigate congestion by reducing vehicle miles traveled and increase mode balance, fostering rational and efficient land uses that curb sprawl focus development on desired growth areas, and promote compatible land uses and promote economic development in the form of job creation.

The method of assessment is as follows: analyze the generation of truck traffic, where different number of trucks are generated by the type of facility located within a freight village. A typical freight village model was created and was applied to six sites. The number of trucks generated by facilities is estimated using the truck trip rates from the ITE Trip Generation manual and relevant figures. To assess the impact of alternative land uses compared to freight village development, various scenarios were used for comparisons which include development of a business park, an amusement park and a regional park. The traffic impact of a freight village will then be compared to that of alternative developments.

After conducting the study and analyzing the potential sites more thoroughly it was concluded that they are suitable for development as freight villages. Previous analysis and international experience shows that networking among freight village facilities in a region enhances their functionalities and increases their potential to achieve clustering effects and to further reduce any adverse impact.

As the need for goods in the region grows, so does the demand for freight transport and logistics operations. The current model of various small facilities and large number of truck trips required to accommodate the demand for freight is not sustainable.

Freight villages help achieve environmental objectives, having the potential to reduce miles of less sustainable modes of transport and increasing the use of environmental friendly transport modes such as rail and water accessible warehouse facilities.

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Feasibility of Freight Villages in the NYMTC Region

Task 6 – Site Impact Assessment

March 23, 2011

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1. INTRODUCTION

This report presents the work performed under Task 6 of the project. Prior work on Task 5 performed qualitative and quantitative assessment of the six sites that have been considered in this project. The qualitative assessment was based on information gathered by the team members during site visits and discussions with local experts, review of pertinent literature and the team's expertise. The quantitative assessment was based on criteria, metrics and associated weights, which were established in consultation with industry experts, through a Delphi based approach. Task 5 considered the differences and the special features and characteristics of each site and the findings from previous tasks, and concluded that all six sites considered in the study demonstrate potential for development as freight village. With the conclusion of Task 5, the study objective to determine the feasibility of developing freight villages within the NYMTC region has been addressed.

Decisions as to whether to proceed with the development of any of these sites as freight village and as to how to exploit the unique opportunities and challenges presented by each site requires site specific studies, going beyond the objective of the current work which is to assess the feasibility of freight villages from a regional perspective. Feasibility analysis of any specific site would require, among other things, detailed market and traffic impact analyses, including collection and analysis of site specific detailed data, to derive estimates of key performance measures, including measures of congestion, vehicle miles traveled, delivery time and cost, etc. Generating such detailed data on a site-specific basis is beyond the scope of this study. Thus, considering the outcomes and recommendations of the previous tasks and the studies that will need to be conducted prior to any specific site development, the objective of Task 6 work was modified to provide the most valuable input for future steps in site development.

Task 6 will provide information on the potential effects of freight village development, addressing the second objective of the study, which is to determine how freight villages might help address NYMTC's three key objectives of (a) mitigating congestion by reducing vehicle miles traveled (VMT) and increasing modal balance; (b) fostering rational and efficient land uses that curb sprawl, focus development on desired growth areas and promote compatible land uses; and (c) promoting economic development in the form of job creation.

International experience, reviewed in Task 3, examines the objectives and drivers of freight village development. It shows that in several cases freight villages have been developed through political incentive to promote employment, suburban development, intermodality, urban congestion mitigation, reorganization of the freight transport sector, load sharing and bundling. In cases in which freight village development is driven through private interests, typically the incentive has been to provide a platform to attract companies, to benefit from synergies between them, and create an integrated business community with transportation and logistics services. The main idea is that concentration of transport and logistics activities in larger infrastructures is more economic and efficient than several smaller intermodal terminals scattered over the territory. Whether a public or private sector initiative, review of international practices provides evidence that freight village development has generally supported the initial objectives.

This report summarizes the work conducted under Task 6, which focused on assessing traffic, logistics and economic impacts, which are then used to determine the extent to which freight village development has the potential to assist in meeting NYMTC's three key objectives. The rest of the report is structured as follows. The next section presents the methodology used in this task. Sections 3, 4, and 5 present the analysis of traffic, logistics and economic impacts, respectively. Section 6 assesses these impacts vis-à-vis NYMTC's key objectives. Section 7 summarizes the key findings and presents directions for future research work.

2. METHODOLOGY

The methodology followed in this task is shown schematically in Figure 1. First, the impact of freight village development in terms of truck traffic generation is assessed. A different number of trucks is generated by each type of facility located within a freight village. A typical freight village model as this was described in Task 3 and elaborated in Task 4 report is being considered, along with typical facilities and activities located within it. This model is applied to the six sites considered in this study and a model of typical freight village development for each site is produced. The number of trucks generated by these facilities is estimated using the truck trip rates from the ITE Trip Generation manual and relevant figures from the limited number of studies available on this subject. To assess the impact of alternative land uses and to allow comparisons with the freight village development, various scenarios will be developed. These scenarios include development of a business park, an amusement park, a multipurpose recreation facility or a regional park. The traffic impact of a freight village will then be compared to that of alternative developments.

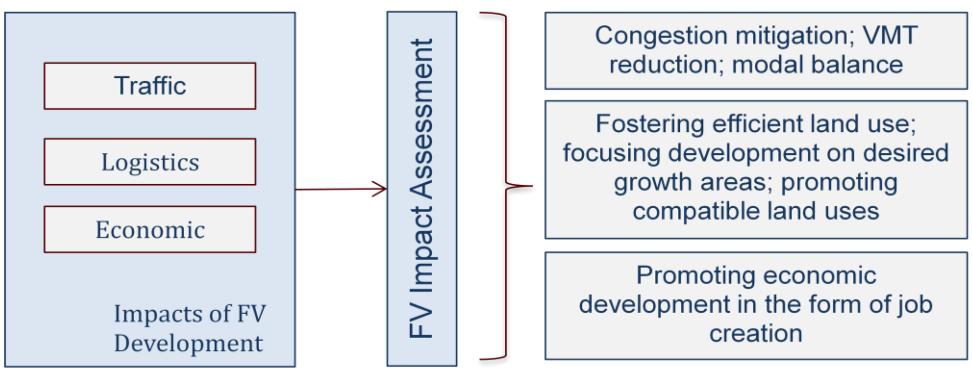

Figure 1 Task 6 Methodology

Task 2 provides data on freight facilities located in the study region, the commodities processed through these facilities, and the types of commodities that are more relevant and applicable to the freight village concept. Based on this information, scenarios of freight facility relocation within a freight village for selected facilities and type of commodity handled will be developed. Estimates of the resulting savings in terms of truck traffic and associated externalities will be produced.

The next step will determine the logistics impact of freight village development. This will depend on the anticipated modal shift as a result of freight village development, as well as on the development of synergies among tenants within the freight village. For this reason, various scenarios will be developed and the potential impact for each one will be assessed.

The third step will determine the economic impact of freight village development with a focus on job creation.

Finally, a summary of the potential impacts assessment will be presented. These impacts will be analyzed in light of NYMTC's regional objectives and the extent to which a freight village may assist in the direction of achieving these objectives will be assessed.

3. TRAFFIC IMPACT ANALYSIS

This section presents an analysis of the truck traffic generation potential for each of the six sites, under various scenarios of development. Typical freight village development is considered as the basic development scenario. Additional scenarios of business park, amusement park, multipurpose recreation facility and regional park development are considered. The traffic generated under each scenario is produced and the results are compared against the basic scenario.

Typical Freight Village Facilities Description

For the purpose of this study a Freight Village has been defined as a *clearly demarcated and actively managed location, within which both multimodal freight transfer facilities and industrial activities are situated, along with commercial and/or worker support activities*. Two different categories of such facilities are considered, namely Logistic Center Freight Villages (LCFVs) and Community Integrated Freight Villages (CIFVs). The main difference between the two is that the latter category includes community activities, recognizing the importance of the community-oriented commercial activities within the context of the NYMTC region.

A typical Freight Village houses businesses heavily relying on transportation services and providers of transportation and logistics services. Facilities supporting their activities include light and heavy warehousing, general light industrial and crossdocking facilities, industrial park and, usually, intermodal terminals. Industrial parks, as indicated in the Task 3 report, have features similar to those of freight villages, with the exception of dedicated freight transfer facilities and multimodal access. Within the context of this analysis, an industrial park is used to indicate the existence of warehouse, service and/or manufacturing facilities within a freight village, which have developed synergies among them. Based on ITE and recent studies[1,2] typical freight village facilities are described as follows:

Warehousing (ITE code 150): warehouses are primarily devoted to the storage of materials; they may also include office and maintenance areas. Light warehouses are 100,000 square feet G.F.A. or less. On average, there are about 7 daily truck trips per acre. Heavy warehouses are greater than 100,000 square feet G.F.A. and generate about 14.3 daily truck trips per acre. Public and private dedicated warehouses are included under this category.

General Light Industrial (ITE code 110): Light industrial facilities usually employ fewer than 500 persons and have an emphasis on activities other than manufacturing. Typical light industrial activities include printing plants, material testing laboratories, assemblers of data processing equipment, and power stations. They generate about 8 daily truck trips per acre.

Industrial Park (ITE code 130): Industrial parks are areas containing a number of industrial or

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[1] http://www.fontana.org/DocumentView.aspx?DID=632
[2] Christopher, Ed. 2000. Intermodal Truck Traffic: Description and Results of a Survey in Chicago. ITE Journal, December 2000. http://www.allbusiness.com/marketing/market-research/1140691-1.html

related facilities. They include manufacturing, service, and warehouse facilities with a wide variation in the proportion of each type of use from one location to another. Synergies are often developed among tenants of these facilities, and this is the case considered in this analysis. As such, industrial parks will be considered to generate about 4.8 daily truck trips per acre (or 10-12 truck trips per ha[3]). Many of them contain highly diversified facilities, some with a large number of small businesses and others with one or two dominant industries.

Truck Terminal (ITE code 030) (i.e. Crossdocking facilities): Truck terminals are facilities where goods are transferred between trucks, or trucks and railroads. The number of daily truck trips generated by truck terminals is about 23 per acre.

Intermodal Terminals: Based on a survey in Chicago[4], on average there are just over 12 truck trips per regular and contract employee, and overall about 15.3 truck trips per acre per day. Therefore, a 30 acre Intermodal Terminal generates approximately 460 truck trips per day. A.M. Peak (6.00 am – 9.00 am) and P.M. Peak (3.00 pm – 6.00 pm) is 18.5% and 23.3% respectively.

A summary of the total vehicle and truck trip generation potential of the facilities within a freight village is shown in Table 1.

Table 1 Total Vehicle and Truck Trips Generated by Type of Facility

	Daily			**AM Peak**		**PM Peak**	
	Total Vehicle Trips/acre	Trucks (%)	Trucks/ day/acre	Total Vehicles/ hr/acre	Trucks/ hr/acre	Total Vehicles /hr/acre	Trucks/ hr/acre
Light Warehousing (LW)	35.9	19.7	7.06	3.15	0.63	2.72	0.71
Heavy Warehousing (HW)	69.9	20.43	14.29	4.64	0.59	6.27	0.65
General Light Industrial (GLI)	37.3	21.4	7.98	3.65	1.04	4.96	0.93
Crossdocking (CD)	42.6	54	22.99	1.95	0.73	2.18	1.13
Industrial Park (IP)	24.8	19.6	4.86	2.64	0.52	3.82	1.20
Intermodal Terminal (IT)			15.3		0.94		1.19

3 Bosserhoff, D.,2000. Integration von Verkehrsplanung und raumlicher Planung, Teil II: Abschätzung der Verkehrserzeugung (Integration of transport planning and spatial Planning, Part II: Estimating the traffic generation), Hessisches Landesamt für Straßen- und Verkehrswesen, Wiesbaden. (in German)

4 Christopher, Ed. 2000. Op.cit.

In addition to the industrial facilities noted above, Freight Villages may contain office buildings, a service and management center, banks, post office, restaurants, truck service facilities, maintenance and repair of containers and chassis, transit stations, and in the case of Community Integrated Freight Villages, office buildings, business promotion facilities such as exposition centers, malls and restaurants open to the public.

Hybrid freight villages may be developed in cases of space limitations, commodities handled, tenants' interests and demands, and lack of multimodality. Examples of such facilities are presented in the Task 4 report and include cases of freight villages without an intermodal facility within the site, which, however, have truck connection to a near by intermodal facility; and freight villages with limited availability of public or dedicated use warehouses.

Application of the Typical Freight Village Model to the Six Sites

In this section, the typical Freight Village model is applied to the six NYMTC sites that have been considered in this study. Typical facilities that may be developed within each site, in accordance with the site characteristics as these were detailed in previous tasks and summarized in the Task 5 report are presented in Table 2.

Table 2 Conceptual Typical Freight Village Development of the Six Sites

		Sunset Park	**Mount Vernon**	**LITRIM/ Pilgrim**	**GATX**	**Calverton**	**AVR**
	Total Area (acres)	97	180	50	220	365	660
Light Warehousing (LW)	%	70	50	20	19	21	25
	area	68	90	10	41	76	168
Heavy Warehousing (HW)	%	0	0	0	15	15	20
	area	0	0	0	33	55	132
General Light Industrial (GLI)	%	0	0	0	0	25	0
	area	0	0	0	0	91	0
Crossdocking (CD)	%	10	20	20	30	11	25
	area	10	36	10	66	40	165
Industrial Park (IP)	%	20	30	0	22	20	25
	area	19	54	0	50	73	165
Intermodal Terminal (IT)	%	0	0	60	14	8	5
	area	0	0	30	30	30	30
Total	%	100	100	100	100	100	100
	area	97	180	50	220	365	660

Based on the preliminary assessment of the **Sunset Park** site presented in Task 4 report, the concept of an Evolved Industrial Park Freight Village[5] seems to present a suitable model for development of this site, although both LCFV and CIFV models may be considered. The 97-acre area considered in the analysis herein, represents development of the Brooklyn Army Terminal (BAT) part of the Southwest Brooklyn Industrial Business Zone. Truck traffic generated by the intermodal terminal (65th Street Rail Yard) is considered separately in subsequent analysis. The South Brooklyn Marine Terminal (SBMT) can be considered for an autonomous or combined Freight Village development. Existing facilities and activities can be incorporated and leveraged in future development. As noted in the Task 5 report, given the relatively small size of the land parcel of BAT a hybrid Freight Village with selected activities should be considered, giving priority to light warehousing, while the adjacent existing rail yard will be used. A typical combination of these activities can be that of 70% light warehousing; 10% crossdocking facilities; and 20% mixed industrial park activities.

The **Mount Vernon** case is rather unique in that it encompasses an area with 300 small land parcels within its 180 acres, and a range of diverse industrial and commercial businesses that can be integrated in a complex with a common identity/theme and, potentially, some synergies. The “Virtual Freight Village”[6] concept seems very relevant to this case, and a hybrid freight village development should be considered, because of the functional limitations of the site. Considering the nature of the site, potential development could include 50% light warehousing, 20% crossdocking and 30% mixed industrial park activities.

In the **LITRIM/ Pilgrim** case, from a community access point of view, both a LCFV and a CIFV can be equally well considered. The site is being planned to be developed as a truck-rail intermodal facility. The land parcel is 50 acres. A typical master plan of the land parcel and a LCFV function could include 20% light warehousing (typically two distribution warehouses with open space); 20% crossdocking (typically two to three crossdocking warehouses with open space) and 30 acres (60%) for the intermodal terminal.

The **GATX** case concerns a large land parcel of 220 acres that is adequate for developing a fully-fledged Freight Village, possibly in a stepwise approach. The potential development of either a LCFV or a CIFV in this site falls under the concept of a “new Freight Village”[7], as described in task 4 report. As noted in the Task 5 report, given the size of the land parcel, any combination of industrial park activities; light warehousing; heavy warehousing; and light manufacturing can be accommodated. A typical combination of these activities can be that of 20% light warehousing; 15% heavy warehousing; 30% crossdocking facilities; 22% mixed industrial park activities and 30 acres (approx. 14%) for an intermodal terminal.

The **Calverton** case concerns a very large land parcel of 365 acres able to accommodate a fully- fledged Freight Village. The site has considerable industrial activity and infrastructure that should be incorporated and leveraged for the development and is appropriate for an Evolved Industrial Park Freight Village development[8]. The site can equally be considered for the development of a LCFV and a CIFV, or different parts of the same complex may fall to the characteristics of either of these options. Given the size of the land parcel full range of Freight Village activities can be developed and any combination of industrial park activities; light warehousing; heavy warehousing; and light manufacturing can be accommodated. A typical

[5] Feasibility of Freight Villages in the NYMTC Region. Task 4.op. cit.. Page 6.
[6] ibid.
[7] ibid.
[8] ibid.

combination of these activities can be that of 20% light warehousing; 15% heavy warehousing; 25% light manufacturing (based on existing activities); 10% crossdocking facilities; 20% mixed industrial park activities and 30 acres (approx. 8%) for an intermodal terminal.

In the **AVR** case a very large undeveloped land parcel of 660 acres is considered. The site has potential for developing a New Freight Village with fully-fledged spectrum of activities. Equally to the previous three sites, the site can be considered for the development of a LCFV or a CIFV, or different parts of the same complex may fall to the characteristics of either of these options. Any combination of industrial park; light warehousing; heavy warehousing; and light manufacturing activities can be accommodated. A typical combination of these activities can be that of 25% light warehousing; 20% heavy warehousing, 25% crossdocking facilities; 25% mixed industrial park activities and 30 acres (approx. 5%) for an intermodal terminal.

Traffic Generation Potential under the Freight Village Development Scenarios

To estimate the traffic that will be generated by the six sites under the freight village development scenario, the trip rates presented above are applied to the typical freight village models. The results are summarized in Table 3, Table 4, and Table 5.

Table 3 Traffic Generation under Freight Village Development (Daily Traffic, all vehicles and trucks)

		Sunset Park	**Mount Vernon**	**LITRIM/ Pilgrim**	**GATX**	**Calverton**	**AVR**
	Daily traffic						
Light Warehousing (LW)	all vehicles	2386	3229	359	1484	2717	6014
	trucks	470	636	71	292	535	1185
Heavy Warehousing (HW)	all vehicles	-	-	-	2309	3830	9235
	trucks	-	-	-	472	783	1887
General Light Industrial (GLI)	all vehicles	-	-	-	-	3405	-
	trucks	-	-	-	-	729	-
Crossdocking (CD)	all vehicles	405	1533	426	2810	1710	7026
	trucks	218	828	230	1518	923	3794
Industrial Park (IP)	all vehicles	471	1339	-	1228	1811	4093
	trucks	92	261	-	239	353	798
Total without IT* (Total with IT)	**all vehicles**	**3261 (3721)**	**6101 (-)**	**785 (1245)**	**7831 (8291)**	**13473 (13933)**	**26393 (26853)**
without IT	**trucks**	**780**	**1725**	**301**	**2229**	**3323**	**7664**
(with IT)	**trucks**	**1240**	**-**	**761**	**2689**	**3783**	**8124**

* Intermodal Terminal

Table 4 Traffic Generation under Freight Village Development (AM Peak Hourly Traffic)

	AM Peak - hourly traffic	Sunset Park	Mount Vernon	LITRIM/ Pilgrim	GATX	Calverton	AVR
Light Warehousing (LW)	all vehicles	210	284	32	131	239	529
	trucks	18	56	6	26	47	105
Heavy Warehousing (HW)	all vehicles	-	-	-	153	254	612
	trucks	-	-	-	33	33	79
General Light Industrial (GLI)	all vehicles	-	-	-	-	333	-
	trucks	-	-	-	-	95	-
Crossdocking (CD)	all vehicles	18	70	19	128	78	321
	trucks	7	26	7	48	29	120
Industrial Park (IP)	all vehicles	50	143	-	131	193	436
	trucks	10	28	-	26	38	87
Total without IT (Total with IT)	**all vehicles**	**279 (307)**	**497 (-)**	**51 (79)**	**543 (571)**	**1097 (1126)**	**1899 (1927)**
without IT	**trucks**	**35**	**111**	**14**	**133**	**243**	**391**
(with IT)	**trucks**	**63**	**-**	**42**	**161**	**271**	**419**

Table 5 Traffic Generation under Freight Village Development (PM Peak Hourly Traffic)

	PM Peak - hourly traffic	Sunset Park	Mount Vernon	LITRIM/ Pilgrim	GATX	Calverton	AVR
Light Warehousing (LW)	all vehicles	181	245	27	113	206	457
	trucks	47	64	7	29	54	120
Heavy Warehousing (HW)	all vehicles	-	-	-	207	343	827
	trucks	-	-	-	22	36	87
General Light Industrial (GLI)	all vehicles	-	-	-	-	452	-
	trucks	-	-	-	-	85	-
Crossdocking (CD)	all vehicles	21	79	22	144	88	360
	trucks	11	41	11	74	45	189
Industrial Park (IP)	all vehicles	73	206	-	189	279	630
	trucks	23	65	-	59	88	198
Total without IT (Total with IT)	**all vehicles**	**275 (310)**	**530 (-)**	**49 (85)**	**653 (688)**	**1368 (1404)**	**2274 (2310)**
without IT	**trucks**	**81**	**170**	**18**	**185**	**308**	**590**
(with IT)	**trucks**	**117**	**-**	**54**	**221**	**344**	**626**

The analysis presented in Tables 3, 4 and 5 shows the amount of traffic that will be generated at each site under the freight village development scenario, as average daily, AM Peak hour and PM peak hour traffic. The total number of vehicles and the number of trucks that will be generated by each type of facility within the site are shown. The number of trucks generated by an intermodal terminal is also estimated and the total traffic (all vehicles and trucks) is shown for a case without and with an intermodal terminal.

Mount Vernon is the only site for which an intermodal terminal is not considered, as the analysis in previous tasks indicated that developing an intermodal terminal within or near by the site is not a probable scenario. The overall traffic anticipated to be generated by Mount Vernon if developed as a freight village would be 6101 vehicles per day, out of which 1725 will be trucks. Of these, 436 total vehicles including 115 trucks will be generated during an AM peak hour, while 501 vehicles including 168 trucks will be generated during a PM peak hour.

The site with the highest traffic generation potential is, as expected, the AVR site, which at 660 acres is the largest one of the six sites. The site has the potential to produce 26393 vehicles per day, including 7664 trucks. If the truck generation potential of an intermodal terminal is considered, 460 additional trucks will be produced.

It should be noted that the scenarios analyzed above represent a worse case scenario in terms of truck traffic generation potential, for several reasons. First, a LCFV development is considered, instead of a CIFV. In this case, the site acreage is allocated to various facilities with high truck trip generation rate, and does not consider facilities such as retail mall, hotel, or restaurant, which have lower truck trip generation rates but perhaps higher passenger vehicle rates. In addition, when an intermodal terminal development is considered, the truck traffic that would be generated to accommodate the local/regional distribution of products entering the facility by rail is added in the total number of trucks, while on the other hand, the reduction in the number of truck trips to the facility as a result of the rail activity is not considered. Finally, studies have shown that the use of ITE truck trip rates typically results in overestimating the truck generation potential of a site[9].

Alternative Land Use Scenarios

The traffic impact of alternative land uses is assessed in this section. For comparison purposes, and to get an impression of the truck traffic intensity of freight village development, scenarios of various other types of development for each site are considered. These scenarios include development of a business park, an amusement park, a multipurpose recreation facility or a regional park. It is assumed that the total land available at each site will be developed in each scenario. The traffic that would be generated under each alternative scenario is shown in Table 6.

Freight facility development typically faces strong local opposition and raises concerns about the impacts of traffic, especially the truck traffic that could be generated by these facilities. Although accurate estimates of truck percentage for alternative land uses are not available, the percentage of trucks in the overall traffic generated by a freight village is anticipated to be higher compared to the percentage of trucks in the traffic generated by the alternative developments considered in this analysis. The total volume of traffic, however, that may be generated by

[9] K. Kawamura et al. Business and Site Specific Trip Generation Methodology for Truck Trips. Project 05-03 Report to US DOT. September 2005.

facilities such as business park, amusement park, or multipurpose recreation facility, as shown in Table 6, is substantially higher compared to the traffic generated by a freight village. Even with a small truck percentage, these facilities would produce a significant number of trucks. As such, the advantage of alternative land uses over a freight village development in terms of traffic impacts is not obvious and any assessment requires detailed analysis and careful consideration of many factors.

Table 6 Traffic Generation for Alternative Land Uses (vehicles per day)

	trip rate (veh/acre/day)	**Sunset Park**	**Mount Vernon**	**LITRIM/ Pilgrim**	**GATX**	**Calverton**	**AVR**
Freight Village (from Table 3)		3261* 3721**	6101 -	785* 1245**	7831* 8291**	13473* 13933**	26393* 26853**
Business Park	149.79	14230	26962	7490	32954	54673	98861
Amusement Park	75.76	7197	13637	3788	16667	27652	50002
Multipurpose Recreation Facility	90.38	8586	16268	4519	19884	32989	59651
Regional Park	4.57	434	823	229	1005	1668	3016

* without an Intermodal Terminal
** with an Intermodal Terminal

No conclusions should be drawn without a thorough analysis of local and regional transportation infrastructure and existing traffic conditions, vis-à-vis the facility development plans[10]. Freight village development does not follow a unique model. Modern facility development and logistics practices consider a wide range of factors, aiming to mitigate the impact of freight facility development and operations. In addition, good practices have been developed[11], which substantially reduce the traffic related impacts of freight village development, making them good neighbors within their communities.

Furthermore, local traffic impacts should not be considered in isolation, as freight villages have been shown to have the potential to reduce the overall heavy truck traffic and associated vehicle miles traveled within the broader region they serve[12], especially in cases in which the existence of alternative modes is leveraged and synergies among tenants are achieved. In addition, freight village development is associated with regional economic gains, such as job generation and value creation[13].

Potential for Regional Traffic Reduction as a Result of Freight Village Development

Up to this point, the analysis focused on the estimation of traffic that will be generated by a site as a result of freight village and alternative types of development. What has not been

[10] Wagner, T. Regional Traffic Impacts of Logistics-Related Land Use. Transport Policy 17 (2010) 224-229.
[11] NCHRP Synthesis 320. Integrating Freight Facilities and Operations with Community Goals – A Synthesis of Highway Practice. Transportation Research Board, Washington, D.C. 2003
[12] Wisinee, W. Review of Good Practices in Urban Freight Transportation. UNESCAP Final Report, April 2010
[13] Hesse, M. (2004) Land for Logistics: Location Dynamics, Real Estate Markets and Political Regulation of Regional Distribution Complexes. Tijdschrift voor Economische en Sociale Geografie 95 (2). 162-173

considered so far is the regional traffic impact of freight village development, which will be examined in this section.

For the purpose of this analysis, a theoretical development of a 660-acre freight village, modeled after the AVR site in Long Island will be examined, and its potential to reduce traffic and traffic impacts will be assessed. **Error! Reference source not found.** Figure 2 shows the location of the potential freight village development site, within the context of the local and regional transportation system. The rail lines are shown in black, major highways in red and local roads in blue color.

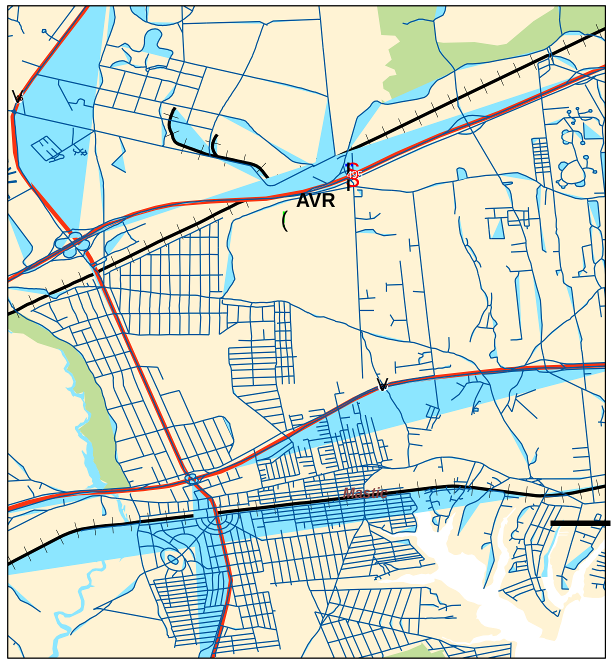

Figure 2 Potential Location of Proposed Freight Village Development

Analysis of goods movement in the Long Island TCC region presented in the Task 2 report indicates that in year 2030 the total freight movements into, out of and within the Long Island TCC would be 181 million tons (98 million tons of imports, 71 million tons exports, and 12 million tons moving internally). Of this traffic, roughly 1.9 million tons would be imported from Canada and Mexico and 1.4 million tons would be exported to Canada and Mexico. Roughly 12 million annual tons are internal trade. The region's major trading partners include NYS, with a total freight exchange of 52 million tons; and the NYMTC region with 29 million tons moving between NYMTC region and the Long Island TCC. NYS, NYMTC, PA, NJ, NYC, Long Island, Midwest and East Coast account for 89% of the total movement by weight in 2030. Nonmetallic minerals, secondary traffic (warehoused consumer goods and local delivery), food products and clay, concrete glass and stone are the top four commodities, accounting for 63% of the total freight movements for 2030. Nonmetallic minerals movements are expected to produce 1.4 million truck trips (or 15% of the total truck traffic) in 2030. Secondary traffic will produce 2.5 million truck trips (or 28% of the total truck traffic). Building materials in the clay, concrete, glass, and stone will account for 1.2 million truck trips (or 13% of the total truck traffic). Shipments of food or kindred products will generate 626 thousand truck trips (or 7% of the total truck traffic). Petroleum or coal products will generate 470 thousand truck trips (or 5% of the total truck traffic). Together, these five commodities represent 68% percent of all regional truck trips in 2030. A very small share of the total amount of commodities is moving by rail. Major commodities moved by rail include lumber or wood, nonmetallic minerals, rubber or misc plastics, food, waste and pulp, paper or allied products.

These, and the other commodities moving in the region, are handled through facilities located in Long Island TCC. In 1999 NYMTC conducted a truck terminal and warehouse survey, which provided detailed information on 164 facilities in the region. Results of this survey are summarized in the NYMTC – Truck Terminals and Warehouses Survey Results[14] In the New York Metropolitan Region report, published in February of 2001. Warehouses and truck terminal facilities play an important role in the distribution of goods in the region. They are used for receipt and storage, possible modification and value added services, and distribution of goods. They represent the type of facilities that could locate within a freight village. Of the 164 surveyed facilities, 73 (or 44%) are truck terminals or truck terminal/warehouses and 81 (or 49%) are warehouses. The size of the warehouse sites ranges from 0.5 to about 32 acres, truck terminals range from 1 to 40 acres, while truck terminal/ warehouse sites range from 1 to 50 acres in size. The majority of the sites are smaller than 5 acres in size. Household items, appliance and general merchandise, health and beauty aids, pharmaceutical products, paper products and auto parts as well as beverage, food and apparel are the main commodities handled by these facilities in the Long Island TCC. Most of these commodities are typical commodities that may be handled within a freight village.

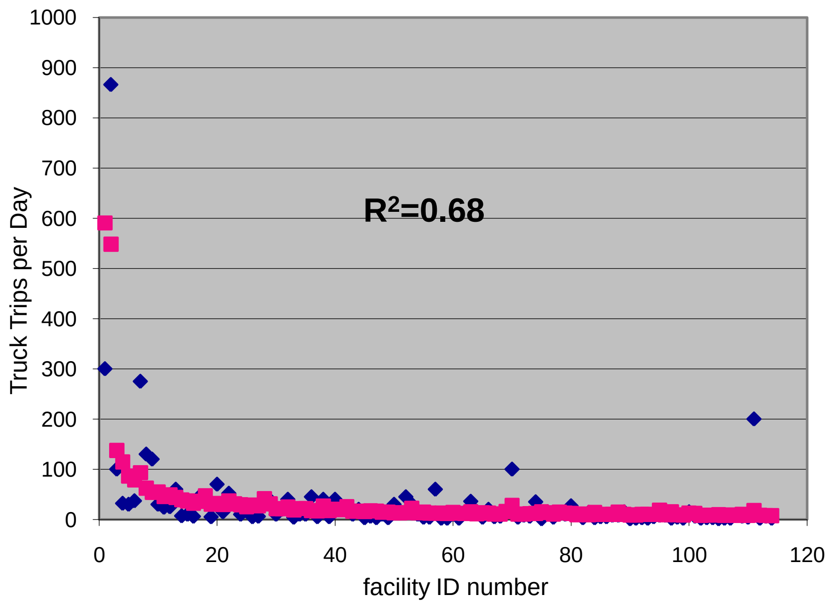

Figure 3 Truck Trip Generation by Size of Facility

The NYMTC survey provided information on the location, type, size, and function of each facility, the facility, the number of truck trips generated, number of employees, shipment volume, and type of of commodity handled. The rather large sample size[15] allowed for further analysis of the data. Regression

[14] NYMTC (2001) Truck Terminals and Warehouses Survey Results in the New York Metropolitan Region
[15] ITE trip rates are often based on much smaller sample size

Regression analysis was used, the outcome of which is shown in

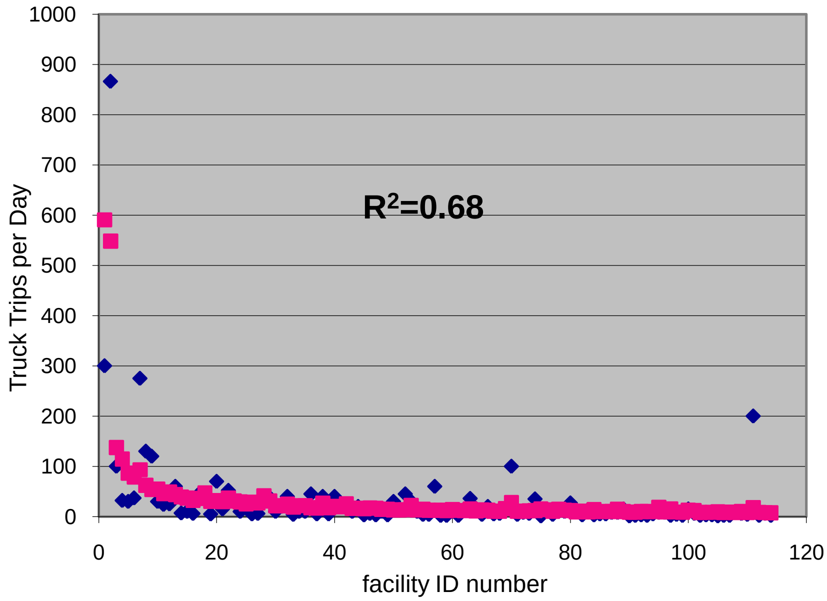

Figure 3. The figure presents the data points (actual and estimated) and R^2 of the correlation between truck trip generation, and facility size and number of employees. Although the R^2 value is not very high, the results indicate that the size of a site and the number of employees are good indicators of the number of truck trips generated by the site. The average rate of daily truck trips per employee is 1.9 and the average rate of daily truck trips per 1000 square feet of covered space is 0.75.

Further to the analysis of goods movement and the location and characteristics of freight facilities in the region, the traffic conditions on the regional highway network were estimated using the NYMTC's New York Best Practices Model (NYBPM). Future traffic conditions were estimated for the AM and PM peak and mid day (MD) and night time (NT) periods.

To determine the potential regional impact of freight village development, various assumptions were made and scenarios were developed. First, it was assumed that several freight related businesses that exist in the region, which handle commodities suitable to be housed within a freight village and which are located in the broader area of the freight village site, would relocate within the freight village. Figure 4 shows a map of the study region. The various freight facilities located in the region and the transportation infrastructure available are shown in the figure. Indicative locations of some of the businesses, marked as (A), that could relocate within a freight village located in (B), are also shown. Under this development scenario, the facilities would locate within the freight village to take advantage of the rail availability and of potential synergies with other businesses located in the village, for the purpose of reducing their logistics costs.

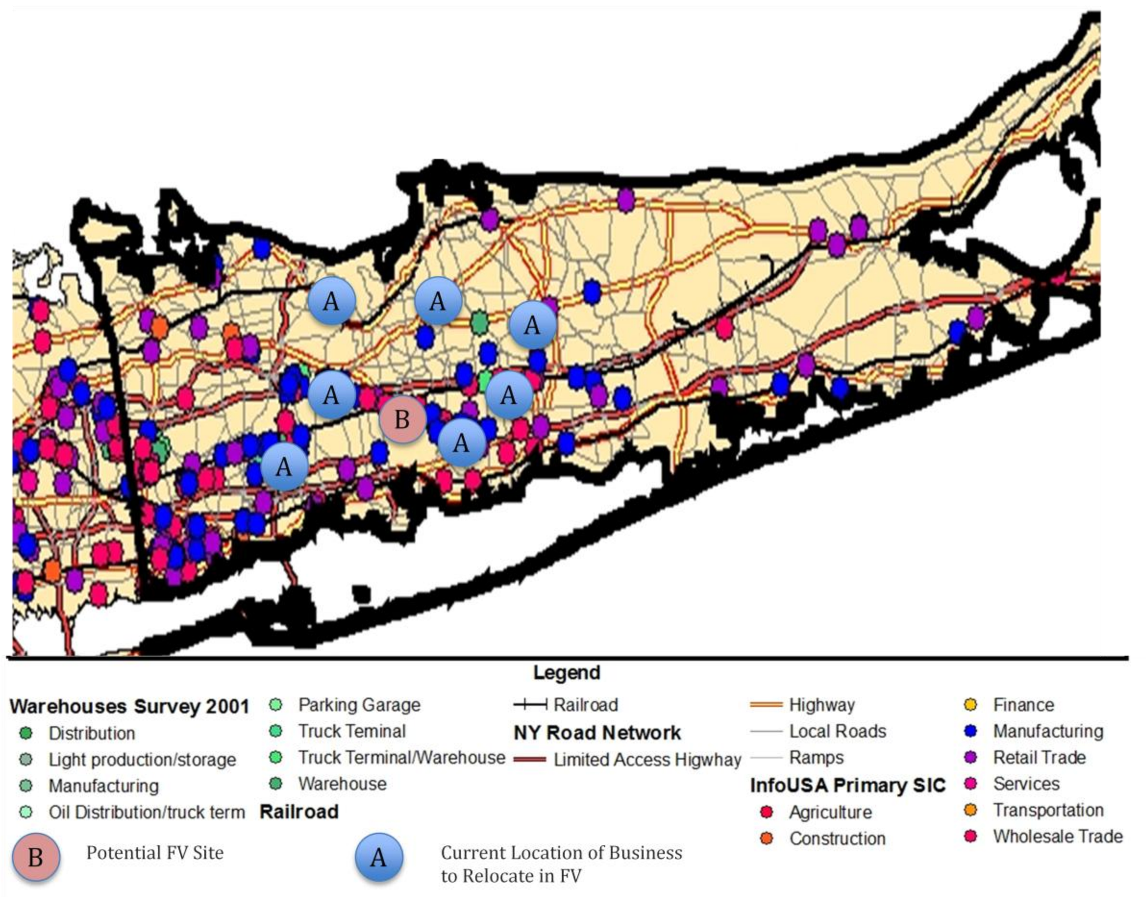

Figure 4 Map of the Study Region

It is anticipated that development of the freight village and the relocation of facilities could reduce heavy truck traffic by shifting goods to rail, and through cooperation of logistics companies. The planning parameters and assumptions made for the traffic impact assessment are summarized in Table 7.

In addition to the size of the potential site, the average per employee truck trip rate as derived based in the NYMTC Truck Terminal and Warehouse survey data and the average per acre truck trip rate are listed in the table. The average per acre truck trip rate has been estimated as a weighted average for a typical freight village development of the 660 acre site, considering that the land will be allocated to 25% light warehousing; 20% heavy warehousing; 25% crossdocking facilities; 25% mixed industrial park activities and 30 acres (approx. 5%) for an intermodal terminal, and using the truck trip rates for each type of facility, as these are listed in Table 1.

Based on the commodity flow analysis for the Long Island TCC region presented in the Task 2 report, a split of the traffic between long haul and regional was performed, with long haul taken to represent approximately 30% of the traffic, while approximately 70% is considered to be regional traffic.

Table 7 Planning Parameters and Assumptions for the Traffic Impact Assessment

Freight Village Site Size	660 acres	
Daily Trip Generation		
Truck trips per employee	1.9	
Truck trips per acre (for typical FV)	12.3	
Share of LHT/RT (%)[a]	LHT 30	RT 70
Reduction through modal shift (%)*	15	
Reduction through cooperation (%)*		10
Truck Trip Distribution		
East (%)	-	1
West LI (%)	-	11
NYMTC (%)	-	16
West to NYS and North (%)	20	30
West to NJ, PA, other (%)	60	40
West to South (%)	20	2

[a] LHT=Long Haul Traffic, RT=Regional Traffic
*Wagner (2010)

The distribution of the truck traffic generated is shown at the bottom part of the table. Again, the commodity flow analysis performed in Task 2 is used as a basis for the estimates shown in the table. For the long haul traffic, it is considered that 20% will move toward New York State and North, 20% moves South and 60% moves West toward New Jersey and Pennsylvania. For the regional traffic, 1% is considered to move East, 11% West within Long Island, 16% within the rest of the NYMTC region, 30% to New York State, 40% West toward New Jersey and Pennsylvania and 2% moves West to the South direction.

To estimate the impacts of potential freight village development, five scenarios are considered. These include: Base Case: No Freight Village; Scenario 1: Freight village where several of the businesses in the region would relocate; Scenario 2: Freight Village and 10% reduction in traffic through cooperation; Scenario 3: Freight Village and 5% reduction in traffic through modal shift; Scenario 4: Freight Village and 15% reduction in traffic through modal shift; Scenario 5: Freight village, 10% reduction in traffic through cooperation and 10% reduction in traffic through modal shift.

For the Base Case scenario, 39 businesses located in the region, and modeled after the sites surveyed in the NYMTC Truck Terminal and Warehouse Survey, were considered. Each of these sites generates a known (from the survey) number of truck trips per day. Several locations are selected as potential attractions of the truck trips produced by each site. These origins and destinations are included as additional input to NYBPM and the model is run for year 2020 traffic analysis. ASSIST-ME[16] is then run, as a post processor to NYBPM. ASSIST-ME takes the output of NYBPM as input, processes it using several cost functions[17], and produces estimates of various traffic related costs.

[16] http://www.rits.rutgers.edu/img/ASSISTME.pdf
[17] Ozbay, K., B. Bartin, and J. Berechman. "Estimation and Evaluation of Full Marginal Costs of Highway Transportation in New Jersey", Journal of Transportation and Statistics, Vol. 4 (1), 2001, pp. 81-103.

In total the 39 businesses considered in the analysis generate 1993 trips per day. The traffic impacts of these trips in terms of truck miles traveled, travel time, travel cost, and costs of accidents, air pollution, and noise are estimated.

- Scenario 1 assumes that by year 2020 a freight village will be developed in the region and the 39 businesses, among others, will be relocated inside the freight village.
- Scenario 2 assumes that by co-locating the businesses within the freight village, synergies will be developed, which will reduce the total traffic by 10%. The traffic reduction will be primarily on the regional trips.
- Scenario 3 assumes that by co-locating the businesses within the freight village, a critical mass is being built to justify rail operations, and that rail will attract 5% of the traffic. Traffic that will shift from road to rail is mainly the long haul traffic.
- Scenario 4 is similar to scenario 3. It considers, however, a 15% reduction on road traffic as a result of modal shift to rail.
- Scenario 5 assumes that by co-locating the businesses within the freight village, synergies will be developed, which will reduce the total traffic by 10%, and at the same time another 10% reduction on road traffic will occur as a result of modal shift to rail. The first 10% will be reduction primarily on the regional trips, while the other 10% is mainly long haul traffic.

Results of the analysis of these scenarios are summarized in the following tables and figures. Table 8 summarizes the traffic impacts for the four scenarios and the base case, for all the truck trips generated by the facilities considered in the analysis. The table shows that total distance traveled by all trucks, their travel time on the network, the associated travel cost, and the costs of accidents, air pollution and noise. It is clear from the table that development of a freight village and relocation of local/regional businesses in it, results in savings on all six metrics listed in table 8, under all four scenarios. Under Scenario 1, although the number of truck trips generated by the various businesses is assumed to remain the same, the businesses are located in the freight village, which has a better location and access to major roadways as compared to the individual sites[18].

Table 8 Traffic Impacts (Total All Vehicles, per Day)

	Truck Miles Traveled (VMT/Day)	**Travel Time (min)**	**Travel Cost ($)**	**Accident Cost ($)**	**Air Pollution Cost ($)**	**Noise Cost ($)**
Base Case	69598	174764	72817	1065	2370	56
Scenario 1	68479	172130	71719	939	2346	55

[18] The problem of local road congestion and difficult access to the sites is also noted in the NYMTC Truck Terminal and Warehouse Study report.

Scenario 2	63588	168235	70096	892	2292	54
Scenario 3	61567	151477	63114	874	2145	52
Scenario 4	53603	118880	49532	734	1774	44
Scenario 5	59116	127754	53229	746	1866	46

Table 9 shows a similar analysis in terms of average per vehicle costs. Data in the table shows that the average vehicle travel time under scenario 2 increases. The reason is that under scenario 2 we have fewer shorter trips as compared to other scenarios. This scenario assumes that synergies will be developed among tenants of the freight village, which will result in a 10% decrease of the traffic. Synergies typically affect local distribution and as such the reduction affects the regional traffic.

Table 9 Traffic Impacts (Average per Vehicle Trip)

	Travel Time (min)	Travel Cost ($)	Accident Cost ($)	Air Pollution Cost ($)	Noise Cost ($)
Base Case	87.7	36.5	0.5	1.2	0.0
Scenario 1	86.4	36.0	0.5	1.2	0.0
Scenario 2	93.3	38.9	0.5	1.3	0.0
Scenario 3	79.8	33.3	0.5	1.1	0.0
Scenario 4	70.0	29.2	0.4	1.0	0.0
Scenario 5	80.1	33.4	0.4	1.1	0.0

The percent reduction of the total truck miles traveled, travel time and sum of costs is shown in Table 10. It should be noted that Scenario 3 is expected to result in higher savings as compared to Scenario 2, although traffic reduction in Scenario 2 is higher (10%) compared to the traffic reduction in Scenario 3 (5%). The reason for this is that the 10% reduction in Scenario 2 affects regional traffic, while the 5% reduction in Scenario 3 due to modal shift would affect the long haul traffic. As such, under Scenario 3, several long distance truck trips are diverted to rail.

Table 10 Percent Reduction from Base Case

	Truck Miles Traveled	Travel Time	Total Cost
Scenario 1	1.61	1.51	1.56

Scenario 2	8.64	3.74	3.81
Scenario 3	11.50	13.32	13.18
Scenario 4	22.98	31.98	31.70
Scenario 5	15.06	26.90	26.69

Figures 5, 6, 7, and 8, show the total system travel time, average per vehicle travel time, total system costs and average per vehicle costs, respectively, for all scenarios. Travel time is reported in minutes and travel cost in dollars.

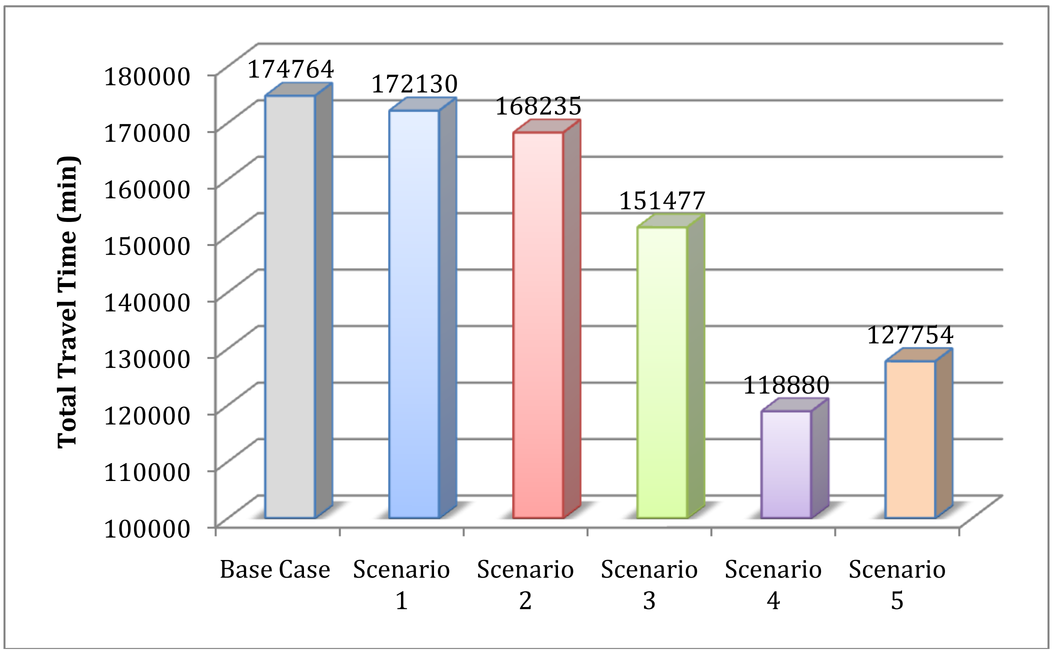

Figure 5 Total System Travel Time for all Scenarios

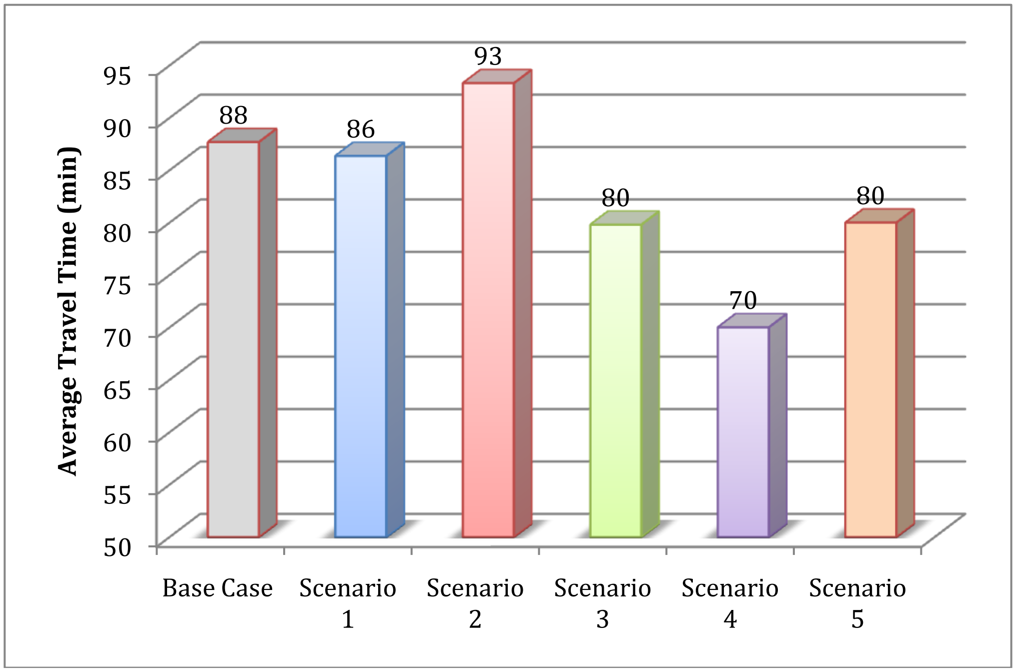

Figure 6 Average per Vehicle Travel Time for all Scenarios

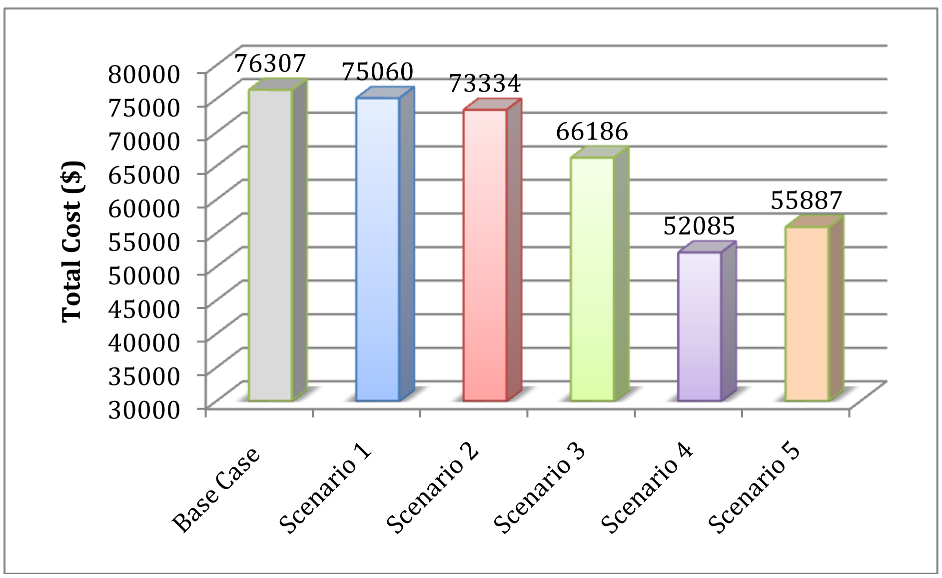

Figure 7 Total System Cost for all Scenarios

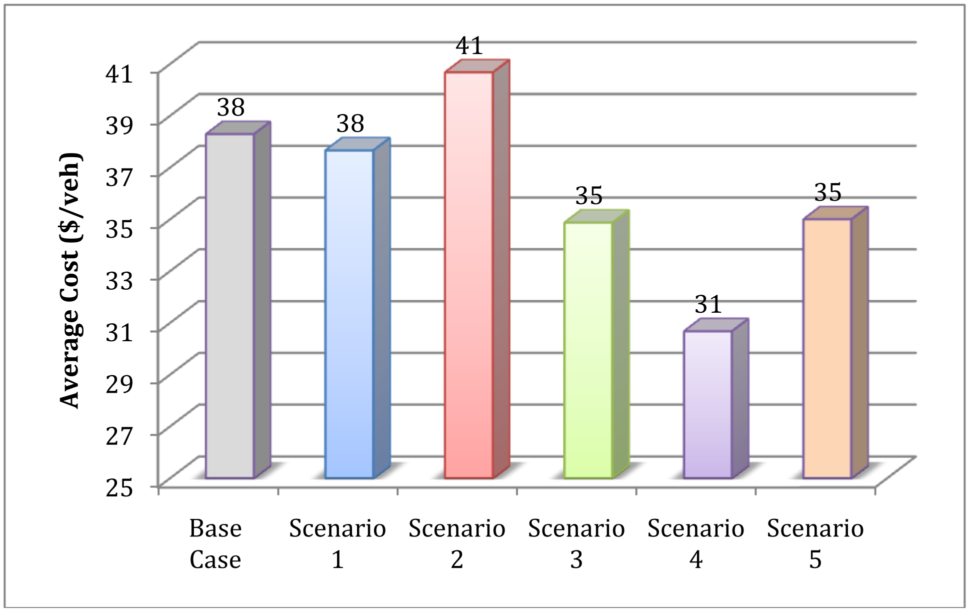

Figure 8 Average per Vehicle Costs for all Scenarios

The above analysis demonstrates the potential of freight villages to reduce traffic related costs in the region they serve, through two means. First, as a result of synergies that may be developed among tenants of the facilities, and second, as a result of modal shift and increased use of rail (or other modes).

4. LOGISTICS IMPACT ANALYSIS

Logistics costs are an important factor affecting the competitiveness of a company, and a strong decision making factor when considering supply chain and distribution strategies. As there is a trade-off between cost components, efforts at a company level are focusing on reducing the total logistics costs, and not the cost of individual logistics activities. From a public policy point of view, however, and in policy decisions, individual components of the logistics costs are considered.

Logistics costs modeling and calculation is a rather complex process and involves a series of assumptions that, in most cases, drive the outcome of the analysis. These assumptions span from stock keeping strategies to last mile distribution patterns. Modeling methodologies span from analytic modeling numerical methods to the continuous approximation (CA) approach[19] and to simple empirical expressions. The later are widely used and, under certain conditions, they have been proved to be very efficient at the strategic planning level[20]. Though most studies worldwide come to the conclusion that freight consolidation and synergies achieved through collaboration reduce logistics costs and this may be a strong incentive to relocate in a Freight

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[19] Daganzo, C. F. 2005. *Logistics Systems Analysis*, 4th ed. Springer-Verlag.
[20] TTR Ltd. 2010. *Freight Consolidation Centre Study*. Main Report Version 1.0, Prepared for the Department for Transport, London.

Village or a Consolidation Centre, some studies, based on certain assumptions and problem formulations have reached a different conclusion[21].

In our case, we assume a simple, empirical logistics cost function to examine three scenarios. The scenarios considered are the following:

a. A Base Case Scenario, deriving from the case considered previously in the traffic impact analysis section, in which 39 warehousing and distribution businesses are scattered in the region and generate 1993 trips per day.
b. A Scenario (Scenario 1) considering relocation of the facilities in the Freight Village and partial collaboration of the businesses located in the Freight Village, which results in 10% reduction of truck trips and 3% reduction of the storage space requirements.
c. A Scenario (Scenario 2) considering relocation of the facilities in the Freight Village, partial collaboration of the businesses located in the Freight Village (10% reduction of truck trips and 3% reduction of the storage space requirements), and 5% of truck trips shifting to rail.

The Logistics Costs Function used is:

$$C = C_T+C_H+C_S+C_I$$

where:

C: the total logistics cost, C_T : the transportation cost, C_H : the handling cost (including the stopping cost for trucks) and the last two components are the components of the holding cost (C_S : storage and C_I : inventory).

The cost of truck transportation is calculated based on the formula:

C_{TT} =1.89 ($/truck mile)* l_{TT},

where l_{TT} =the total distance traveled by trucks; and the total (fixed and variable) cost of truck transportation is 1.89 ($/truck mile)

The cost of rail transportation is:

$$C_{TR} = n_{TS} * 21.63*0.03*l_R$$

where = n_{TS} is the number of truck trips shifted to rail, l_R = total distance traveled by rail, the truck payload factor is 21.63 tons/truck and the total (fixed and variable) cost of rail transportation is 0.03 $/ton mile

The total cost of truck transportation per mile was based on data from an ATRI Study[22], market information and the fact that most of the truck trips considered are short haul trips. This cost, however, heavily depends on fuel oil costs. The truck payload factor was estimated from

[21] Kawamura, K. and Lu, Y. 2007. Evaluation of Delivery Consolidation in U.S. Urban Areas with Logistics Costs Analysis
[22] ATRI, 2008. An Analysis of the Operational Costs of Trucking.

information provided by the FHWA[23]. The total cost of rail transportation per ton-mile was based on data from literature[24] and market analysis for short haul rail transportation (approx. 100 miles). The cost of truck stopping and handling (50 $/truck) and the cost of storage (23.5 $/full truck content/week) were based on market information.

The following assumptions were also considered:

- Handling costs for truck and rail transportation are equal
- Holding cost is limited to the storage cost. No pipeline inventory cost is considered since this cost relies heavily on commodity, supply chain and distribution strategies of the specific businesses involved
- Rail transportation travel distance of 100 miles was considered for all those truck trips shifted to rail (the average trip length of the trucks trips shifted to rail is about 75 miles)
- No drayage cost from the rail yard is considered
- No additional cost for FV infrastructure development was considered

Results of the analysis of the three scenarios and associated cost estimates are summarized in Table 11, Figure 9 and Figure 10.

Table 11 Components of the Logistics Costs ($/day)

	Base Case	Scenario 1	Scenario 2
Transportation Cost	131,540	120,181	118,977
Handling Cost	99,650	90,150	90,150
Holding Cost (storage only)	9,367	9,086	9,086
Total Logistics Cost	240,557	219,417	218,213

Table 11 lists the values of the transportation, handling and holding cost components of the total logistics costs for the base case and scenarios 1 and 2. The same numbers are shown graphically n Figure 9, while Figure 10 shows the share of each cost component as a percentage of the total cost.

[23] http://ops.fhwa.dot.gov/freight/freight_analysis/faf/faf2_reports/reports9/s1and2.htm
[24] Laurits R. Christensen Associates, 2008. A study of Competition in the U.S. Freight Railroad Industry. Volume 2. Prepared for the Surface Transportation Board, Washington DC.

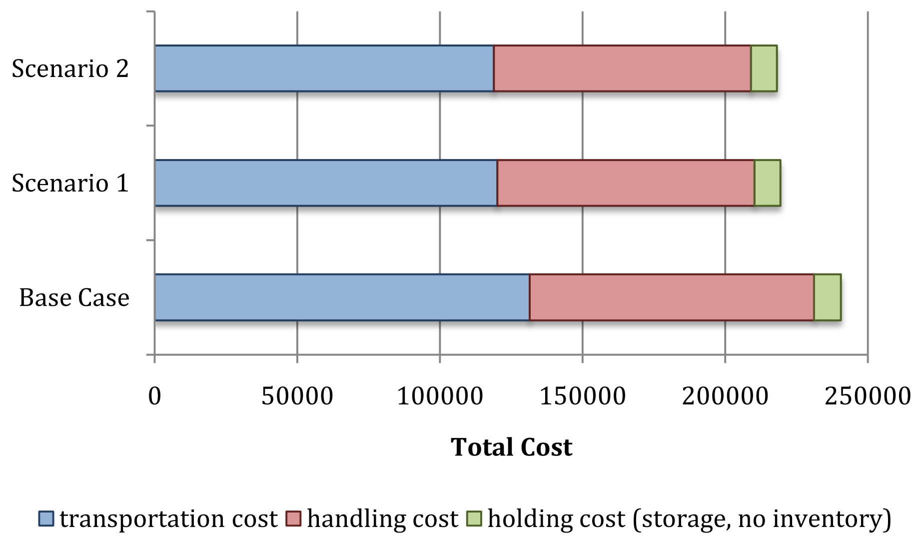


Figure 9 Logistics Costs Components for Each Scenario

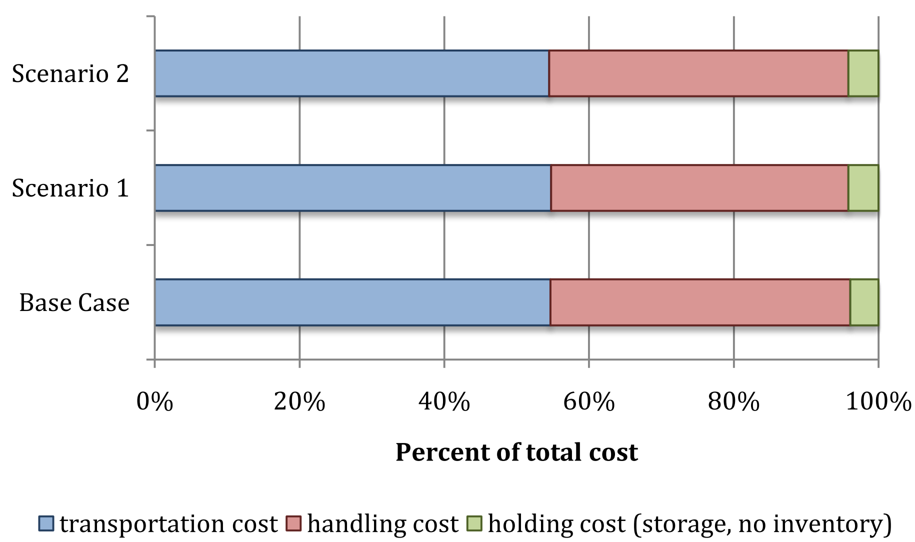


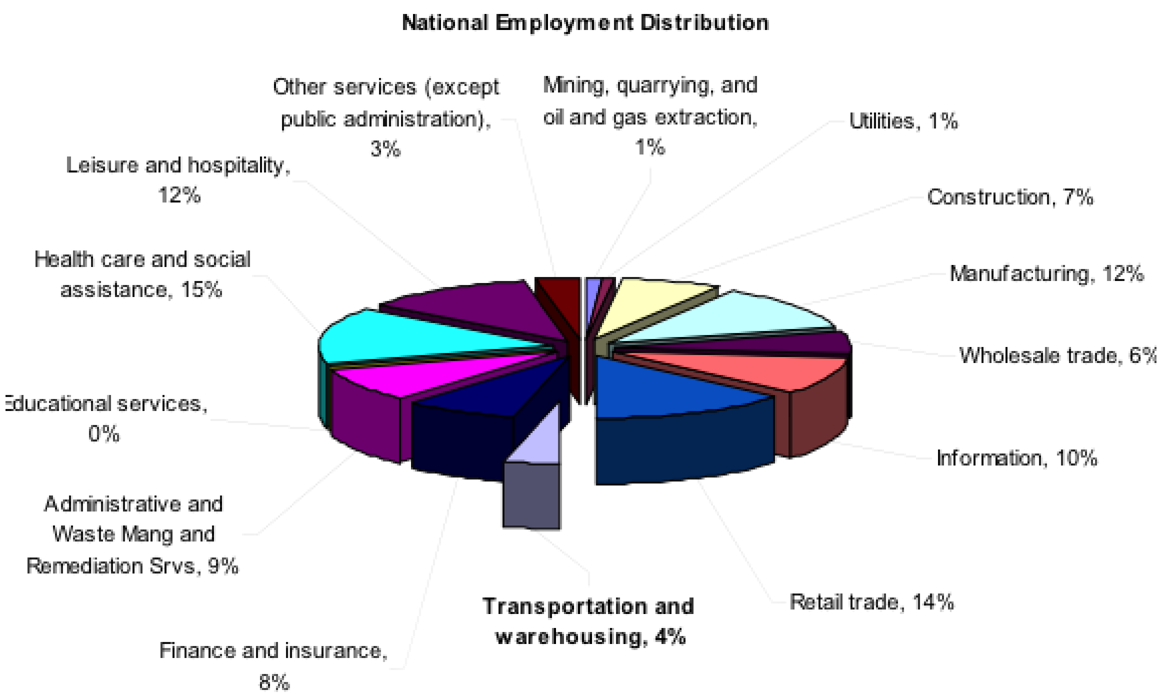
Figure 10 Transportation, Handling and Holding (daily storage) Costs as a Percent of Total Logistics Costs

In our analysis and for all the scenarios examined, the handling cost, as percentage of the total cost, is higher than the average values reported in the literature. This can be attributed to the fact that most of the truck trips considered are short haul-trips with an average distance of 34.9 miles.

The analysis shows that from a logistics cost point of view the outcome of potential synergies in terms of truck trips elimination is more important than modal shift to rail transportation.

5. ECONOMIC IMPACT ANALYSIS

Efficient freight transportation and logistics systems are key elements for economic growth and sustainability. Frequently noted for being a contributor to congestion and air pollution, freight is also a key contributor to economic development including job creation. As Figure 11 shows, freight activity, narrowly defined as transportation and warehousing, constitutes 4% of the employment in the US[25].



Source: Grimshaw, J. (2009) Cargo-Oriented Development (COD): Freight Linked Industrial Development (http://www.nacto.org/downloads/workshops/cargo_oriented_devt_cnt.pdf)

Figure 11 National Employment Distribution

In terms of measuring the economic impact of the transportation and warehousing sector, several studies have been performed, which typically use input/output economic models to estimate this impact of this sector. The impact of integrated logistic centers or freight villages, however, has not been studied to the same extent and only few reports are available analyzing the benefits associated with freight village type of development.

An HDR/HLB Decision Economics Inc. study[26] classifies impacts of freight village type of development as short-term impacts during the construction phase and long-term impacts during the operation phase. Three types of spending/production activity are involved in the economic impact analysis:

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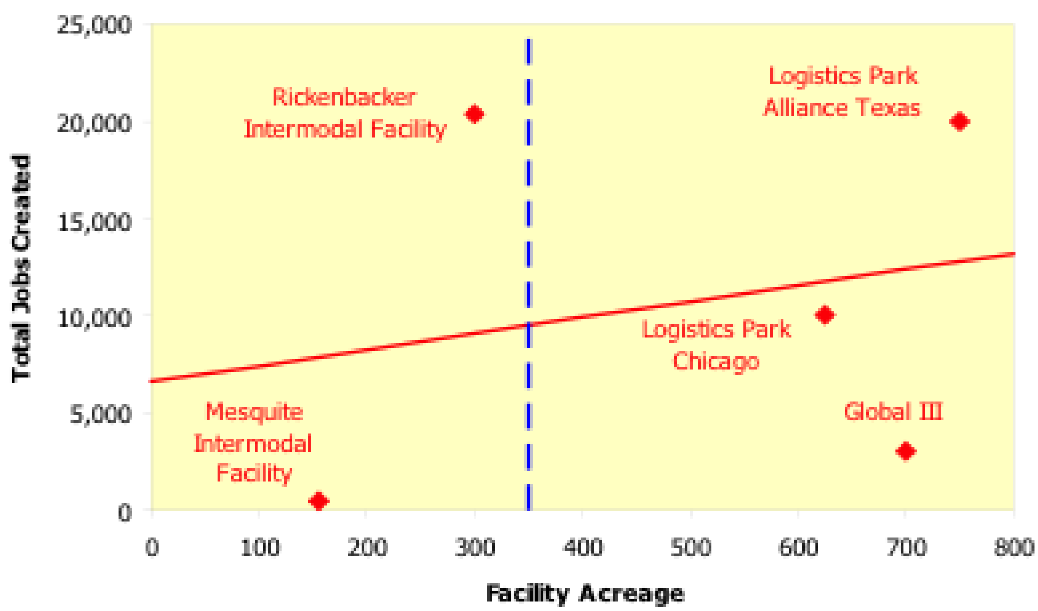
[25] http://www.cnt.org/repository/TOD-COD.GettingSmart.110107.pdf
[26] CSX Real Property Inc. Development of an Integrated Logistics Center in Winter Heaven, Florida. January 2006. Prepared by: HDR/HLB Decision Economics Inc. page 11-13

- *Direct effects are the changes in local business activity occurring as a direct consequence of companies located in the logistics parks, including all construction activities;*
- *Indirect effects are the result of purchases by local firms that are the direct suppliers to the directly affected companies; and*
- *Induced effects are the changes in local business activity resulting from personal household spending for goods and services – including employees of directly and indirectly affected businesses.*

The sum of these effects, with 'induced' being the largest ones, gives the total economic value of the facility. The study reviewed several sites and produced a table summary of their economic impacts. The economic impacts are measured in terms of business output, value added, employment, labor income and tax revenue.

Focusing on employment, and based on further analysis of the economic output produced for each of the sites, a graphical relationship between facility size (in acres) and total jobs created was developed, as shown in Figure 12. The study used this graph to produce estimates of the number of jobs that could be created as a result of a new freight village site development. The average employment density in this study is estimated at about 25 jobs per acre.



Source: CSX Real Property Inc. Development of an Integrated Logistics Center in Winter Heaven, Florida. January 2006. Prepared by: HDR/HLB Decision Economics Inc

Figure 12 Facility Acreage and Job Creation (from CSX Real Property Inc. study)

Based on a study of the economic effects of logistics development in Hamburg, Germany[27], estimates of the number of jobs generated as a result of freight village development, for the

[27] Regionomica, 2005. Wirtschaftliche Effekte der Logistikinitiative Hamburg Im Auftrag (Economic effects of the Logistics Initiative Hamburg). Final Report. Behörde für Wirtschaft und Arbeit der Freien und Hansestadt Hamburg (in German).

different types of facilities typically located in a freight village are produced. These estimates are summarized in Table 12.

Table 12 Employment Density for Various Logistics Market Segments

Market Segment	Employee Density (jobs/acre)
Light Warehousing	27
Industrial Park	20
General Light Industrial, Heavy Warehousing	16
Crossdocking	16
Intermodal Terminal	2

The employment densities listed above may be used to develop employment estimates for the six candidate sites, as shown in Table 13.

Table 13 Employment Potential of each Candidate Site

		Sunset Park	Mount Vernon	LITRIM/ Pilgrim	GATX	Calverton	AVR
Light Warehousing (LW)	Jobs	1844	2440	271	1112	2061	4555
	Area	68	90	10	41	76	168
Heavy Warehousing (HW)	Jobs	0	0	0	534	890	2137
	Area	0	0	0	33	55	132
General Light Industrial (GLI)	Jobs	0	0	0	0	1473	0
	Area	0	0	0	0	91	0
Crossdocking (CD)	Jobs	162	583	162	1068	648	2671
	Area	10	36	10	66	40	165
Industrial Park (IP)	Jobs	384	874	0	809	1182	2671
	Area	19	54	0	50	73	165
Intermodal Terminal (IT)	Jobs	0	0	60	60	60	60
	Area	0	0	30	30	30	30
Total number of jobs		**2390**	**3897**	**493**	**3584**	**6313**	**12094**
Total area (acres)		97	180	50	220	365	660
Average employment density (jobs/acre)		25	22	10	16	17	18

A comparison of the estimates of the number of jobs that would be produced for each site as a result of freight village development using the data from the two studies reviewed above is shown in Table 14.

Table 14 Summary of Site Employment Potential Estimates

		Sunset Park	Mount Vernon	LITRIM/ Pilgrim	GATX	Calverton	AVR
Job estimates based on the CSX study [20]	(jobs)	2522	4680	1300	5720	9490	17160
Job estimates based on Regionomica [21]	(jobs)	2390	3897	493	3584	6313	12094
Total area	(acres)	97	180	50	220	365	660

Data in Table 14 shows the potential of each site to generate new jobs related to the operation of the facilities within the freight village. More accurate estimates would require a more detailed analysis, using economic input/output models, which is beyond the scope of this task. It should be noted that the number of jobs generated by a freight village facility, which integrates several different types of establishments, depends on many factors. This is the case even when single establishments in the freight transportation and logistics sector are considered. For example, there are facilities, such as automated warehouses, which may employ as few as one worker per 2,000 sq. ft. of plant space. On the other hand there are facilities that employ as many as one worker per 200 sq. ft. These figures depend on a number of diverse factors and vary by the type of activity carried out in a facility, the level of automation, the location of the facility, but also on the broader logistics industry in the region[28]. In addition to the variation on employment rates, different facilities produce different types of employment opportunities, requiring different sets of skills. Some logistics related jobs, such as small order assembly, may not require any special skills or training, while others require skilled labor and, often, specialized training. Consequently, jobs may vary from entry level low paying and day labor, to high-level high-salary ones.

It is worth mentioning that an early benchmarking study[29] in Germany indicated that in 1999 the average freight village employment density was around 8-9 employees per acre, a figure significantly higher compared to the average freight village employment density in 1992, which was about 3 employees per acre. These numbers are based on the study of 10 freight village facilities in Germany. A more recent benchmarking study[30] revealed a gross employment density of about 10 employees per acre (gross area), which, in practice is double this figure if the common use and buffer areas (i.e., environmental reserve areas) are considered.

This change in the employment density is the result of the staged development of the freight village sites, which start with a small number of facilities and area coverage and continue to develop and attract more businesses. In addition, value added activities taking place in more ‘mature’ freight villages, further increase the employment density.

[28] http://www.nacto.org/downloads/workshops/cargo_oriented_devt_cnt.pdf

[29] Nobel, T. 2000. Bundesweiter Erfahrungsaustausch der GVZ-Standorte auf der Grundlage des Benchmarking-Ansatzes mit der Zielsetzung, die Verbesserung der Entwicklungsprozesse an den einzelnen Standorten (zu einem GVZ-Netz) zu forcieren (Nationwide Study for Freight Villages through benchmarking with the aim of improving the development processes. ISL, Bremen.

[30] Nobel, T., Nestler, S., Münch, S., Koch, H.2010. Ranking der Europäischen GVZ-Standorte: Benchmarking der Europäischen Erfahrungen (Ranking of the European Freight Villages: Benchmarking of the European Experience). Wissenschaftlicher Verlag Berlin

As a result of the number of jobs generated as direct employment during the operation of a freight village, additional jobs are generated throughout the economy. A study[31] of the relationship between freight transportation and economic development indicates that for every direct job created in the transportation and warehousing sector, approximately 2.7 jobs are generated as direct, indirect, and induced employment.

Furthermore, new jobs will be generated during the construction phase(s) of the freight village, and as a result of the roadway improvements that will be necessary. As the analysis of potential sites presented in previous tasks indicates, major transportation improvements would be needed to improve access to the sites and/or to provide efficient modal and intermodal connections. A recent study[32] indicates that, in transportation investments, it is typically expected that the investment multiplier on the local economy is about three times the size of the investment, which means that for each $1 billion in direct costs due to the construction of the project, $3 billion are expected to be provided in total regional economic activity. This estimate does not account for additional costs that would be incurred in addition to realizing these impacts, or for secondary impacts that would also be produced.

Additional economic benefit from the development and operation of a freight village would be produced in the form of labor income and tax revenue. Indicative examples, reported in the literature[33], provide values of economic impacts for several U.S. sites, a few of which are noted below.

> The Logistics Park – Alliance Texas, in Forth Worth, TX, includes a logistics facility, which is 750 acres in size and includes 140 companies producing 20,000 jobs and $313 billion in property taxes for the period 1990-2003.
>
> The Logistics Park – Chicago, in Elwood, IL, includes a logistics facility, which is 625 acres in size, was expected to produce 8,000 to 12,000 jobs upon completion and generate $27 million per year in property taxes and $108 million in sales tax (construction materials cost).
>
> The Richerbacker Intermodal Facility in Columbus, OH, a 300 acre facility that was under development at the time of the study is expected to produce $805 million in direct tax revenue, $1.26 billion in indirect tax revenue and 20,400 direct and indirect jobs, over a 30 year period.

This section examined the economic benefit generation potential of freight village development, with a focus on job creation. Site specific analysis using advanced models would be required to produce more accurate estimates of the potential economic and community benefits resulting from the construction and operation of freight village development within the sites considered in this study. The economic benefit of freight village development should also be compared to the economic benefit of alternative investments.

---

[31] Parsons Brinckerhoff Team. Relationship of Freight Transportation to Economic Development. Final Report to Oregon Department of Transportation. June 2009. p. 37

[32] Peters, J., R. Paaswell and J. Berechman (2008) Project # C-06-28: Economic Competitiveness Performance Measures for Transportation. Task 2 Report: Review of Literature and Best Practices. p. 7

[33] CSX Real Property Inc. Development of an Integrated Logistics Center in Winter Heaven, Florida. January 2006. Prepared by: HDR/HLB Decision Economics Inc. p. 12

6. FREIGHT VILLAGE IMPACT ASSESSMENT

Analysis presented in the previous sections focused in the assessment of the potential traffic, logistics and economic impacts of freight village development in the NYMTC region. Data available from previous tasks and other studies found in the literature were used in the analysis. The scope of this task was to demonstrate the potential of freight village development to reduce traffic and logistics costs and bring economic benefit in the region, and not to provide accurate estimates of these potential impacts for any specific site, which would require extensive data collection and analysis and more advanced models to be used.

Nevertheless, the analysis presented in this report demonstrates that freight village development has the potential to assist in reaching NYMTC's regional objectives, which include: (a) mitigating congestion by reducing vehicle miles traveled (VMT) and increasing modal balance; (b) fostering rational and efficient land uses that curb sprawl, focus development on desired growth areas, and promote compatible land uses; and (c) promoting economic development in the form of job creation.

In terms of congestion mitigation, previous tasks had shown the potential of freight villages, through best practice and literature review. In this task an attempt has been made to quantify this potential for VMT reduction and modal balance. FV development is shown to have the ability to produce positive results, provided that appropriate collaborative conditions will be ensured. This is a task to be undertaken by the facility development and management entity, following an appropriate market analysis.

As noted also in Task 1, by locating multiple freight and industrial activities in the same area, instead of having them scattered throughout the region, freight villages are thought to promote more rational and efficient land use, and growth areas can be focused upon. Freight villages present an efficient use of industrial land and provide opportunities for development and redevelopment of industrial sites. Furthermore, the development of commercial services provides for integration between different land uses, such as industrial and residential. Green areas are often developed as buffer zones and environmentally friendly practices are employed on a large and synergistic scale (such as solar panel use for energy production).

Finally, in terms of economic development in the form of job creation, although freight village development is not a direct major employment generator, it can provide additional employment opportunities by fostering economic development in the broader region and helping in increasing indirect employment opportunities. Freight villages provide a broad range of job opportunities, ranging from low skill daily labor to high paying skilled jobs.

7. CONCLUSIONS

In previous tasks, one of the key objectives of the project, meaning to determine the feasibility of freight village development in the NYMTC region, has been addressed. The study conducted an extensive review of freight village facilities from all over the world and studied their features and characteristics. A generic freight village model was developed. The study also conducted a thorough analysis of the characteristics of freight movement in the region. Several sites were identified, with key features and characteristics, required for consideration for freight village development. These potential sites were then analyzed more thoroughly. Their analysis and evaluation indicated that they are suitable for development as freight villages.

The second objective of the study was to demonstrate that freight village development would help address the regional objectives of congestion mitigation, rational and efficient land use, and economic development in the form of job creation. This objective has been addressed in this report, which presents the relevant analysis that was performed and the outcomes of this analysis. Results indicate that freight village development has the potential to achieve NYMTC's regional objectives.

Besides the strong public sector initiative, however, private sector interests are critical for the success of freight village development. Private sector actors are primarily interested with the maximization of their profits and less concerned with public benefit related issues. Although analysis in this study focused on demonstrating that freight village development may help achieve the objectives of the public sector, the results provide clear indication that such sustainable practices can result in cost savings for the private sector as well. Effective communication between public and private sector stakeholders is necessary, and has been achieved to a good extent through the course of this project.

Previous analysis and international experience shows that networking among freight village facilities in a region enhances their functionalities and increases their potential to achieve clustering effects and to further reduce any adverse impact. Thus, it is recommended, that subsequent studies look into the possibility of networking activities among potential sites and the impact that such networking may have.

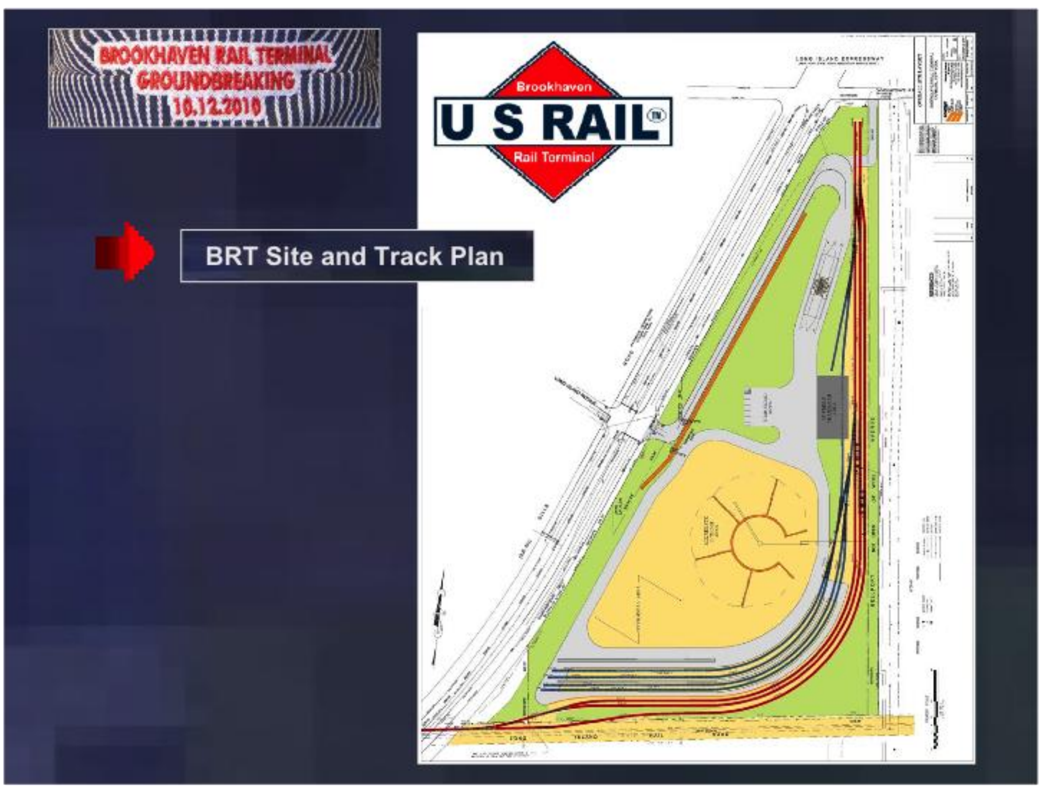
As the need for goods in the region grows, so does the demand for freight transport and logistics operations. The current model of various small, scattered facilities and large number of truck trips required to accommodate the demand for freight transport is not sustainable. Freight villages have the potential to improve current conditions and better meet future needs.

Besides the economic perspective, environmental concerns need to be analyzed, within the overall concept of sustainability. Freight villages help achieve environmental objectives, as they have been shown to have the potential to reduce the ton-miles of less sustainable modes of transport and increase the use of environment friendly transport modes, such as rail and water.

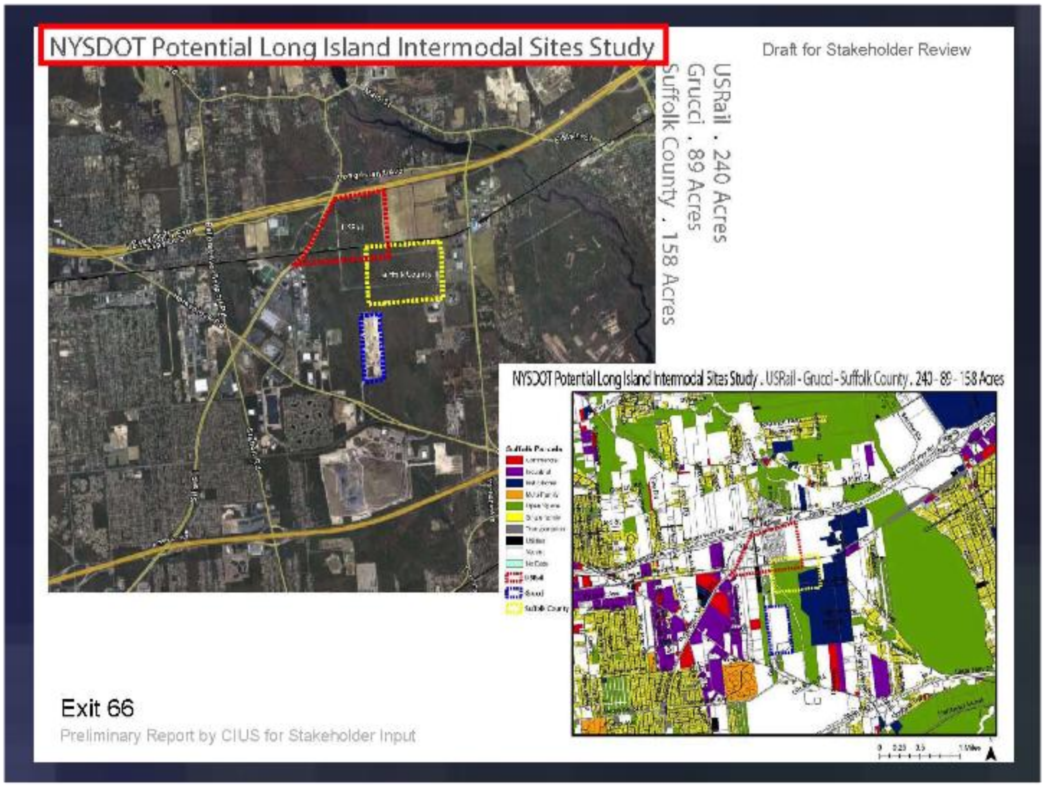
8. APPENDIX 1 – POST ANALYSIS SITE LOCATION-BROOKHAVEN RAIL TERMINAL

The appendix includes information on a site (as of March 2011) now under construction as a transload facility called Brookhaven Rail Terminal. Representatives from this project made a presentation on this at a Freight Transportation Working Group meeting on February 1, 2011. **The information contained herein was produced by the Brookhaven Rail Terminal project team and not by NYMTC and used by the team at the Working Group meeting. It is presented here for informational purposes only and could be part of a future study for further analysis. Its inclusion here does not constitute an endorsement of the project nor of the material below.**

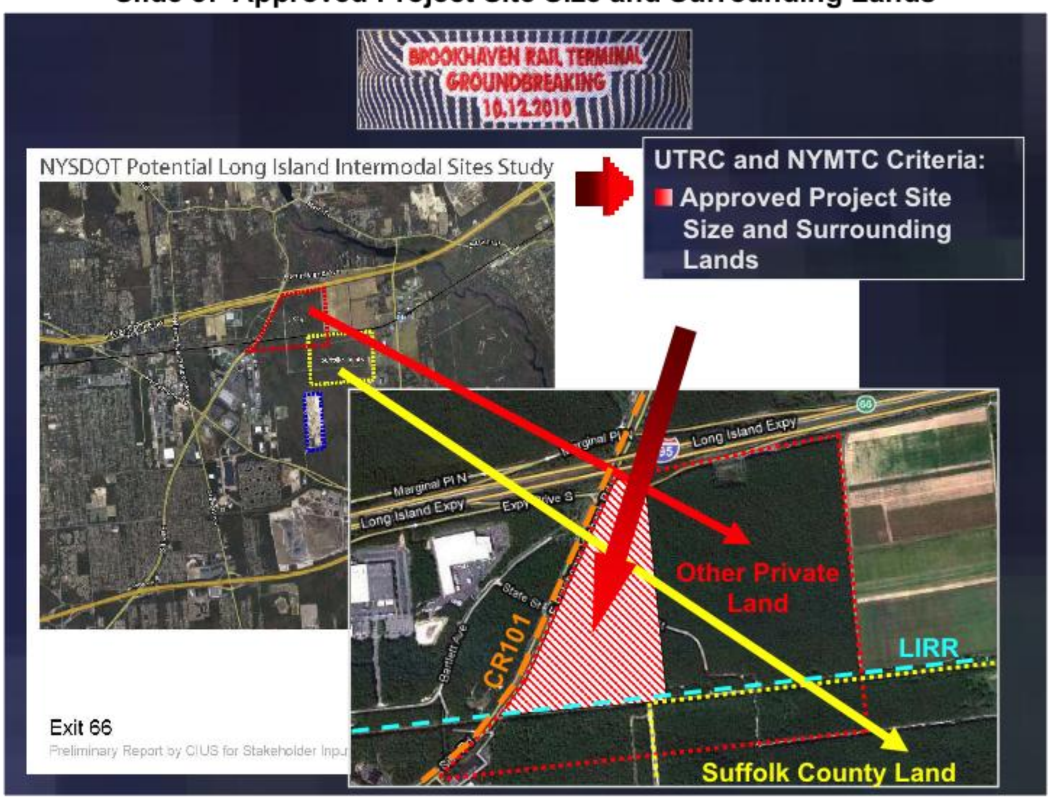
Slide 1: BRT Site and Track



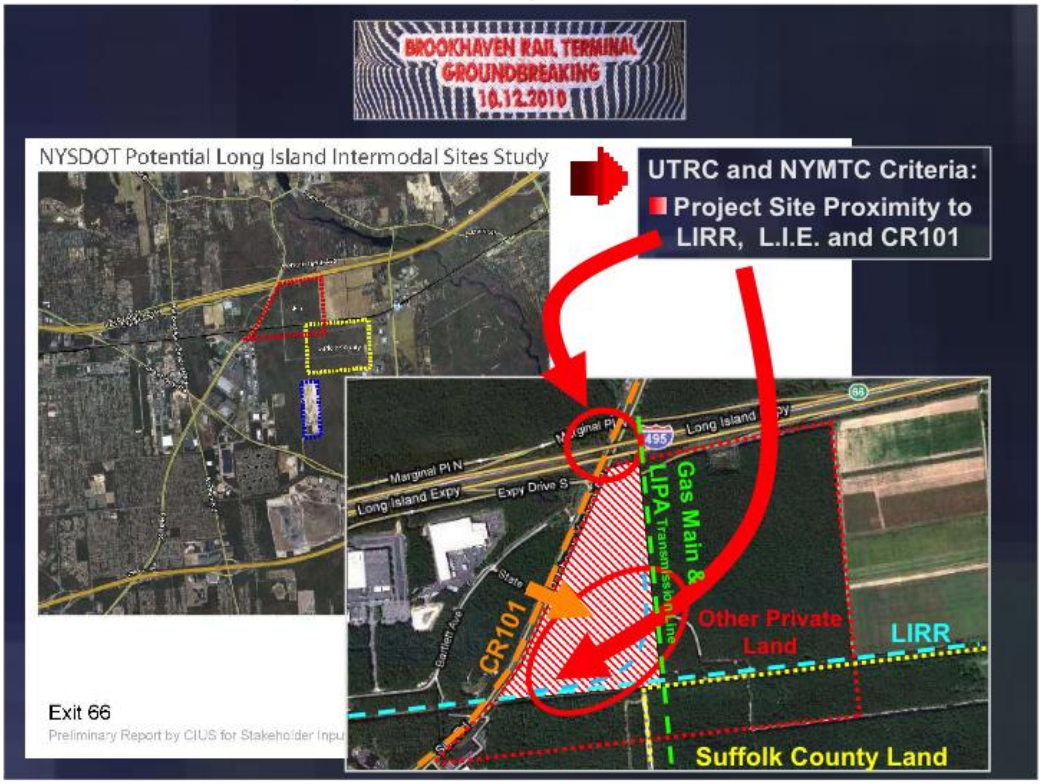
Slide 2: NYSDOT / UTRC BRT Candidate Site Overview



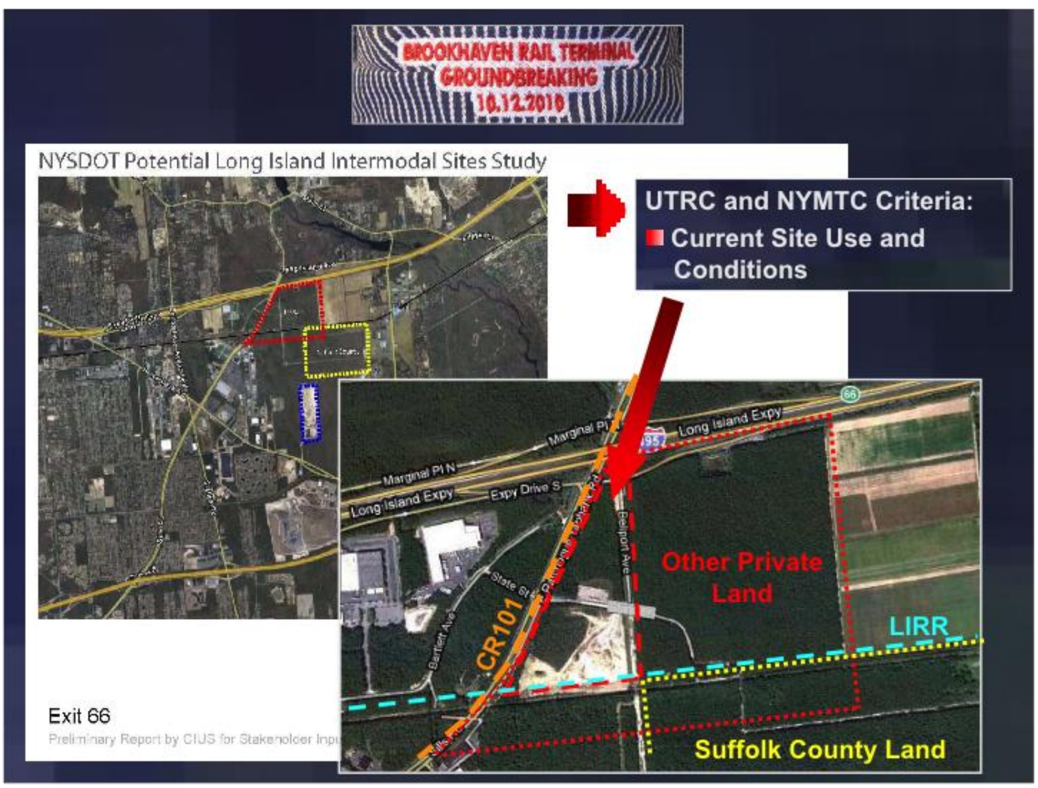
Slide 3: Approved Project Site Size and Surrounding Lands



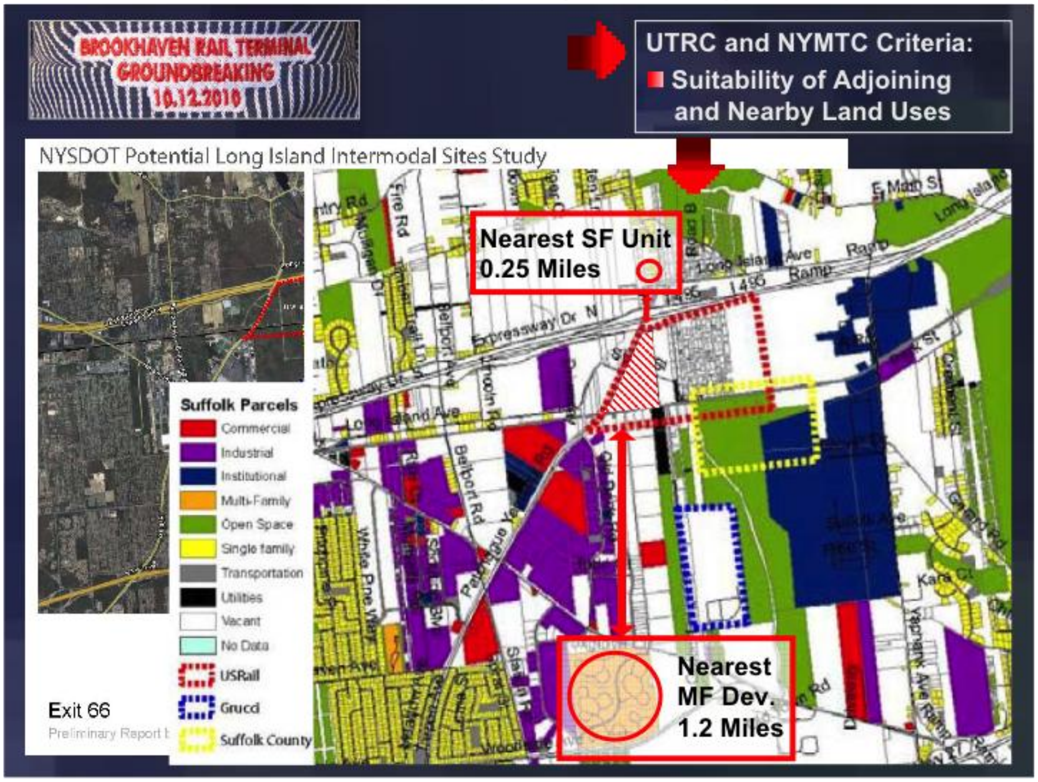
Slide 4: Project Site Proximity to LIRR, L.I.E. and CR101



Slide 5: Current Site Use and Conditions



Slide 6: Suitability of Adjoining and Nearby Land Uses



Slide 7: Access to Airports

Brookhaven Rail Terminal
Submission to NYMTC
in connection with
NYMTC 2010 Freight Village Study

Introduction:

The following data and information is submitted in support of the Brookhaven Rail Terminal / US Rail of NY, LLC Facility (BRT) being included in the NYMTC Freight Village in the NYMTC Region Study. The information is submitted in the same format in which the other potential Candidate Sites were formatted to facilitate their inclusion in the text or as an Appendix. The visual exhibits listed below are attached and are available as individual PDF's or JPEG's.

1. BRT Site and Track Plan
2. NYSDOT/UTRC BRT Candidate Site Overview
3. Approved Project Site Size, and Surrounding Lands
4. Project Site Proximity to LIRR, L.I.E. and CR101
5. Current Site Use and Conditions
6. Suitability of Adjoining and Nearby Land Uses
7. Access to Airports

Candidate Site:

Brookhaven Rail Terminal/US Rail of NY (BRT)

General Information

History of Site Development:

The site is located at 205 Sills Road (Suffolk County Road 101) in the Town of Brookhaven, Long Island, New York. The site has been vacant until the January, 2011 start of construction of the BRT.

Size:

BRT owns the 28 acre site for which the STB issued Decision ID No. 41020 on August 20, 2010 which authorized US Rail of NY, LLC (USRNY) to construct and operate a rail facility.

The 2010 NYSDOT/UTRC DRAFT Long Island Intermodal Sites Study (NYSDOT Study) identified this site has having a potential to be 240 acres taking into account other adjoining privately and publicly owned lands.

Major Highways:

The BRT site is located in the geographic center of L.I. and abuts Long Island Expressway (LIE) Exit 66. The site’s entrance is 1200’ south of the LIE on County Road 101 also known as Sills Road. Sills Road is a fully improved 4 lane divided highway, with full signalization and acceleration and deceleration lanes at the BRT entrance. There are no sensitive neighborhood receptors between the LIE and the BRT.

Proximity to Other Freight Facilities:

Other candidate sites included in the NYMTC DRAFT Freight Village Study included an AVR site at LIE Exit 68 and a Calverton site at LIE Exit 71;

Rail Lines:

The site abuts the LIRR Main Line for 1,147 feet along its southern boundary. The construction of the main line switch and 13,000 feet of yard track is approved by the 2010 STB decision. BRT is believed to be the easternmost intermodal site <u>not</u> impacted by the 17’ 6” height constraint.

Waterfront:

There is no waterfront.

Current Condition:

The site is currently under construction for the STB approved rail facility. Existing commercial sized LIPA electric and gas facilities are adjacent to the BRT site. Water lines are adjacent to the BRT site. The site is zoned L1

Context:

A distinct advantage of the BRT site is the STB approval to construct and operate a rail facility at this location which necessitated the completion of a Full NEPA review, issuance of a FONSI, and adoption of a SEQR Negative Declaration by the Town of Brookhaven.

<u>Information Pertinent to the Evaluation Criteria</u>

A. Site Suitability

A1 Acreage

The site is 28 acres and a NYSDOT Study indicated that the site potential was 240 acres including other privately and publicly owned lands.

A2 Topography and Configuration

The BRT owned site and the adjacent lands form a suitable configuration for an intermodal facility which will allow for a track configuration enabling a 40 car freight train to access the site and clear the main line.

A3 Potential for further expansion

Additional publicly and privately owned lands indicated in the NYSDOT Study would have to be made available by their respective current owners for that use or acquired via a public eminent domain process if required.

A4 Utility Infrastructure

The site is adjacent to LIPA commercial level power lines and gas main and is surrounded by water lines from the Town of Brookhaven. Other infrastructure required to support the STB approved facility is under construction. Additional hook-ups and internal facilities would have to be built as required to support the expanded facility contemplated by the NYSDOT Study.

A5 Environmental Conditions

There are no significant environmental concerns with the BRT site or adjoining sites that would impede development.

The STB approval of the BRT necessitated a full NEPA review and FONSI by the STB's Section on Environmental Analysis. The Environmental Assessment prepared during the NEPA process and FONSI included input from all relevant interested parties and Agencies, determinations that particulate matter and ozone impacts were below statutory *de minimis* levels requiring no general conformity analysis and that there were no other air, water, biologic, land use or historic resource impacts.

The Town of Brookhaven also unanimously approved the BRT project and adopted a SEQR Negative Declaration for the BRT.

Adjacent and nearby land uses are either vacant, industrial or publicly owned institutional uses. There are no immediate residential neighbors. - The closest noise sensitive receptor is a group of 3 single family homes on CR 101approximately 1/4 mile north across the LIE from the site. A multi-family complex is located 1.2 miles south of the site.

BRT land and potentially available adjoining lands would not present land use conflicts. Based on the lands being unused and vacant, their appropriate zoning for the use and that the area had been designated an Empire Zone indicating that use of the land for job generating enterprises had already been determined to be part of an adopted Economic Development Plan and Program.

A6 Developable Acreage

See A1 above.

A7 Security

Site configuration and surroundings do not create any significant challenge for site security.

B. Background Activities and Facilities

B1 Existing Activities that can be incorporated

The current configuration of the BRT indicated in Figure 2 could easily be incorporated into a larger facility in the event that the other adjacent privately and publicly owned lands indicated in the NYSDOT Study were to become available for use as an expanded intermodal facility.

B2 Existing Facilities that can be incorporated

See B1.

C. Access and Transportation Network Connections and Infrastructure

C1 Road Access

[The BRT site is located in the geographic center of L.I. and abuts LIE; Exit 66. The site curb cut is 1200' south of the LIE exit on County Road 101 also known as Sills road. Sills road is a fully improved 4 lane divided highway, with full signalization and acceleration and deacceleration lanes at the BRT entrance. Sunrise Highway (US Route 27) is 2.5 miles south of the site on CR 101.

There are no sensitive neighborhood receptors between the LIE and the BRT.

C2 Rail Access

The site abuts the LIRR Main Line for 1,147 feet along its southern boundary. The construction of the main line switch and 13,000 feet of yard track is approved by the 2010 STB decision. BRT is believed to be the easternmost intermodal site <u>not</u> impacted by the 17' 6" height constraint.

C4 Air Access

The BRT site is centrally located to four (4) mid - Island airports including: Brookhaven (WSH) 3.5 miles; MacArthur (ISP) 8.5 miles; Suffolk County (FOK) 9.4 miles; and Calverton (CTO) 10 miles.

C5 Ease of commuting access

The site, located in the central portion of Long Island, is easily commutable to a population of 2.8 million. Brookhaven labs and the former Grumman facility drew a labor force from across all of Nassau and Suffolk Counties. Proximity to the LIE creates opportunity for car pooling and ride sharing opportunities.

D. Property Conditions

D1 Property Price and Ownership

The 28 acre parcel approved by the STP is owned by BRT. In the event that the other private and publicly owned lands were to become available their cost would be determined by the market and the property owners.

D2 Land Use Zoning

The 28 acre site and the other privately lands indicated in the NYSDOT Study are zoned L1.

D3 Covenants Running with the Land that Restrict its Free Use

Other than an agreement with the Town of Brookhaven that limits the site's use as a solid waste facility, there are no covenants that restrict its free use.

D4 Land Uses of Neighboring Sites and Conflicts

Adjacent and nearby land uses are either vacant, industrial or publicly owned institutional uses. There are no immediate residential neighbors. - The closest noise sensitive receptor is a group of 3 single family homes north on CR 101approximately 1/4 mile north and on the opposite side of the LIE from the site. A multi-family complex is located 1.2 miles south of the site.

D5 Recurring Costs

None.

D6 Attitude of Neighboring Communities

The NEPA process included a public process. The Town of Brookhaven unanimously approved the project and adopted a SEQR Negative Declaration for the project. The BRT also enjoys the support of the South Yaphank Civic Association and the Long Island Regional Planning Council.

D7 Pressures from Existing Uses

None. In fact, certain existing uses are natural customers of the BRT such as Global Tissue an existing paper converter immediately opposite the site of CR 101.

E. Location and Interconnected Business Activities

E1 Centrality of site in relation to important consuming areas

BRT's central Long Island location places it in position to efficiently address the LI markets. The detailed information below addresses Nassau and Suffolk, however, it is expected that for various markets and products there will be a demand potential in the NYC boroughs of Brooklyn (Kings) and Queens.

Long Island's population is 2,864,793; 53% or 1,511,732 reside in Suffolk County and 47% or 1, 353,061 reside in Nassau County. Ninety one percent (91 %) of Suffolk County's population (1,334,900) lives in its 5 western towns (Huntington, Babylon, Islip, Smithtown, and Brookhaven). Brookhaven has the largest population of all 10 Suffolk Townships at 472,000. The labor force for Nassau and Suffolk Counties is 1,211,900; 725,000 of these employees are located in Suffolk County and 486,900 are located in Nassau County[4]. Professional and business services sector saw its largest growth in the decade during 2005-2006 at 2.7%, manufacturing declined during the early part of the decade and has stabilized and leveled since 2005. The manufacturing employment in Suffolk remains stronger than that in Nassau.

There are 466,614 service businesses in Nassau County and 55,156 goods producing businesses for a total of 521,770. There are 45,000 businesses in Suffolk County.

The largest employers in Suffolk County are:

- North Shore Health Care 32,000
- Diocese of Rockville Center 17,000
- Waldbaums 6,000 +/-
- North Fork Bank 6,000 +/-
- LIRR 6,000 +/-
- Cablevision 6,000 +/-
- Home Depot 4,000 +
- Pathmark 4,000 +
- King Kullen 4,000 +
- Key Span 4,000 +
- LIU 4,000 +
- Stony Brook Hospital 4,000 +
- UPS, Brookhaven Labs, Newsday, Estee Lauder and Computer
- Associates all have at least 2,000 employees
- The largest employers in Nassau County are[6]:
- Cablevision 12,768
- Verizon 5,600
- North Shore Medical Center 4,981
- Winthrop Univ. Hospital 4,000
- Citigroup 2,800
- Nassau Univ. Medical Center 2,624
- All Metro Health 2,500
- Northrop Grumman 2,400
- So. Nassau Comm. Hospital 2,262
- St. Francis Hospital 1,632

The total employment of the 27 largest employers on Long Island is 197,477. Thirty six percent (36%) of the jobs in those 27 largest employers are in healthcare and nineteen percent (19%) are in telecommunication, utilities and communication. These two categories comprise 55% of the jobs of Long Island's largest employers. Seventy Seven (77%) percent of Nassau County is service employment and 9% is manufacturing[7]. In Suffolk 32% is manufacturing and the balance is service and other sectors[8]. Suffolk County where three (3) Freight Village options are located has 24 million square feet of existing office space and 2.7 million square feet of office space proposed to be built; average annual lease cost for this space is $25.40. According to Grub and Ellis R.E. Suffolk has 91 million square feet of industrial – warehousing space, or 2/3 of Long Island's total. The average asking price for lease of industrial space is $7.78 (per s.f. /yr) in Suffolk[9] and $10.75 (per s.f. /yr) in Nassau.

Both Suffolk and Nassau Counties are important, densely populated, consuming areas. Based on data from the task 2 report[11], in 2004 56 million tons of freight moved into, 33 million tons moved out of and 8 million tons moved within the Nassau/Suffolk TCC, with the projections for 2030 being 181, 71, and 12 million tons respectively, for movements into, out of and within the Nassau/Suffolk TCC. Major commodities by weight in the area include secondary traffic; nonmetallic minerals; clay, concrete, glass or stone; food or kindred products; petroleum or coal products and chemicals or allied products. Given that the major commodities moving in the area are expected to produce about 7 million truck trips per year in 2030[12], there is a strong potential for reduction in truck traffic in the area with the development of a freight village.

E2 Proximity to major retailers & logistics providers

The location of this site on the Long Island Expressway gives it good access to logistics providers and retail distribution chains along the LIE serving the eastern side of New York City and all of Long Island. Major retailers and logistics providers are plentiful in the Central and Western parts of Long Island. Nevertheless, the site can hardly serve NYC locations.

E3 Location in relation to interstate/regional freight transshipment

There are no facilities in the immediate area to support interstate/regional freight transshipment. The location is not favorable to support similar activities. A score of 1/5 has been assigned to this criterion.

E4 Availability of local trucking

There are 1720 trucking companies within an hour's drive of this location.

These companies are broken down as follows:

- Freight forwarding 704
- Long Haul Trucking 671
- Cartage / Truck Lines / Movers 345

Nassau and Queens present a significant location quotient of the truck transportation employment sector, 0.35 and 0.59respectively[14]. A score of 4/5 has been assigned to this criterion.

E5 Availability of suitable workforce According to the Nassau and Suffolk County Planning Departments

The labor force for Nassau and Suffolk Counties is 1,417,529; 751,422[15] of these employees are located in Suffolk County and 666,107 [16] are located in Nassau County. As indicated earlier, employment in the truck transportation sector is high and during the last few years trucking firms have diversified to 3PL and other logistics activities. The location quotient for transportation support activities is high both in Nassau and Queens (1.28 and 5.2 respectively)[17]. It should be noted that Long Island has relatively high housing costs, higher in Nassau, as compared to Suffolk. A score of 4/5 has been assigned to this criterion.

SUMMARY OF SITE POTENTIAL ASSESSMENT

BRT Site Potential

The STB approved site belongs to private owners and the STB approved rail facility is under construction as of January, 2011. The additional private and public lands identified in the NYSDOT – UTRC Study are vacant and potentially available from the respective owners all of which would form an approximately 240 acre well configured site according to that Study.

The land is zoned L1. The site has STB approved direct access from an LIRR main line switch with 13,000 linear feet of yard track which will allow a 40 car train to clear the main line.

Access to the LIE is excellent with the facility curb cut being 1200 from Exit 66. Direct access to the facility comes from County Road 101 (Sills Road) which is a 4 lane, fully signalized, with acceleration and deceleration lanes facility. Sunrise Highway (US Route 27) is 2.5 miles south of the site on CR 101. Distance from Manhattan is approximately 60 miles.

Sensitive receptors are not adjacent to or in the immediate vicinity of the site and the Site underwent a full NEPA Review resulting in the issuance of A FONSI. The Town of Brookhaven also unanimously approved the project and issued a SEQR Negative Declaration in connection therewith.

The site offers the opportunity to conceive and design as creative a development as possible subject to the availability of adjacent lands which potentially could be developed in cooperation with local and regional economic development, transportation and environmental agencies it offers a model for sustainable community -economic development and transportation systems.

As with all four of the Long Island sites considered in this study, this site offers a gateway to eastern Long Island serving both Suffolk and Nassau Counties. BRT owners believe that the outer Boroughs of Brooklyn (Kings) and Queens are potential markets as well

Based on data from the task 2 report[75], in 2004 56 million tons of freight moved into, 33 million tons moved out of and 8 million tons moved within the Nassau/Suffolk TCC, with the projections for 2030 being 181, 71, and 12 million tons respectively, for movements into, out of and within the Nassau/Suffolk TCC. Major commodities by weight in the area include secondary traffic; nonmetallic minerals; clay, concrete, glass or stone; food or kindred products; petroleum or coal products and chemicals or allied products.

Given that the major commodities moving in the area are expected to produce about 7 million truck trips per year in 2030, there is a strong potential for reduction in truck traffic in the region.

The potential development of a freight village in this site falls under the concept of a “new”.